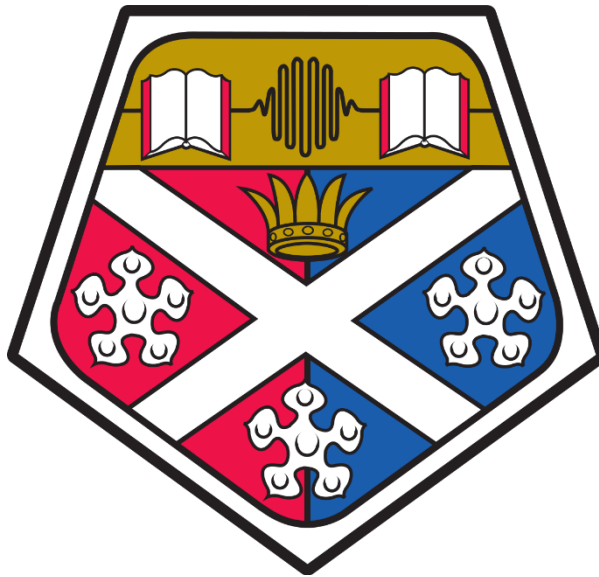# AN INVESTIGATION OF THE INTERVENTIONAL ROLE OF PERCEIVED NORMS ON GREENER CHOICE

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**This dissertation is submitted for the degree of Doctor of Philosophy**

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*This thesis is to my twin boy's Scottish grandpa, David Blenkinson (1940-2021), a faithful and humble servant of Jesus, who helped transform the lives of many in Glasgow and around the world.*

*You can learn more about David Blenkinson at https://www.davidblenkinson.com/.*

*'Even though I walk through the valley of the shadow of death, I will fear no evil, for you are with me. Your rod and your staff, they comfort me'.* **---Psalm 23:4**

The interventional role of perceived norms on promoting greener choice– YuanYuan Zhou – April 2023

# DECLARATION

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# ABSTRACT

Encouraging green consumption is a key goal of green marketing. However, the practice of green consumption often deviates from green attitudes. The approach of behavioural interventions can help reduce the deviation, i.e., the green attitude-behaviour gap, by influencing consumers' decision-making. Nevertheless, this approach lacks a coherent theory underlying the promotion of green consumption behaviour, neglects the influence of self-consciousness on decision-making and intervention effectiveness, and has little recognition of its potential side effects on consumers' well-being.

To address this, this research, using a combined lens of decision-making and behavioural intervention, aims to investigate the impact of normative mechanisms as informational interventions on encouraging consumers to make greener choice and how self-consciousness affects these interventional impacts.

Three experimental studies in hotel towel reuse scenarios were conducted to achieve the aim. The findings reveal that both personal and social normative interventions are effective in promoting green consumption, and self-consciousness affects consumer responses to these interventions. The negative influence of private (public) self-consciousness on the impact of personal (social) normative interventions provides insight into why some studies failed to produce intervention effects. In addition, the research suggests that the impact of intervention on self-concept clarity could reflect its effect on consumers' well-being. By revealing the mediating role of green preference in normative interventions, this research bridges the causal process among personal norms, green preference, and greener choice.

These findings have important implications for marketers and policymakers seeking to promote green consumption while ensuring the well-being of consumers. Focusing on personal norms can encourage sustained greener choice, as it relates strongly to green preference and further activates one's private self-consciousness, providing well-being benefits due to increased self-concept clarity. Effective normative prompts for different marketing communication purposes can be crafted using the research's findings.

(99779 words excluding references and appendices)

# ACKNOWLEDGEMENTS

twin boys for any inconvenience I caused. I want them to know how much I love and cherish them both.

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# 1 INTRODUCTION

## 1.1 Opening Statement

This thesis is an investigation of the interventional role of perceived norms in promoting greener choice. Specifically, it develops and examines a framework of: i) the activation of personal and social norms to promote greener choices; ii) the interaction effect between self-consciousness and perceived norms; and iii) their influence on self-concept clarity, green preference, and greener choice.

This introductory chapter first briefly presents the theoretical background, then, introduces the research problems and states the research aim and objectives. Subsequently, it describes the research approach and summarises the main theoretical and practical contributions of the research. Finally, the chapter ends with an outline of the thesis.

## 1.2 Background

> *"...the more attention our discipline gives to green/ethical marketing, the better it could be for societal well-being in the long term."*
>
> Mceachern and Carrigan (2012, p. 1)

Traditional marketing is often criticised for promoting excessive consumption (Mcdonagh and Prothero, 2014; Mceachern and Carrigan, 2012; White et al., 2019), which can contribute to various environmental problems (Arslan and Aksoy, 2012; Ipcc, 2022; Lunde, 2018; Steg et al., 2019; Steg and Vlek, 2009; Wiltrud and Darya, 2015). These environmental problems, such as climate change, pose major challenges to human health, well-being, equity and justice, as well as ecosystem health (Ipcc, 2022). Therefore, to address these problems, it is essential to implement preventive solutions, which could

lie in changing consumption behaviours (Arslan and Aksoy, 2012; Tripathi, 2017; Wiltrud and Darya, 2015). As a result, encouraging green consumption has become a key goal of green marketing (Mceachern and Carrigan, 2012).

The promotion of green consumption can be driven from a higher macro-level, a meso-level, or a micro-level marketing perspective. At the macro-level, the impact can be driven by changes in economic, political and other social structures (Davies et al., 2020). At the meso-level marketing perspective (Thomas, 2018), on the supply side, the impact can be driven by the change of organisational behaviour through implementing green marketing strategy and management (Dangelico and Vocalelli, 2017; Leonidou and Leonidou, 2011; Rivera-Camino, 2007). At the micro-level marketing perspective (Thomas, 2018), on the demand side, the impact can be driven by the change of consumer behaviour through encouraging consumers to obey the principles of consumption that reduce, reuse, and recycle (Benton, 2015), as well as to purchase and consume green products and services (Mcdonagh and Prothero, 2014).

Green consumption has been seen as a means to reduce and minimise the adverse impact of human consumption on the environment and/or society (Costa Pinto et al., 2016; Tripathi, 2017). Achieving green consumption as a collective action requires changes at all the above mentioned three levels, from macro to micro-level. The three levels are interlinked, hence changes in one level can prompt changes in the other two levels (Davies et al., 2020; Geels, 2010). Therefore, consumers, along with governments and businesses, are responsible in addressing the negative environmental impacts of consumption and production (Žagar, 2020). 'Green (responsible) marketing requires a change to how consumers behave' (Carrigan and Bosangit, 2016, p. 83).

Focusing on consumer behaviour change is important as the power of buyers has long been recognised since the 1900's and it is believed that every purchaser determines to some extent the direction of industry (Carsky and Dickinson, 2005; Moraes et al., 2011). However, more than twenty years after advocating for consumers to take responsibility for green consumption, behavioural changes are still slow and need to be accelerated to mitigate climate change (Trujillo et al., 2021). Considering the importance of consumer's role on green consumption, this research will focus on micro-level change to understand how consumers can be effectively encouraged to make greener choice.

Based on current literature, there appear to be two main research streams in encouraging green consumption. One focuses on the explanation and prediction of green consumption behaviour, mainly through the use of psychological theories as the primary means, as indicated by systematic reviews and meta-analyses (Bamberg and Möser, 2007; Groening et al., 2018; Han, 2021; Steg and Nordlund, 2019; Tripathi, 2017). However, this research stream still faces the challenge of dealing with the attitude-behaviour gap since it was identified 20 years ago in ethical consumption literature (Andrea et al., 2011; Carrington et al., 2014; Davies et al., 2020; Davies et al., 2002; Hassan et al., 2014; Johnstone and Hooper, 2016; Mcdonagh and Prothero, 2014). The other research stream focuses on behavioural intervention to change consumer behaviour. In addition to improving the necessary conditions for green consumption, such as accessibility and affordability of green products and services, nudge interventions have been recognised as an effective way to address the problem of attitude-behaviour gap (Torma et al., 2018; Wiltrud and Darya, 2015). The results of the research by Trujillo et al. (2021) suggest that nudge interventions reduce the attitude-behaviour gap by activating individual-level's beliefs about sustainability. According to Oecd (2008), the following good practices have been applied to nudge consumer behaviour change: communications campaigns or initiatives focused on encouraging green consumption habits, using eco-labelling or green certificates on green products, raising taxes and charges on less sustainable products, providing subsidies and incentives for more sustainable products, and educating consumers/students/citizens to gain skills and competencies to become green consumers.

In summary, the discussion above suggests that encouraging green consumption has become an important area of research for both theory and practice for addressing the negative environmental impacts of consumption and production. While psychological models provide valuable insight into understanding green consumption behaviour, relying solely on this approach may not be adequate to encourage green consumption due to the persistent issue of attitude-behaviour gap. Therefore, there is a need to focus on exploring intervention approaches to promote green consumption that have been recognised for their effectiveness in changing consumer behaviour.

## 1.3 Research Problem

*"Interventional research is often action-based and seems to lack a coherent theory underlying the promotion of pro-environmental behaviour"*

Chapter 1: Introduction

This thesis adopts a decision-making lens to view green consumption as choice-making. The purpose of this thesis, based on the understanding of research background, is to promote greener choices through behavioural intervention approach as it helps translate consumers' green attitude into green consumption behaviour. Using a nudge intervention to promote a greener choice requires a coherent theory of promoting green consumption behaviour (Abrahamse and Matthies, 2019). Although studies have agreed on the effectiveness of informational type of intervention to promote changes in green consumption behaviour, they do not agree on specific information (Davies et al., 2020). Therefore, it is important to identify which underlying theoretical mechanism acts as informational intervention before developing a framework of promoting greener choice.

Previous research on motivations, drivers or determinants of green consumption behaviour is rich (Tripathi, 2017; White et al., 2019), but many of them have not examined their effectiveness in changing behaviour. Key theories such as the Norm Activation Model (Schwartz, 1977), and the Value-Belief-Norm theory (Stern, 2000) highlight the critical role of norms in in understanding green consumption (Keizer and Schultz, 2018; Peattie, 2010; Stern, 2000). Therefore, norms should be investigated as a cause of behaviour change. However, some issues can be identified in the existing research surrounding the role of norms and their interventional impact on behavioural change.

First, the mechanism of how personal norms impact on greener choice and its effectiveness in behaviour change is unclear. Personal norms are referred to as a sense of obligation to perform the given behaviour (Schwartz, 1977). Despite its key role in explaining green consumption (Han, 2014; Kiatkawsin and Han, 2017; Onwezen et al., 2013; Schwartz, 1977; Stern, 2000; Tripathi, 2017), little research has applied its mechanism for behavioural intervention toward making greener choice.

Second, in terms of social norms, referring to perceived social expectation to perform the given behaviour (Fishbein and Ajzen, 1975), marketers and public policy advocators often use its persuasive power as interventional tools in a wide array of contexts, including green consumption behaviour (Melnyk et al., 2021). However, the effectiveness of using the mechanism of social norms as an informational intervention has been surprisingly mixed: sometimes effective and sometimes not (Schultz et al., 2007). This may be due to

a lack of understanding of the conditions that affect the effectiveness of social norms. White and Simpson (2013) noticed that there was insufficient research on examining moderators of normative influence. Furthermore, Nguyen et al. (2019) suggested that identifying moderators of the relationship between attitude and behaviour contributes to the explanation of the attitude-behaviour gap, thereby helping to close the gap.

Third, a recent study by Trujillo et al. (2021) investigated the importance of activating both personal and social norms to increase green consumption. However, the research of Trujillo et al. (2021) and previous research related to nudge interventions (Andor and Fels, 2018) overlooked how the role of self can influence the effect of behavioural intervention and can inhibit changes, despite the importance of self-focus in decision making for green consumption has been highlighted by Bamberg and Schulte (2019). Previous studies on a specific psychological state, self-consciousness in self and identity research have enhanced understanding of their influence on decision making (Fenigstein, 1979; Oyserman, 2004; Silvia and Phillips, 2013; Simon and Trötschel, 2008) and the role of self-consciousness has also been studied in the marketing and psychology literature (Goukens et al., 2009; Lo et al., 2019). However, the ways in which self-consciousness may interact with norms by presenting normative information (intervention) remains unknown. In other words, little research has investigated the relationships between personal norms and private self-consciousness, as well as social norms and public self-consciousness, to provide an understanding of how consumers processing of normative message affects greener choice. Specifically, whether self-consciousness influences the effectiveness of normative information on greener choice and under what condition of self-consciousness the effect of normative information is stronger are unknown. Furthermore, it is unclear whether the underlying mechanism by which norms and self-consciousness influence greener choice (i.e., the interaction between norms and self-consciousness) has an impact on consumers' level of self-concept clarity.

Fourth, although previous research in green consumption acknowledges the importance of preference in choice making (Brennan, 2006; Dagiliūtė and Paulauskaitė, 2016; Olson, 2013; Van Der Werff et al., 2013), the relationships among norms, green preference and greener choice have not been examined. Moreover, how consumers process normative messages, e.g., whether and under what conditions can activate an overall green preference, is unclear.

To conclude, the above discussion highlights the importance of applying the impact of personal and social norms as intervention mechanisms (normative activations) to promote greener choices. It also points out the need to integrate the role of self in decision-making by investigating the influence of self on the effectiveness of behavioural intervention, which is to explore how self-consciousness interacts with the normative effect and green preference.

## 1.4 Research Aim & Objectives

The aim of this research is to investigate the impact of normative mechanisms as informational interventions on encouraging consumers to make greener choice and how self-consciousness affects these interventional impacts related to promoting greener choice. To achieve the aim, a framework is developed with two conceptualised activating routes to promote greener choices. The following specific research objectives describe these activating routes in detail.

1.  To investigate how and under what conditions personal normative information prompts consumers to make greener choice.

This **first research objective** (RO1) is to investigate the first activating route regarding personal norms' impact on greener choices. Specifically, this objective seeks to reveal whether personal normative information (through activating personal norms) can lead to greener choice and whether this effect is attributable to an increase in overall green preference. Examining green preference is to understand the underlying mechanism of the personal normative information. That is to answer 'how' personal norms impact on greener choice by revealing the mediator role of green preference. Additionally, it is also important to uncover whether private self-consciousness influences the effectiveness of personal normative information on greener choice and under what condition of private self-consciousness the effect of personal normative information is stronger. This will help answer the question 'when' personal normative information is more effective, by examining the moderator role of private self-consciousness.

2.  To investigate how and under what conditions social normative information prompts consumers to make greener choice.

This **second research objective** (RO2) is to investigate the second activating route that focuses on social norms' impact on greener choices. Specifically, this objective aims to reveal whether social (i.e., descriptive and injunctive) normative information (through activating descriptive and injunctive norms) has a direct effect on greener choice and whether public self-consciousness influences the effectiveness of social normative information on greener choice and under what condition of public self-consciousness the effect of social normative information is stronger. This is to answer 'when' social normative information is more effective by examining the moderator role of public self-consciousness. Regarding to the question of 'how', it relates to revealing whether the effect of social normative information (through activating social norms) on greener choice is not through the increase of the overall green preference to differentiate the underlying mechanism between personal and social norms.

3.  To investigate what may reduce the impact of personal normative information on prompting consumers to make greener choice when private self-consciousness is activated.

This **third research objective** (RO3) is made conditional on the achievement of the first research objective to further explore empirically the underlying mechanism of the personal normative impact on greener choice. This objective aims to reveal the interaction effect of personal norms and private self-consciousness on self-concept clarity. The need for such an investigation is supported by previous research in self-discrepancy (Higgins, 1987), self-awareness (Duval and Wicklund, 1972) and self-concept clarity (Campbell et al., 1996; Furchheim et al., 2020). Their research has established that i) self-concept clarity could be influenced by the outcome of the self-evaluation, when self-consciousness is activated and the activated different selves (actual self vs idea self) are compared; and ii) self-concept clarity's negative relationship with stress and its positive relationship with subjective well-being (Furchheim et al., 2020; Mittal, 2015). Therefore, such an investigation can respond to the call of environmental psychology to find ways to effectively prompt consumers to make greener choice and, in the meantime, preserve consumers' well-being and quality of life (Steg et al., 2019).

4.  To investigate what may reduce the impact of social normative information on prompting consumers to make greener choice, when public self-consciousness is activated.

This **fourth research objective** (RO4) is conditional on the achievement of the second research objective to further explore, empirically, the underlying mechanism of the social normative impact on greener choice. This research objective aims to reveal the interaction effect of social norms and public self-consciousness on self-concept clarity. The motives for conduct such investigation is consistent with the third objective which is to explore the effect of normative intervention on consumer well-being/happiness-related traits.

## 1.5 Theoretical & Methodological Approach

Green consumption, as an important aspect of sustainable development, contributes to addressing Sustainable Development Goal (SDG) 12- ensure sustainable consumption and production patterns– as well as other interrelated SDGs (Un, 2022). Research related to green consumption has gradually emerged into a multidisciplinary and interdisciplinary research (Liu et al., 2017). The diverse sources of literature on green consumption enrich the understanding of the research problem and objectives for marketing discipline. These sources include studies in environmental science, social science and business management, as well as theories derived from psychology, economics, and sociology with different perspectives.

This thesis mainly reviews six streams of literature. First, the thesis reviews green consumption literature in general and then briefly reviews the nudging theory (Thaler and Sunstein, 2008) in particular, thereby identifying the use of the nudge intervention approach to promote green consumption. Second, five philosophical perspectives on general consumer decision making (e.g., Bray, 2008) and their linkage to green consumption are reviewed, in order to understand the multi-perspective approach adopted by existing fundamental frameworks of green consumption building on a cognitive behaviourism perspective. Third, to identify an influential factor (thereby: norms) of green consumption behaviour for the investigation of its interventional impact, four psychology-based fundamental frameworks of green consumption behaviour are reviewed. Specifically, they are the Theory of Planned Behaviour (Ajzen, 1991), the Model of Goal-Directed Behaviour (Perugini and Bagozzi, 2001), the Norm Activation Model (Schwartz, 1977), and the Value-Belief-Norm theory (Stern, 2000). Fourth, to understand the activations of personal and social norms, literature related to the effect of personal norms and social norms on greener choice and their activation mechanisms is reviewed. Fifth, the concepts related to preference and choice (e.g., Dagiliūtė and

Paulauskaitė, 2016; Warren et al., 2011), green preference and choice (e.g., Olson, 2013), and preference and norms (e.g., Bicchieri, 2010) are reviewed to explore how green preference can be activated by the normative information and in turn influences greener choice. Sixth, literature related to self-concept (e.g., Markus and Kunda, 1986; Markus and Wurf, 1987; Oyserman, 2004), the effect of self-consciousness (e.g., Campbell et al., 1996; Fenigstein et al., 1975; Goukens et al., 2009) and self-concept clarity on consumer decision making (e.g., Furchheim et al., 2020; Mittal, 2015), and the self-related concepts and theories (e.g., Duval and Wicklund, 1972; Fransen et al., 2011; Hertel, 2018; Higgins, 1987) are reviewed to explore the understanding of how the role of self may affect processing the normative information (the intervention).

Figure 1.1 is drawn to help the understanding of the theoretical approach of this research. In brief, based on the lens of decision-making, the thesis reviews theories of green consumption, literature related to norms, preference, choice and self-related concepts to understand factors and internal mechanisms related to consumer decision-making. From a choice-making perspective, green consumption has been conceptualised as greener choice. Although choice and preference are highly connected, the two concepts have been distinguished in this research. Moreover, to understand green consumption, different antecedents, determinants, motivations or drivers of greener choice have been reviewed and the key motivations of norms have been identified.

By combining lenses of behavioural intervention and decision-making, and from a cognitive behaviourism perspective, the thesis views normative intervention as an external contextual factor that provide informational input to facilitate internal decision making. While the role of self-related concepts is viewed as inner attributes that affect information evaluation to understand how consumers respond to behavioural intervention for promoting greener choice. In other words, this thesis brings literature from general areas of self-related concepts, preference and choice, and nudge intervention, to enrich the understanding of the promotion of green consumption in the marketing field.

**Figure 1.1 The theoretical approach**
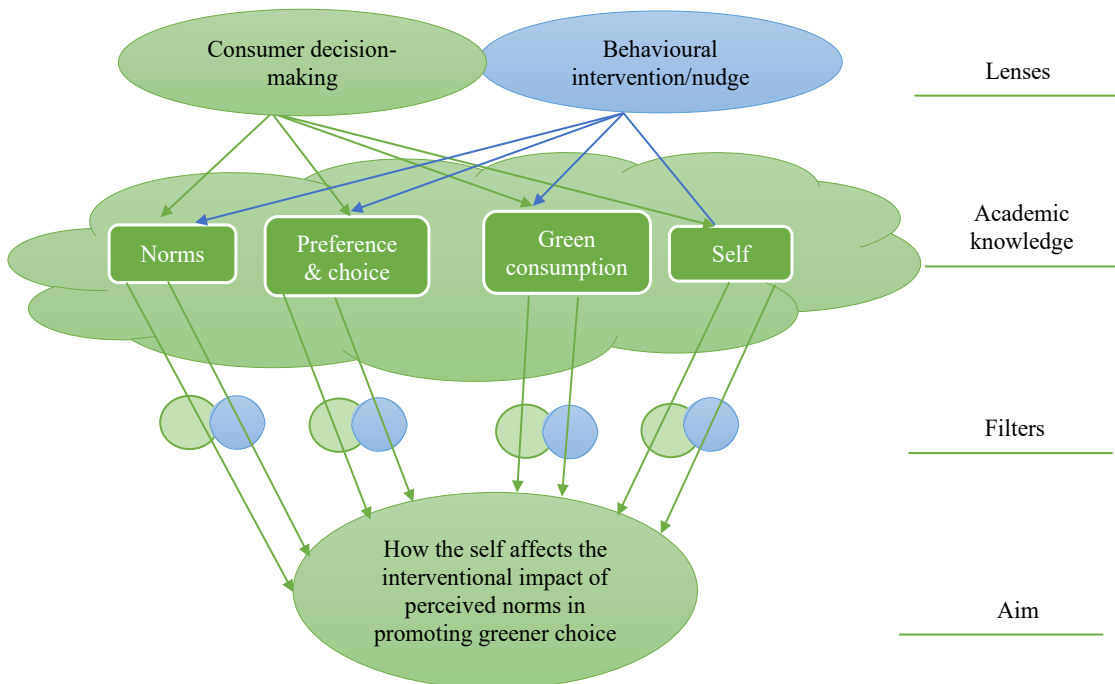


In terms of the empirical approach, this research follows a causal research design, grounded in the philosophical position of post-positivism. Experimental methodology is adopted to investigate the causal effect to examine the effectiveness of normative intervention. Three experimental studies are conducted to test the different types of normative information to address research objectives correspondingly as outlined in Figure 1.2 of the research approach for empirical study. Study 1 and Study 2 are designed to address objective 1 related to the test of the impact of personal norms and private self-consciousness and objective 2 related to the test of the impact of social norms and public self-consciousness. Study 3 is developed depending on the results of Studies 1 and 2, to address objectives 3 and 4, testing the impact of norms and self-consciousness on self-concept clarity. Each study is independent in terms of experimental design, data collection, and data analysis. However, they are conceptual and operational interconnected, with comparable results due to their similarities, such as the use of the same hotel towel reuse scenario, looking at their impact on greener choice, targeting the UK population, and deploying consistent measures, data collection and analysis methods (e.g., Mediation, Moderation and Conditional Process Modelling: PROCESS analysis).

**Figure 1.2 Research approach for empirical study**
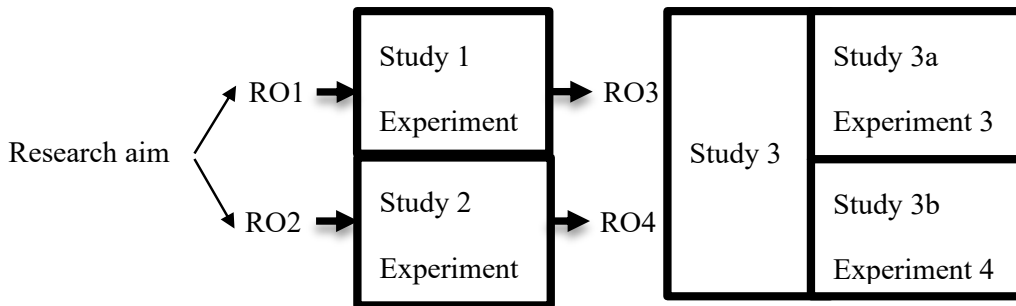


## 1.6 Theoretical & Practical Value of the Thesis

This research is important for both researchers and practitioners in the field of promoting greener choice by emphasising consumer responsibility.

In terms of theoretical value, this research can contribute in several ways. Firstly, this research can contribute to promoting green consumption by adopting behavioural intervention through nudge, which helps shift consumers towards making greener choices. Secondly, it can contribute to the body of green consumption literature on identifying effective drivers for changing consumers' behaviour, through investigating the impact of perceived personal and social norms. Beyond that, this research can provide new insights into the relationship between personal norms and greener choice, and between social norms and greener choice. By examining the effect of the activation of self-consciousness on the normative influence, and testing the impact of perceived norms on green preference and greener choice, this research adds significant detail on when and how the causal processes occur behind the influence of personal and social norms on greener choice. Thirdly, this research can provide an initial contribution to research promoting green consumption related to the potential side effect of behavioural intervention by exploring the effect on self-concept clarity.

In terms of practical value, the results of this research can have several managerial implications, particularly in the area of marketing communications. Firstly, the results can assist managers in identifying interventional mechanism when planning marketing communications. Specifically, managers can choose different types of norms to work towards different purposes of marketing communications. For example, when designing

appeals to encourage sustained greener choice, managers can design informational prompts that focus on personal norms. Secondly, the results can also improve managers' understanding of consumers' self-consciousness on the influence of the designed prompts or appeals. As a result, they could manipulate self-consciousness to encourage green consumption. Thirdly, the results can provide information to managers about the social impact of marketing communication by understanding the interventional impact on self-concept clarity. Overall, the research can assist practitioners in developing counteracting strategies, in response to the phenomenon that consumers do not always follow their green attitude, by crafting normative information to facilitate their behaviour change.

## 1.7 Thesis Outline

The thesis is structured as follows. Following this introductory chapter, Chapter 2 reviews the literature related to green consumption to establish the boundaries of this research area. It critically reviews a cluster of related terms and definitions related to green consumption and presents an overview of previous research on green consumption. It justifies the use of greener choice, and differentiates the concept of (green) preference from (greener) choice. Chapter 3 reviews philosophical underpinnings of general consumer decision and choice making theories. It then reviews the dominant approaches to encouraging green consumption in marketing and consumer behaviour literature and identifies the focus on the behavioural intervention approach in promoting green consumption. Then it reviews the fundamental frameworks of green consumption to identify the focus on perceived norms as the interventional mechanism. This chapter therefore reviews the research related to normative activations. Based on the needs to understand how consumers intrapersonal activities affect their response to the interventions (normative activation), it explores the role of self-related concepts underlying the activation of norms to establish the research aim. Chapter 4 proposes the conceptual model and the hypotheses with regard to two routes to promote greener choices by activating personal norms and social norms. Chapter 5 describes and justifies the methodological decisions that were made for three experimental studies to test the conceptual framework. The three experimental studies will be presented in the following three chapters. Chapter 6 describes and presents Study 1 on testing how and under what conditions *personal* normative information promotes consumers to make greener choice. Chapter 7 describes and presents Study 2 on testing how and under what conditions *social* normative information promotes consumers to make greener choice. Chapter 8 describes

and presents Studies 3a and 3b which investigate the role of *self-concept clarity* on the routes of promoting greener choice, respectively. Finally, in Chapter 9, the main findings of the thesis and their theoretical and managerial implications are summarised. The limitations of the study are also discussed and avenues for future research are proposed.

Chapter 1: Introduction

# 2 GREEN CONSUMPTION: DEFINITIONS, BACKGROUND & CHOICE PERSPECTIVE

## 2.1 Introduction

This chapter builds the territory for this research by specifying the definition of green consumption, examining the use of the term, and viewing green consumption as choice-making through the lens of decision-making.

This chapter begins with a discussion of terms and definitions related to green consumption and provides an overview of previous research on green consumption. Afterwards, the concept of 'greener choices' is introduced based on the conceptualisation of consumption as a choice. This chapter finishes with a discussion of green preferences.

## 2.2 Terms & Definitions

In research on green consumption, a cluster of related terms have been used interchangeably, including green behaviour, sustainable consumption, ethical consumption, pro-environmental consumption, environmentally friendly behaviour, environmentally responsible behaviour, and ecological behaviour (Carrete et al., 2012; Tripathi, 2017).

These related terms evolved from the early concept of sustainability. According to a historical study of sustainable consumption (Heather and Frank, 2015), the term 'sustainable' first appeared in 1731 in a guide book on sustainable forest management, which addressed the right of future generations to use resources. Following the timeline of evolution of the concept of sustainable consumption (Forum, 2013; Tripathi, 2017), the concept of sustainable consumption seems to have first emerged to address the dilemma of resource depletion and growing population, and then evolved to address climate change, loss of biodiversity, overfishing, poverty and the maldistribution of wealth (Kibert et al., 2018).

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The underlying purpose of these related terms is similar, to achieve sustainable development in one or more of the following areas: environment, social equity and economic prosperity (Simpson and Radford, 2014). *Environmental sustainability* refers to the consumption impacts on the natural environment and resources. *Social sustainability* refers to the consumption impacts on social issues such as equity, justice, community relations and workplace ethics. *Economic sustainability* refers to the consumption impacts on the economy and economic growth of companies (e.g., to achieve long-term economic growth; (Simpson and Radford, 2014) and the well-being of consumers (e.g., work-life balance; (Sheth et al., 2011). Achieving economic sustainability (e.g., long-term economic growth) is conditional on the achievement of environmental and social sustainability (Oecd, 2008).

These terms and definitions can all be categorised based on the considerations of three factors: scope, focus, and orientation. The differences in considering these aspects within these terms are shown in Table 2.1.

**Table 2.1 A comparison of a cluster of related terms**

| Term | Definition | Scope | Focus | Orientation |
|---|---|---|---|---|
| Sustainable consumption behaviours | A level and pattern of consumption that meets the needs of the present generation without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development (Brundtland, 1987) | Social and environment | Behaviour | Impact-oriented |
| | It is the use of goods and services that respond to basic needs and bring a better quality of life, while minimising the use of natural resources, toxic materials and the emission of waste and pollutants over the life cycle, so as not to jeopardise the needs of future generations (Black and Cherrier, 2010; Oslo, 1994). | Social and environment | Behaviour | Impact-oriented |
| | Includes a range of behavioural changes, such as more efficient use of energy and resources in the home, the minimisation of waste, and more environmentally friendly household purchasing habits (Oecd, 2002). | Environment | Behaviour | Impact-oriented |
| | Sustainable development (which also takes into account consumption) depends on achieving long-term economic growth that is consistent with | Social, environment and economy | Behaviour | Impact-oriented |

| | | | | |
|---|---|---|---|---|
| | environmental and social needs…, and the sustainability of consumption is considered in economic, environmental and social terms (Oecd, 2008). | | | |
| | Consumption that balances time and monetary expenditure while satisfying the basic needs of life and the future needs of generations (Bilgin et al., 2021, p177; Robins and Roberts, 2006). | Social and environment | Behaviour | Impact-oriented |
| | A consumer's behaviour that improves social and environmental performance while also meeting their needs (Belz and Peattie, 2009). | Social and environment | Behaviour | Impact-oriented |
| | Intends to meet the needs of the current generation and benefit the environment without compromising the ability of future generations to satisfy their needs (Leary et al., 2014). | Social and environment | Value | Intent-oriented |
| | Consumer behaviours that improve social and environmental performance while also meeting consumer needs (Tripathi, 2017). | Social and environment | Behaviour | Impact-oriented |
| Customer-centric sustainability | The consumption-mediated impacts of marketing actions on the environmental, personal and economic well-being of the consumer (Sheth et al., 2011). | Environment and economy | Behaviour | Impact-oriented |
| Sustainable consumption and production (SCP) | "The use of services and related products which respond to basic needs and bring a better quality of life while minimising the use of natural resources and toxic materials as well as emissions of waste and pollutants over the life cycle | Social and environment | Behaviour | Impact-oriented |

| | | | | |
|---|---|---|---|---|
| | of the service or product so as not to jeopardise the needs of future generations."- (Un, 2012). | | | |
| Socially responsible consumers' behaviour | This is the act of purchasing products and services perceived to have a positive (or less negative) influence on the environment, or patronising businesses that attempt to affect related positive social change (Roberts, 1993). | Social and environment | Behaviour | Impact-oriented |
| Pro-environmental behaviour | This is the behaviour that "consciously seeks to minimise the negative impacts of one's actions on the natural and built world" (e.g., minimising resource and energy consumption, using non-toxic substances, and reducing waste production; (Kollmuss and Agyeman, 2002). | Social, environment and economy | Value | Impact-oriented |
| | This is the behaviour that "harms or even benefits the environment as little as possible" (Ertz et al., 2016; Paswan et al., 2017; Steg and Vlek, 2009). | Environment | Behaviour | Impact-oriented |
| Pro-environmental purchase behaviour | The purchase of goods and services that have a minimal impact on the natural environment (Onel, 2017). | Environment | Behaviour | Impact-oriented |

| | | | | |
|---|---|---|---|---|
| Environmentally significant behaviour (personal private-sphere) | These are personal behaviours with consideration for the environment in the daily decisions about the purchase, use, and disposal of personal and household products that impact the environment (Stern, 2000). | Environment | Value | Impact-oriented |
| Environmental responsible consumption | The purchase of products that benefit or cause less harm to the environment than do more conventional consumer goods (Ebreo et al., 1999). | Environment | Behaviour | Impact-oriented |
| Ethical consumption/purchasing | It is concerned with 'the effects that a purchasing choice has, not only on themselves, but also on the external world around (Harrison et al., 2005, p. 2). | Social and environment | Values | Intent-oriented |
| | It is concerned with decision-making, purchasing and other consumption experiences that are influenced by the consumer's ethical concerns (Coopermartin and Holbrook, 1993). | Social, environment, economy and ethics | Values | Intent-oriented |
| | Ethical consumer behaviour refers to decision-making, purchasing and other consumption experiences that are affected by the consumer's ethical concerns (Coopermartin and Holbrook, 1993). | Social, environment, economy and ethics | Values | Intent-oriented |

| Green consumption values | "The tendency to express the value of environmental protection through one's purchases and consumption behaviours" (Haws et al., 2014). | Environment | Value | Intent-oriented |
|---|---|---|---|---|
| Green consumption | The behaviour of an individual who considers environmental or social issues while making purchasing or non-purchasing decisions (Peattie, 2010; as cited in Tripathi, 2017, p. 323). | Social or environment | Value | Intent-oriented |
| Green consumption behaviour | Behaviour that is perceived as having a nil, minimal or reduced impact on the environment, such as protecting waterways, recycling and purchasing environmentally friendly products (Johnstone and Hooper, 2016; Johnstone and Tan, 2015). | Environment | Behaviour | Impact-oriented |
| Green behaviour | Refer to environmentally friendly or sustainable behaviours as 'green behaviours' that involve reducing, reusing and recycling of consumer goods and purchasing items labelled as ecological, biological or organic products (Carrete et al., 2012). | Environment | Behaviour | Impact-oriented |
| Green consumerism | It is the purchasing and non-purchasing decisions made by consumers that are based at least partly on environmental or social criteria (Peattie, 1992, p. 118; Pedersen and Neergaard, 2006). | Social or environment | Value | Intent-oriented |

| Green purchase behaviour | Represent a complex form of ethical decision-making behaviour and is considered a type of socially responsible behaviour. A socially responsible consumer, the green consumer, "takes into account the public consequences of his or her private consumption and attempts to use his or her purchasing power to bring about social change" (Joshi and Rahman, 2015). | Social and environment | Value | Intent-oriented |
|---|---|---|---|---|

The remaining of this section justifies the choice of using the term 'green consumption' and the use of the working definition of 'green consumption', which adopts the environmental scope of green consumption, the value focus (value vs. behaviour) and the intent orientation (intent-oriented vs. impact-oriented).

**The decision to use the term 'green consumption'**

To explain the use of the term 'green consumption' in this research, the differences in the frequency of use of these related terms in different disciplines are discussed. Studies on the impact of human consumption on the environment and society are widely distributed across multiple disciplines (Reisch and Ropke, 2004). Disciplines seem to prefer to use certain terms with different emphases to serve their research purposes. The terms related to 'green,' such as 'green consumption,' 'green behaviour,' 'green consumer,' 'green products' and 'green services,' are more frequently adopted in marketing and consumer psychology literature. 'The notion of green consumption has emerged as a focus for marketing strategies' (Peattie, 2010, p. 197). Green consumption research when emerged in marketing literature, initially focusing on issues of energy use and pollution in specific industries, and later on consumer behaviour in a wide range of activities such as energy conservation, recycling, or reuse, and their response to marketing communications (e.g., advertising and labelling information; (Connolly and Prothero, 2008; Peattie, 2010). In contrast, the term pro-environmental behaviour, is widely used in existing environment psychology literature, and sustainable consumption is widely used in sustainability, environmental science, sociology, policy studies, and other fields (Schaefer and Crane, 2005). The terms 'environmentally friendly behaviour,' 'ecological behaviour,' and 'environmentally responsible behaviour' were used across a range of literature areas but appeared less after the 1990s and some were replaced by 'sustainable consumption' (Carrete et al., 2012). Given the preference for the use of term in marketing and consumer literature, and its underlining meaning, 'green consumption' is frequently adopted to describe consumer behaviour related to environmentally-friendly products and services. Therefore, the use of the term 'green consumption' is appropriate for serving the purposes of this research conducted in the marketing discipline.

**The scope of green consumption**

To better understand the suitability of this term, its differences from related terms, and to determine the definition and scope within the definition of green consumption, the

definitions and focused dimensions (triple-line consideration) of these related terms are discussed.

First, regarding sustainable consumption, most of the definitions found in the literature emphasise the behavioural impact on the future, i.e., the level of consumption that should meet the needs of both the present and future generations (see definitions of sustainable consumption in Table 2.1). Sustainable consumption is conceptualised as overarching sustainability that considers the influence of all three dimensions – environmental, social, and economic – in the decision-making process for consumption behaviours or choices (Sheth et al., 2011; Simpson and Radford, 2014). These definitions have been criticised: i) for their ambiguity, which may result in artificially created needs to influence demand, leading to greenwashing; and ii) for their broadness, which may result in a loss of focus on the specific dimension(s) of sustainability that take precedence and fall into the trap of promoting economic goals over environmental ones (Davies et al., 2020). The definition leaves room for debate about how needs are defined and which needs should be prioritised in cases of conflict (Schaefer and Crane, 2005).

Second, regarding a number of environmental-related terms such as environmentally significant behaviour (Stern, 2000), environmentally responsible behaviour (Ebreo et al., 1999), environmental behaviours (Lindenberg and Steg, 2007a), and pro-environmental behaviour (PEB) (Paswan et al., 2017; Steg and Vlek, 2009), in contrast to the definition of sustainable consumption, there is an agreement on the importance of considering environmental sustainability as a focus. For example, all of these definitions focus solely on the behavioural impact that causes less harm to, or even benefit, the natural environment (Lunde, 2018). These definitions have been criticised as being too narrow in focus and prioritise environmental concerns (Davies et al., 2020).

Third, the concept of ethical consumption encompasses ethical concerns in decision-making beyond the triple-line consideration. In addition to environmental, economic, and social sustainability, attention is paid to minimising the adverse impacts on animal welfare, human welfare, and human rights. Buying fair-trade products, boycotting unethical products and brands (e.g., avoiding the purchase of sweatshop-produced clothing), and purchasing ethical clothing (clothing that is ethically produced and distributed, uses recyclable, natural, and nontoxic materials, and has minimal or no packaging) have emerged to be seen as ethical consumption practices. However,

determining whether a particular consumption behaviour is ethical or not becomes an issue when consumers practise ethical consumption because the unclear executive standards, principles, or rules influence them to decide what is right or wrong regarding their purchasing behaviour. Consumers would be in a dilemma as to how to make an ethical decision if their personal morality conflicts with ethical norms. Ethics is about a standard of what is good and bad, right and wrong, of a society or a group. Morality is one's personal opinions about right and wrong, good and bad (Crane and Matten, 2010). For example, boycotting clothing made in sweatshops meets the ethical standard of societies as labour exploitation, but it could be an unethical decision that has an even more negative impact on these vulnerable groups (by cutting off the major source of income for these people) as the result of the closure of sweatshops by boycotting. Furthermore, there is no clear principle for making judgments when triple-line considerations and ethical considerations are inconsistent. It is unclear whether the ethical criterion for purchasing items should take precedence over other triple-line effects. For example, it is difficult to make an ethical consumption decision between fair-trade food flown in from thousands of miles away and local food (ethical concerns vs. environmental impact). Ethics and human or animal welfare are abstract concepts and general ideas, without a clear and consensual understanding of how these concepts are embodied. To avoid the above issues, the term 'ethical consumption' is not used in this thesis.

Fourth, regarding green consumption, there is a lack of a generally accepted definition of green consumption. Researchers have not reached an agreement about the scope of decision consideration, i.e., the impact of green decision-making on single- or multidimensional areas. Three of the six definitions found in the literature mentioned both environmental concerns and social issues when making decisions (for details, see Table 2.1), but all of these mentioned that the decision is based at least partly on environmental or social criteria (Gilg et al., 2005; Peattie, 1992; Peattie and Belz, 2010; Pedersen and Neergaard, 2006). The underlying assumption of these definitions seems to support the intrinsic linkage between environmental and social concerns. For example, pollution as an environmental problem not only harms the natural environment, but also affects humans and society by causing health issues. In addition, the environmental problem could cause natural disasters that negatively impact the economy and society. Many sociologists have investigated environmental issues related to the causes and solutions of human activity (Barkan and Foundation, 2016). In fact, researchers mainly focus on environmental sustainability in sustainable consumption or green consumption research,

(Peattie, 2010; Schaefer and Crane, 2005), as they may have recognised this intertwined relationship. Therefore, focusing on the environmental dimension of sustainability implies considering social aspects. Decision makers may only consider one dimension directly (e.g., environmental issues), but the outcome indirectly impacts other dimensions. Green consumption is assumed to be directly related to the environmental dimension of sustainability as the 'green' colour conjures up nature and plants, implying conservation of environmental resources, but is also subtly intertwined with social and economic sustainability (Peattie, 2010). Based on the above discussion of the emphasis on environmental sustainability in definitions and research on green consumption, this research also chooses to focus on the environmental dimension of sustainability in its application of the research design.

**The focus and orientation of green consumption**

After explaining the emphasis on the environmental scope of green consumption, the orientations of the concept (intent-oriented or impact-oriented) and the focus in its definition (value or behaviour) are discussed. The differences between the terms can be seen in Table 2.1. According to the research purpose, the definitions can be divided into two orientations: impact-oriented and intent-oriented (Stern, 2000). The impact-oriented definition identifies behaviours that can make a significant difference to the environment (Stern and Gardner, 1981). Most definitions of sustainable consumption and pro-environmental behaviour seem to be impact-oriented, as the emphasis is on the impact of behavioural consequences. The intent-oriented definition focuses on understanding people's beliefs, values, motives, attitudes and intentions and then changing target behaviours as a goal (Stern, 2000). Haws et al. (2014) defined 'green consumption value' as "the tendency to express the value of environmental protection through one's purchases and consumption behaviours". Behaviour is the expression of values. Researchers have found that pro-environmental behaviours driven by more stable factors such as values (Lindenberg and Steg, 2007b) or self-identity (Shaw and Shiu, 2002a, b; Sparks and Shepherd, 1992) are likely to lead to a wider range of pro-environmental behaviours (Gatersleben et al., 2012). Conversely, if promoting pro-environmental behaviour only focuses on its behavioural impact, one type of pro-environmental behaviour (e.g., organic food purchase) would not necessarily be related to other types of pro-environmental behaviour (e.g., recycling or curtailing car use; (Gatersleben et al., 2012). Furthermore, the intent-oriented definition mainly targets behaviours that have indirect impacts on the

environment (e.g., reusing towels) but occur much more frequently than impact-oriented *environmentally significant behaviours* (e.g., installing solar photovoltaic panels) that may occur only once in a lifetime ((Stern, 1997). This research does not focus on impact-oriented *environmentally significant behaviour* but rather on changing consumer behaviour from a micro-level marketing perspective. The effect of marketing communications on promoting this type of behaviour seems limited. For instance, the installation of solar photovoltaic panels is more likely to be influenced by government policy and financial status. In contrast, the decision to focus on the intent-oriented green consumption behaviour would be consistent with this research's focus on promoting green consumption through consumer behavioural change. This may lead this research being related to understanding of the impact of consumers' underlying beliefs and values on green consumption. Therefore, the definition of green consumption adopted in this research will be intent-oriented, allowing to focus on consumer behaviours that occur frequently and are driven by stabilising factors such as values.

**Working definition of green consumption**

The working definition of 'green consumption' (i.e., 'greener choice') for this research is an adaptation from Peattie (2010), i.e., **the behaviour of an individual who considers environmental issues while making purchasing or non-purchasing decisions**. In other words, the behaviour or choice may be an expression of environmental protection. This definition is adopted as it entails the consideration of the environmental dimension of sustainability. According to the previous discussion of the scope of green consumption, this definition also implies the consideration of the social dimension due to their interrelationship. A value-motivated behaviour may not result in a single behaviour but rather a set of behaviours displayed in various situations and contexts guided by this value (Schwartz, 1992). Therefore, this definition of value focus and intent orientation also helps to understand the features of stable underlying values and beliefs, which lead consumers to regularly perform a range of relevant green behaviours, from one type of green consumption to another (e.g., purchasing green products, using green services, and recycling).

## 2.3 Green Consumption as Decision Making

### 2.3.1 Overview

Encouraging consumers to adopt green consumption behaviours continually is a challenge faced by government agencies, policymakers, market practitioners, and researchers (Johnstone and Hooper, 2016). 'Green marketing has become an important research area for scholars' (Sharma, 2021, p. 1217). Most of the research in green marketing is based on understanding the perspective of consumers (Sharma, 2021). Consumers' green consumption behaviour is a key driver for green production and green service operationalisation (Schaefer and Crane, 2005). As early as the 1980s, managerial schools of marketing thought shifted their focus from market behaviour to individual consumers, resulting in the emergence of the 'behavioural schools of marketing thought' (Sheth, 1985). The most commonly used theories have evolved from macro-level to micro-level theories over the past 20 years (1997–2016) in the marketing literature (Lunde, 2018). Therefore, the review of the green consumption study will focus on the research on micro-level consumer behaviour in a green consumption context.

Previous research on green consumption has been drawn from different perspectives and disciplines (Liu et al., 2017). Using theories from other disciplines to understand consumer behaviour, choice and decision-making is a common practise in the marketing discipline (Deborah, 2011). Extant green consumption research is mainly based on theories derived from social and behavioural science disciplines, such as psychology, economics, and sociology (Davies et al., 2020). Although the socio-anthropological approach and its theories emerged for understanding green consumption, the prominent theories for explaining and predicting green consumption behaviour are psychological theories, according to systematic reviews and meta-analyses (Bamberg and Möser, 2007; Groening et al., 2018; Han, 2021; Steg and Nordlund, 2019; Tripathi, 2017). Psychological theories provide insights into how green consumers make decisions and choices.

The existing literature on encouraging green consumption can be sorted into two types of research approaches: those seeking to understand green consumption behaviour and those aiming to change consumers to adopt green consumption behaviour. Understanding and explaining green consumption behaviour is one of the mainstream areas of green consumption research (Johnstone and Hooper, 2016; Mcdonagh and Prothero, 2014;

Pagiaslis and Krontalis, 2014). The predominant methodological approach used in this line of research to examine green consumption behaviour and its social psychological determinants relies on self-reported consumer surveys, with a frequently noted concern of socially desirable response tendencies (Jan-Benedict E.M et al., 2010). The interventional approach to promote changes in consumer behaviour has become another mainstream approach to encouraging green consumption behaviour (Abrahamse and Matthies, 2019). Interventional approach-related green consumption research can be found in the following papers: Cadario and Chandon (2020); Campbell-Arvai et al. (2014); Haug and Busch (2014) and Torma et al. (2018). Interventional studies primarily rely on experimental methodology to examine the effectiveness of behavioural change interventions (Osbaldiston and Schott, 2012), and the use of experiments is considered more appropriate for gaining deeper insights into green consumption behaviour (Davies et al., 2020). The nudge-type intervention is often used by governments, businesses and NGOs to change consumer behaviour and tackle policy problems (Thaler and Sunstein, 2008; Trudel, 2018). In this research, the intervention approach is used to promote green consumption. Chapter 3 will justify this decision by discussing these two research approaches in more detail.

Research to develop or improve theories on green consumption has looked at different antecedents (Pagiaslis and Krontalis, 2014) and determinants (Tripathi, 2017) to improve the understanding of green consumption as well as various influencing factors and intervention mechanisms that can contribute to the promotion of green consumption (White et al., 2019). These various factors can be grouped into those that are related to personal characteristics (Gifford and Nilsson, 2014), social influence (Abrahamse and Steg, 2013), and contextual factors (Ertz et al., 2016; Joshi and Rahman, 2015). These studies have also focused on different behavioural outcomes, including intention, preference, choice and actual behaviour. The difference in focus may be affected by the theoretical perspectives adopted and the conceptualisation of green consumption.

To elaborate on the above discussion, the literature review in Chapter 3 will review the philosophical underpinnings of decision-making and choice theories, the dominant approaches to promoting greener choices, and the key frameworks for green consumption. The rest of this chapter will focus on the discussion of how green consumption has been conceptualised in the marketing discipline.

## *2.3.2 Green Consumption as (Greener) Choice in Marketing*

Due to the diverse perspectives on consumption, green consumption can be viewed from different perspectives. Consumption could be an economic, a physical, and a social process influenced by the society in which one lives (e.g., culture, laws, geography and circumstances) and individuals' psychology (Peattie, 2010). From a functional perspective, consumption is seen as satisfying different needs and wants and as a process of personal identity formulation and social distinction as well as identification that contributes to one's well-being (Jackson, 2005; Schaefer and Crane, 2005). From a sociological perspective, consumption is considered to be shaped by different social contexts. In marketing and economics disciplines, consumption is mainly viewed as a decision-making process that involves the evaluation of alternatives (Peattie, 2010).

### Consumption-via-choice

Traditional psychological and marketing research that study consumption in the context of environmental problems often conceptualises consumption as an individual's choice (Peattie, 2010; Schaefer and Crane, 2005). Therefore, understanding green consumption could be viewed as understanding consumer psychological processes of choice-making. Based on different philosophical stances, there are various points of view regarding understanding of the underlying choice-making processes (a detailed discussion will be shown in Section 3.2). According to Ivan (1979), these include stimulus-response theories of choice (choice is a response to stimulus), expectancy-value theories (choice is determined by the expectation of a behavioural consequence and its value), and other early works in information processing approaches. Ivan's (1979) proposed informational processing approach considers that information obtained from internal sources (e.g., memory) or external sources is processed to evaluate and select among alternatives. The information processing is goal-directed and involves a series of evaluation processes that lead to a choice.

This study will adopt an information-processing and choice-oriented conceptualisation of green consumption, which is in line with Schaefer and Crane's (2005) view of consumption. This view is preferred in the marketing and consumer behaviour literature (Peattie, 2010; Schaefer and Crane, 2005). This approach also tends to lead to quantitative research (e.g., a stimulus-response model to steer consumer behaviour), where the findings are more empirically based for practical implementation.

**Green vs. Greener**

Based on the choice perspective presented above, green consumption is considered a green choice. However, to avoid the issue of the premise of 'green choice,' green consumption is considered as a greener choice among alternatives. Hence, the term 'greener choice' will be used in this thesis.

Green choice implies the objectivity and dichotomy of the options (green choice vs. ungreen choice). The premise of the dichotomy is the set of alternatives that are mutually exclusive. These alternatives or options should be either 'absolutely green' or 'absolutely ungreen' (harmful to the environment). However, there is very little possibility that such absolutely green products or services exist. Producing 'absolutely green' products requires minimising the adverse impact on the environment at every stage of the product's life, including design, production, distribution, promotion and recycling; using natural resources and eliminating toxic materials; and addressing waste and pollutant emissions. Zink and Geyer (2016) asserted that there is no such thing as a 'green' product. Even if such green products do exist in the set of alternatives, consumers are unlikely to have sufficient information and background knowledge about all these attributes of green products to make such a decision. According to a study by Barbarossa and Pastore (2015), which examines the green purchasing gap by focusing on consumers' justifications, the most relevant barrier to green purchasing is the lack of availability of green products. Consumers often perceive 'green' products as unavailable. Therefore, consumers may choose not to practice green consumption if they believe no such 'green' products or services exist.

In contrast to the absoluteness of 'green choice,' the concept of *greener* choice implies relativity, subjectivity, and the compulsion to make a choice among alternatives that are perceived as relatively better or less harmful to the environment. The difficulty of identifying a choice as relatively 'greener' should be reduced dramatically because the decision could be made based on the available green information about the products (e.g., eco-labelling and certification; (Tang et al., 2004; Thøgersen et al., 2012). The green information or green attributes of the products could be seen as a clue for a heuristic decision that facilitates decision-making (Thøgersen et al., 2012). Therefore, it can be inferred that insufficient information on calculating the environmental impact of every stage of a product's life should no longer be a barrier to practicing green consumption when it comes to finding a relatively greener option. Using the term 'greener choice'

would be more realistic for both the supplier (enabling them to offer relatively greener products) and the demand side (enabling consumers to identify relatively greener products). Therefore, this research will adopt the term 'greener choice,' which is the act of choosing a greener option. According to the working definition of 'green consumption,' this greener option should have a less negative impact on the environment than other alternatives.

## 2.3.3 Greener choice vs. green preference

A greener choice should be considered differently from a green preference because choice will be considered differently from preference in this research. Previous research frequently fails to differentiate between preference and choice, as researchers choose to measure the choice/intention to purchase eco-labelled or green products as an indicator of eco-preference (Brennan, 2006; Dagiliute and Paulauskaitė, 2013; Dagiliūtė and Paulauskaitė, 2016). The following section explains the difference between 'greener choice' and 'green preference,' and discusses the potential role of green preference in this research. This is accomplished by discussing the concept of 'green preference' and its related terms, as well as the established relationship between preference and choice.

### The concept of green preference

According to the definitions of *environmental preference* (Thefreedictionary, 2012) (see definitions in Appendix 1) and the concept of 'greener choice,' 'green preference' in this research could refer to **consumers preferring to choose products or services that they believe have a less negative impact on the environment throughout the process of production, distribution, use, reuse and recycling, and disposal**. Previous research has identified green consumers' preference for purchasing products with green attributes (Brennan, 2006; Dagiliute and Paulauskaitė, 2013; Dagiliūtė and Paulauskaitė, 2016; Gilg et al., 2005), but the role of an overall green preference has not been explored.

The general idea of an overall green preference in this research seems to be similar to the concept of environmental preference (Van Der Werff et al., 2013; Zhao et al., 2018), eco-preference (Dagiliute and Paulauskaitė, 2013; Dagiliūtė and Paulauskaitė, 2016), preference for green products (Brennan, 2006; Olson, 2013). However, previous research seems to suffer from conceptual confusion in relation to preference, which has naturally led to inconsistent ways of operationalising the construct of preference. Specifically,

some studies do not distinguish between preference and choice, and other studies choose an aspect of expressing preference to indicate a preference; for example, Zhao et al. (2018) measured demand response to changes in price as the only indicator to reflect the environmental preference (those who were less influenced by the price increase were perceived as having a higher environmental preference). However, many reasons could account for an individual being resilient to a price increase, not necessarily environmental preference. Similarly, Van Der Werff et al. (2013) used four items to indicate environmental preference and intention for green energy consumption, including willingness to pay more and likelihood to switch to green energy. However, these indicators could not reveal the complete idea of the overall green preference defined for this research.

## Understanding the relationship between preference and choice

To interpret the potential role of an overall green preference in this research, it is important to understand the established relationship between preference and choice and the attributes of preference.

Preference and choice are closely related, as preference is expressed when a choice is made (Warren et al., 2011). When people say that they prefer A, it means that they normally choose option A instead of other options (Bicchieri, 2017). However, there are two main contradictory perspectives about preference.

On the one hand, traditional psychologists assumed that a preference is stable and inherent (context-independent) (Warren et al., 2011), and thus believed that most decisions are made based on these stable underlying preferences (Simonson, 2008). Choices are seen as the manifestation of these preferences (Hoeffler and Ariely, 1999). According to this interpretation, preference is considered an underlying preference (Warren et al., 2011) and can be inferred from values, general beliefs, and existing attitudes (Fehige and Wessels, 1998). It is highly correlated with intention, but the intention is directed towards a specific behaviour, unlike the preference, which can predict a range of behaviours (as it is goal-directed). For example, a preference for purity (an abstract idea) could often influence someone to like something simple, white and transparent. This overall preference for purity (as a choice criterion) affects the choice of clothing, decoration style, purchase of furniture (with a white colour and simple styles), etc. In other words, an overall preference for purity would affect the specific choice. From

this perspective, green consumers who prefer to choose a specific greener option among alternatives in different contexts may do so because of a pre-existing overall green preference (underlying preference). This overall green preference could be a product of consumers' underlying values, ecological worldview, environmentally friendly attitude, and norms.

On the other hand, behavioural decision theory argues that preference is context-sensitive (Warren et al., 2011) and changes under different circumstances (Elster, 1983, cited in Brennan, 2006). This view also seems to be correct, considering that the underlying preference could be activated due to the change in priority of values. Although the underlying preference is relatively stable as it is formed based on the underlying values (Schwartz, 1992), the priority of values may change by increasing the cognitive accessibility of targeted values in a given situation (De Groot and Steg, 2009a). In this situation, a preference can be constructed to respond to the prioritised value (George, 1993) and be considered an expressed preference (Warren et al., 2011). Expressed preference is often measured by choice. It implies the incompleteness principle of preference, which assumes the formation of preference that may look like building architecture. This implies that the underlying preference alone cannot completely determine the expressed preference. The inputs/stimulus would not solely activate or retrieve underlying preferences or uncover pre-existing values from memory. In other words, the expressed preference in response to the interaction between the underlying preferences and the environment (Hoeffler and Ariely, 1999) accepts the underlying preference, but may be updated and changed at the time of making a choice due to a changed priority of values or integration with new motivational information (based on the motivationally salient properties of the alternatives (Dietrich and List, 2012)). For example, although someone generally prefers clothes in white colour and with simple styles, the influence of (motivational stimuli) clothing choices of models in shop windows currently on display, the information about fashion trends, and friends' recommendations combined could result in a specific choice of a completely different colour and style.

In sum, according to this attribute of preference, green preference can be considered as an updated version of the underlying overall green preference, and it can be activated (retrieved from memory by the new information), reconstructed (based on new motivational information), or increased (developed and internalised with pre-existing

beliefs) through the new salient motivational stimuli. These inferred attributes of 'green preference' reveal the potential role of green preference in promoting greener choice.

To conclude, an overall green preference should be distinguished from a greener choice, and a one-time greener choice would not be sufficient to infer green preference. In order to promote greener choices, it is critical to investigate the mechanisms by which consumers make greener choices. According to the attributes of green preference, green preference should play a role in green consumer decision-making. From a behaviourism perspective, it is important to identify which motivational stimuli/mechanisms can activate, reconstruct, or increase the green preference, which in turn promotes greener choices. In other words, to understand the potential role of green preference in this research, it is necessary to know whether the motivational factors promote greener choices by influencing green preference. The next chapter will explore these potential motivational factors and mechanisms underlying the greener choice.

## 2.4 Summary of the Chapter

This chapter clarified the terms and definitions related to green consumption and offered a working definition of green consumption for the purposes of this thesis. An overview of the research on green consumption blending in the marketing and behavioural science literature was then provided. The green consumption study was found to be frequently viewed through a decision-making lens in the marketing discipline. Therefore, in this research, green consumption is conceptualised as making the 'greener choice' among alternatives; the term 'greener choice' is adopted, and a distinction is made between 'greener choice' and 'green preference'.

To promote green consumption, it is important to identify what factors, determinants, or motives would influence green preference and greener choice during the decision-making process. To identify the mechanism behind greener choices, it is necessary to know the underlying process of green consumer decision making. The next chapter will review the philosophical underpinnings of consumer decision-making, different approaches to promoting green consumption, and key frameworks for understanding the underlying process of how consumers make greener choices.

# 3 PROMOTING GREEN CONSUMPTION

## 3.1 Introduction

The overarching goal of this research is to find effective ways to promote greener choices. To achieve this, this literature review chapter identifies the intervention approach to promoting greener choices by reviewing the dominant approaches in green consumption studies. To explore the underlying mechanisms for promoting greener choices, this chapter examines and analyses the existing theoretical frameworks in green consumption research. As a result, this chapter identifies the normative focus for promoting greener choices and investigates two normative activation routes for facilitating greener choices. The cognitive approach (p. 42) to understanding consumer internal decision-making, suggests that consumers' intrapersonal activities should influence their response to interventions that promotes greener choices. Therefore, this chapter reviews the relevant literature on the role of self-related concepts to investigate how the self-consciousness can affect the interventional impact of perceived norms. This chapter acts as a theoretical foundation for this thesis, establishes the philosophical underpinning for the promotion of green consumption, and provides a foundation for establishing a conceptual framework for promoting greener choices by focusing on normative activations.

Figure 3.1 provides an overview of the literature that will be reviewed in this chapter and the rationale behind it that leads to the research aim. Specifically, this chapter begins with an overview of the philosophical underpinnings of the general theoretical perspectives on consumer behaviour, with a discussion of how these can be understood and applied in a green consumption context. This chapter then discusses the dominant approach to promoting greener choices. It follows by presenting four fundamental frameworks of green consumption behaviour that enable the identification of the focus of this research. Then it justifies the focus on the activation of norms for promoting greener choices. This chapter ends with a discussion of the role of self-related concepts underlying the activation of norms.

**Figure 3.1 Overview of literature review of chapter 3**
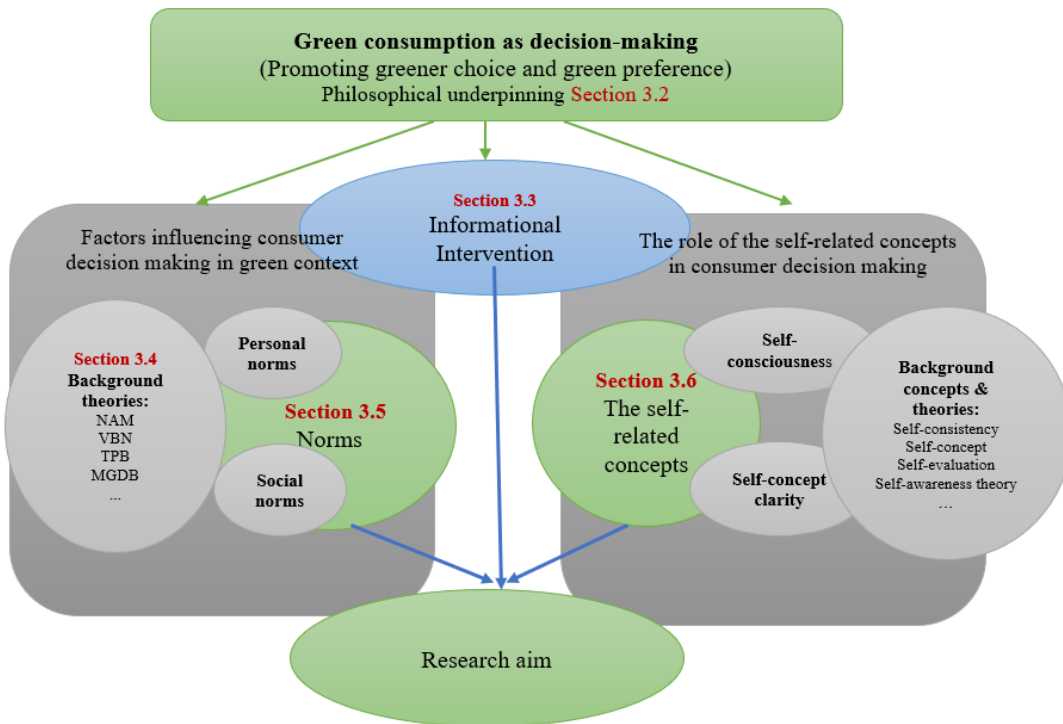


## 3.2 Philosophical Underpinnings of General Consumer Decision & Choice-Making Theories and Linkage to Green Consumption

This section reviews five major philosophical underpinnings of general consumer decision making and discusses how these approaches could be used to explain or promote green consumption accordingly, including the economic, psychodynamic, behaviourist, cognitive, and humanistic perspectives (Bray, 2008). The discussion of these approaches could also provide an understanding of their implications on green consumption studies and what the current fundamental frameworks of green consumption behaviour are based on. An overview of these five philosophical approaches can be found in Table 3.1.

**Table 3.1 Five philosophical approaches to understanding consumer decision-making**

| Approach | References | Behaviour/choice determinants | Assumptions | Limitations |
|---|---|---|---|---|
| Economic perspective | Jevons (1835-1882)<br><br>Simon (1955)<br><br>Wilton and Myers (1986)<br><br>Bray (2008) | The expected outcomes (Utility maximisation) | Rational man and economic man | Bounded rationality and incapable of maximising utility |
| Psychodynamic approach | (Sigmund Freud (1856-1939) cited in Stewart, 1994)<br><br>Pitman and Knauss (2020)<br><br>Bray (2008) | Biological drives | Full control of instinctive forces | Ignoring the influence of external stimuli and individual cognition |
| Behaviourist approach | Watson and Rayner (1920): classical behaviourism<br><br>George (2019)<br><br>Bray (2008) | External forces | Humans born as a blank slate and experience learnt through conditioning | Without consideration of intrapersonal processes |
| Cognitive approach (Cognitive Behaviourism) | Neisser (2007)<br><br>Sternberg (2005)<br><br>Raj (1982)<br><br>Mcleod (2015)<br><br>Bray (2008)<br><br>Stewart (1994) | Intrapersonal cognition | Humans are information processors; the rational man | Ignoring unconscious factors, emotion, spontaneity, habit and cognitive limitations |
| Humanistic approach | Bagozzi and Dholakia (1999)<br><br>Nataraajan and Bagozzi (1999)<br><br>Bray (2008)<br><br>Stewart (1994) | Human volition | Human volition could overcome all other interventional factors. | Overestimate the power of human volition |

First, the early study of consumer decision-making is from an *economic perspective*, with the human being viewed as an 'economic man'. This perspective assumed that consumers are entirely rational and self-interested (derived from Adam Smith's philosophy). Meanwhile, the 'Utility theory' is based on this perspective. It suggested that consumers' choice-making is based on the expected outcomes of their decisions (maximising utility) (Bray, 2008). However, the assumptions of the economic perspective have been criticised as psychologically unrealistic. Simon's (1955) 'bounded rationality' pointed out that humans are limited in their ability to make a fully rational decision in order to achieve their optimal choice. Behavioural research has well documented that decision makers are easily limited by their cognitive limitations, the adequacy of the information they receive, and the amount of time and costs involved in exhaustively comparing all available options prior to making a decision (Colman, 2015, p101; Kahneman, 2011; Torma et al., 2018). Simon suggested replacing *utility maximisation* ('economic man') with *satisfaction.* This means choosing not what is optimal, but what *meets* or *exceeds* a pre-established minimal acceptable criterion (Kahneman, 2003; Simon, 1957, p. 204).

To view green consumer behaviour with this perspective, it could be assumed that green consumption (the expected outcome) is a goal of green consumers, and that the motive for reaching this goal is to obtain self-benefits (e.g., self-enhancement, health concerns). Therefore, green consumers would rate the selection's greenness by assessing each option's perceived environmental impact on performing the option. According to the initial assumption of this approach (completely rational men), green consumers have to evaluate the adverse impact on the environment from all aspects (e.g., sourcing, production, packaging, and service delivery) of each option, which is not realistic. The evolved economic perspective suggests that green consumers' decisions are determined by utility satisfaction with the pre-determined criteria (e.g., the product with environmentally friendly attributes) for selection and the ultimate outcome of the choice's benefits to themselves. However, this perspective does not provide a full understanding of the motives behind green consumption (e.g., self-interest vs. the common good). The implication of this approach may lead to a green consumption studies that examine the attributes and expected outcomes of green products and services, such as the effect of eco-labelling and packaging (Taufique et al., 2017). While applying this approach to promote green consumption, marketers should focus on providing more information about products or services on how to minimise negative environmental impacts at each stage of the product/service life cycle (Mukherjee and Onel, 2013).

Second, the *psychodynamic approach* assumes that behaviour is determined by biological drives (instinctive forces). According to Sigmund Freud's view of Id (Freud, 1962), the biologically driven decision is unconscious and driven by instinctual desires (e.g., hunger, love, safety). Under these forces, consumers tend to seek immediate fulfilment of any impulse to avoid pain or discomfort caused by increasing instinctual tension (Bray, 2008). This assumption is based on the idea of hierarchical drives (fundamental instinctual drives and secondary instrumental drives) and Freud's three aspects of the psyche. This approach focuses on internal biological drives, which could explain emotional or impulsive buying, but not the decisions influenced by external stimuli and individual cognition.

Based on psychodynamic assumptions, green consumers' decisions are only determined by their internal biological drives. This approach can only be used to understand green consumer behaviour if green consumption is assumed to be an instrumental drive that satisfies the Id, the ego, or the superego. Green consumption may be driven primarily by the superego rather than the ego and the Id. The implications of this approach on the study of green consumption may lead to exploring the influence of unconscious, moral-emotional and impulsive buying behaviours. Chatzidakis (2015) found that unconscious guilt can be viewed as a biological drive that can promote green consumption, and that this guilt could exist while establishing a superego. Applying this approach to encourage green consumption, marketers could focus on linking green products or services with identified instinctual desires to drive green consumption. In addition, Paswan et al. (2017) found that people who derive enjoyment in nature and have achieved a balance between "mankind" and nature are more likely to exhibit green purchasing behaviour. Therefore, marketers can promote an instinctive relationship between humans and nature, just like the instinctive relationship exists between a child and their parents, according to attachment theory (Mcleod, 2017).

Third, the *behaviourist approach* assumes that behaviour is determined by external forces (learnt experiences). This is based on two assumptions. First, humans are born as a blank slate (known as a tabula rasa) and learn everything from their environment (Locke's empiricism). This is the philosophical stance of logical positivism. Behaviourists believe that society shapes the individual and an individual's behavioural patterns through laws, rules, social norms, socialisation, social class, gender and ethnic background (Crotty, 1998). Second, this approach assumes that learning occurs through conditioning (classical and operant conditioning: stimulus and response). In other words, behaviour is

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determined by learnt experiences acquired through exposure to a set of stimuli. Human drives as the source of stimuli aiming to change consumer behaviour have been widely used by marketers in advertising. These stimuli were viewed as intervention factors for persuading and then changing behaviour. In this regard, the function of drives is similar to that of biological drives.

Based on the assumptions of behaviourism, green consumers' decisions are only determined by external factors. The behaviourists' sole approach ignores the existence of cognitive events, which could only partly explain green consumer behaviour (Stern, 2000; Stewart, 1994). The implication of this approach to the study of green consumption could be to seek the influence of external factors. Some specific external factors have been examined to understand green consumer behaviours and choices, such as the situational effect (Hasan, 2011), the social environment effect (Johnstone and Hooper, 2016), the perceived cultural effect (e.g., individualism, collectivism) (Cho et al., 2012), and the contextual forces, including government regulations, product attributes, the availability of products and services, and advertising (Stern, 2000; Vining and Ebreo, 1992). While applying this approach to promote green consumption, researchers and marketers should identify which determinants and intervention factors are effective in promoting green consumption.

Fourth, the *cognitive approach* assumes that observed behaviour is determined by intrapersonal cognition (finally reifying abstract psychological concepts as observable objects). This approach is considered as the dominant approach in decision research (Bray, 2008). This assumption highlights the effect of consumers' mental activities on decision-making. Therefore, the stimulus-organism response (SOR) model is developed, which emphasises the role of the organism (individual internal state). The ontological assumption of the cognitive approach is to view the individual as an information processor (Mcleod, 2015). Therefore, external stimuli are viewed as informational inputs that facilitate internal decision-making (Stewart, 1994). The organism as an information processor could be influenced by its past experiences that affect what information is sought and received (Moital, 2006). Following this line of thinking, organisms may respond differently to the same stimulus due to differences in the amount and scope of information received and processed. Moreover, an organism may respond to the same stimulus in different ways from time to time under the influence of past behaviour and new input (e.g., exposure to new information). This highlights the limitations of the

behaviourist approach to understanding consumer behaviour and its unstable predictability.

Several cognitive models have been developed that offer a comprehensive explanation of everyday consumption (Bray, 2008). For example, the consumer decision model, as an overarching model, describes the decision-making process from input (stimuli) through information processing to the decision-making processing (from need recognition through information search, evaluation of alternatives, and purchase to post-purchase/evaluation) and how other environmental factors and individual differences would affect the decision-making process (Blackwell et al., 2000). Some models that have been developed only focus on specific factors that may influence decision-making. The Theory of Planned Behaviour (TPB) (see Figure 3.2 Initial TPB model) (Ajzen, 1991) and the theory of reasoned action (TRA) (Ajzen, 1980) are built on cognitive processes and focus on how consumer intentions are formulated. These models have been applied and extended to understand the progress of the underlying beliefs of green consumers. The implication of this approach on understanding green consumers could be the focus of the investigation on the effect of consumers' cognitive factors, such as attitude, norms, awareness, knowledge, and behavioural intention towards green consumption. In addition, consumer environmental concern, consumer environmental knowledge (Pagiaslis and Krontalis, 2014), perceived consumer effectiveness and trust have been found to influence decision-making for green consumption (Joshi and Rahman, 2015). However, the cognitive models are often criticised for their assumptions about rational consumers and their ignorance of the effects of unconscious and subconscious factors, emotions, spontaneity, habit, and cognitive limitations. While applying this approach to promote green consumption, marketers could focus on changing behaviour through the change of the identified cognitive factors.

Fifth, the *humanistic approach* has emerged to overcome the limitations of the cognitive approach and to further understand the specific aspects of behaviour (Bray, 2008). This approach believes in the power of volition to overcome all other influences and interventions. The Theory of Trying (Bagozzi and Warshaw, 1990) and the Model of Goal-Directed Behaviour (MGDB) (see Figure 3.4 MGDB model) (Bagozzi, 2002; Perugini and Bagozzi, 2001) are all viewed as humanistic models. MGDB, as an extension of TPB, embraces the constructs of emotions (anticipated emotions), past behaviour, and desires (biological drives and/or secondary drives) along with the

antecedents of TPB. MGDB seems to combine the determinants derived from five approaches: drives (biological), subjective norms (external influences), cognitive progress, and emotions (humanistic approach). The MGDB was adopted in a green consumption study and was found to have better predictability of behavioural intention than the TPB, despite its limitations in application (data gathering issues) (Leone et al., 2004).

The implication of this approach to understanding green consumers may lead to research on understanding the volitional stages of decision-making. The concepts such as implementation intention (plan) (Gollwitzer, 1999), commitment (Baca-Motes et al., 2013), and self-regulation (Carver and Scheier, 1981) are viewed as instrumental tools to enable volitional behaviour, and some of them have been investigated, and attempt to bridge the relationships between green intention and behaviour (Carrington et al., 2010; Carrington et al., 2014; Hassan et al., 2014).

After reviewing the five approaches discussed above in relation to the green consumption study, it appears that each perspective in the decision-making process may only partially explain the potential account of green consumer behaviour, and thus does not appear to be sufficient for providing a comprehensive understanding of green consumers. This is because in most situations, a decision is made that is often based on multiple drives, motives, or influential factors. Green consumption is more likely to be determined by different combinations of the determinants under different conditions and contexts, including expected outcomes (economic perspective), biological drives (psychodynamic approach), social (external) influences (behaviourist approach), intrapersonal cognition (cognitive approach) and human volition (humanistic approach). For this reason, previous theoretical frameworks of green consumption have mainly adopted a multi-perspective approach; for example, Hasan (2011) combined Mehrabian and Russell's affective (emotion) theory with the behavioural perspective model (BPM) (Foxall, 1995) to explain environmental behaviour (affect, behaviour and cognition). Section 3.4 will present a detailed discussion of key theoretical frameworks of green consumption.

## 3.3 The Dominant Approach to Promote Greener Choice: Intervention

As introduced in Section 2.3.1, there are two dominant approaches to the study of green consumption. One focuses on explaining and understanding green consumption

behaviour. The studies adopting this approach often rely on the following theories as a base to improve the understanding of green consumption: the theory of planned behaviour (Ajzen, 1985), the model of goal-directed behaviour (Perugini and Bagozzi, 2001), the norm activation model (Schwartz, 1977) and the value-belief-norm theory (Stern et al., 1999). These studies all face the problem of the green attitude-behaviour gap. The actual behaviour deviates from attitudes, which is a common phenomenon in consumer decision making (Fishbein and Ajzen, 2010). It is frequently studied in general psychological and attitudinal studies (Fishbein and Ajzen, 2010), and is also well documented in green consumption-related research (Carrigan and Attalla, 2001; Carrington et al., 2014; Moraes et al., 2012). The resolution of the green attitude-behaviour gap is a key topical issue, especially after 2006, according to the systematic review by Liu et al. (2017) to track the evolution of sustainable consumption. A group of researchers focused on approaches to bridge the gap for theoretical extension by identifying and incorporating new variables or psychological constructs between intention and behaviour, such as 'plan' (Hassan et al., 2014), 'implementation intention' and 'situational factors' (Carrington et al., 2010). The general Attitude-Behaviour-Context (ABC) theory, in particular, has been adopted to understand the green attitude-behaviour gap by focusing on the contextual factors (Peattie, 2010). Another group of researchers focused on explaining the gap by identifying barriers to adopting green consumption behaviour, such as 'perceived availability' (Vermeir and Verbeke, 2006), 'quality perception' (Bray et al., 2011), 'lack of information or environmental knowledge' (Sharma, 2021), 'lack of transparency and trust towards labels and certifications' (Joshi and Rahman, 2015), 'price' (Barbarossa and Pastore, 2015), and 'perceived consumer effectiveness' (Nguyen et al., 2019). However, this gap has persisted in the green consumption literature, and this issue has been described as obstinate, and a better approach is needed to understand and predict behaviours (Carrigan, 2017; Moraes et al., 2012). Although it is acknowledged that this research stream's explanatory value lies in explaining and understanding behaviour and introducing some of the drivers of green consumption behaviour, it has been shown to have little value in changing behaviour (Davies et al., 2020; Perera et al., 2018). There is a strong need for marketing and behavioural science to shift consumers towards making greener choices (White et al., 2019).

**Behavioural intervention approach: theoretical origins, types and its fitness**

The interventional approach has been frequently adopted in green consumption research to change consumer behaviour. Trudel (2018) divides intervention strategies into two categories: incentives and nudge-type strategies. Although economic incentives have been widely used to motivate green consumption, especially in reducing electricity usage, this incentive-type has been recognised as questionable due to its cost and mixed effects (Bolderdijk and Steg, 2014; Nguyen-Van et al., 2021). The interventional approach is known in behavioural science as the 'nudge' intervention strategy. It refers to changing behaviour through the influence of any aspect in a choice context without limiting their existing choices or affecting them by strong incentives (Hansen and Jespersen, 2013). Nudge aims to help simplifying choices, reducing the transaction costs of decision-making, and guiding people towards certain options in a positive direction (Thaler and Sunstein, 2008). Nudge-type interventions found in the marketing literature focus on sustainable food consumption behaviours such as healthy eating and healthy food purchase (see Cadario and Chandon (2020) for a detailed review) and energy conservation behaviours such as household energy conservation (Abrahamse et al., 2005; Andor and Fels, 2018); resource conservation through recycling and reuse (Abrahamse and Steg, 2013; Osbaldiston and Schott, 2012); and reducing behaviours (i.e., reducing the use of private cars) (Möser and Bamberg, 2008). To better understand this approach, the origins of its theoretical basis for intervention design are discussed.

**The theoretical basis of the interventional approach**

This research stream seems to have evolved from the applications of two other branches of research. First, the nudge intervention may have its origin in reasoning and judgment research, because it applies the findings of early studies of cognitive constraints and biases to the design of interventions. This field of study is primarily based on the psychologically realistic assumption that humans have limited rationality (Kahneman, 2003; Thaler and Sunstein, 2008), as well as the psychological dual-process theory, which underpins behavioural economics, modern psychology, and neuroscience (Hansen and Jespersen, 2013), as a lens for understanding the reasons for systematic errors or biases in human decision-making (Hansen and Jespersen, 2013). Researchers believed that this dual-process theory could partly explain the aforementioned problem of the intention-behaviour gap and proposed nudge interventions as a solution to overcome this gap (Torma et al., 2018; Trujillo et al., 2021; Wiltrud and Darya, 2015). Many designs of

nudge intervention were based on the use of identified errors or issues in decision-making rather than just cognitive barriers such as forgetfulness, cognitive bias, bounded rationality, cognitive overload, a lack or overload of information and a lack of trust (Lehner et al., 2016). The design of a nudge is based on changes to elements in the choice architecture or context. This includes the change of elements such as in labelling (e.g., eco-labelling for reliable labelling and certification with green information in response to a lack of trust) (Borin et al., 2011), framing (e.g., loss or gain frame)(Amatulli et al., 2019), sizing (e.g., product size or the size of container), anchoring (e.g., a reference price) (Andersson et al., 2021), salience (e.g., highlight items or motivational information) (Ischen et al., 2022), and the default option due to 'status quo bias' (e.g., the green option as the default option) (Kahneman, 2011).

Second, the 'nudge' intervention may be based on the application of research findings on motivations, drivers, and determinants of behaviour. A wide range of factors (not just psychological drivers) identified in the White et al. (2019) and Trudel (2018) review papers are suggested as suitable intervention tools to promote greener choices. These identified psychological factors were grouped by White et al. (2019) as social influence (e.g., social norms, social proof and social identities), habit formation (e.g., implementation intention), and the individual self (e.g., self-concept, self-consistency, self-interest, self-efficacy, and self-identification). However, not all of these factors have had treatments developed and experimentally tested to promote greener choices (e.g., self-concept).

In summary, the nudge interventions derived from research on cognitive constraints and biases act like toolkits that offer a list of 'behavioural changes,' but these nudge interventions without theoretical justification underpinning what should be changed. Research on motivations, drivers, and determinants of behaviours can supply the theoretical justification for designing interventions. In other words, researchers should determine what elements in the choice architecture should be changed, such as the application of the salient effect, and they should determine what information should be salient by identifying the drivers of a specific behaviour.

**The types of interventional strategies used in green consumption**

According to the features of the targeted drivers/factors for change, interventions can be divided into informational and structural strategies (Steg and Vlek, 2009). Informational

strategies aim to change behaviour by altering 'soft' factors (psychological characteristics of consumers) such as knowledge, awareness, norms, and attitudes. Structural strategies focus on changing 'hard' factors (contextual and infrastructural factors), such as the provision of recycling facilities and the use of incentives or technical devices (Abrahamse and Matthies, 2019). For promoting greener choices, informational interventions have applied the effects of social norms (Cialdini, 2003), social identity (Goldstein et al., 2008), prompt (Sussman and Gifford, 2012) and feedback (Karlin et al., 2015).

Informational interventions are most commonly used, according to systematic reviews and meta-analyses of interventional studies (Abrahamse and Steg, 2013; Abrahamse et al., 2005; Andor and Fels, 2018; Osbaldiston and Schott, 2012). The effectiveness of the informational intervention for facilitating green behaviour change has been agreed upon, but not on which specific information should be used (Davies et al., 2020). Identifying a theoretical basis for designing intervention strategies is critical (Abrahamse and Matthies, 2019). Therefore, applying the findings of motivational research with a focus on the determinants of green consumer behaviours can help identify which factors should be targeted for designing informational interventions to promote greener choices. Causal factors influencing green consumption behaviour need to be identified before designing the intervention (Steg and Vlek, 2009). As a result, it appears that the existing marketing literature lacks an articulate theory to understand which and how interventions work in promoting greener choices, as well as how consumers process and respond to such interventions.

Based on the above review of dominant approaches to green consumption research, the interventional approach is identified as fulfilling the general purpose of undertaking this research. Using an intervention/nudge lens to view consumer behaviour change, researchers should equip themselves with sufficient knowledge of green consumption patterns to be able to design the intervention strategies and assess the mechanism behind the changes. The following section will review fundamental frameworks in green consumption research to identify the causal factors of green consumption behaviour for developing informational intervention to promote greener choice.

## 3.4 Fundamental Frameworks of Green Consumption Behaviour

*"All models are wrong, but some are useful"* -Box and Draper (1987, p. 424).

As every model is a simplification of reality, this section reviews key frameworks of green consumption behaviour that have been proposed for understanding the underlying process of how consumers make greener choices. This section discusses what factors could be targeted to promote greener choices.

### 3.4.1 Theory of Planned Behaviour and Theory of Reasoned action

The Theory of Planned Behaviour (TPB) (Ajzen, 1985; 1988, initial model see Figure 3.2) is mainly built on the cognitive perspective (Fishbein and Ajzen, 1975) which is also called the rational choice model (Groening et al., 2018). It is an extended version of the Theory of Reasoned Action (TRA) (Ajzen, 1980) incorporating the construct of *perceived behaviour control* (PBC) and thus compensating for the lack of consideration by TRA of the influences of resources and the ability to perform a behaviour.

**Figure 3.2 Initial TPB model**

*Ajzen (1988)*
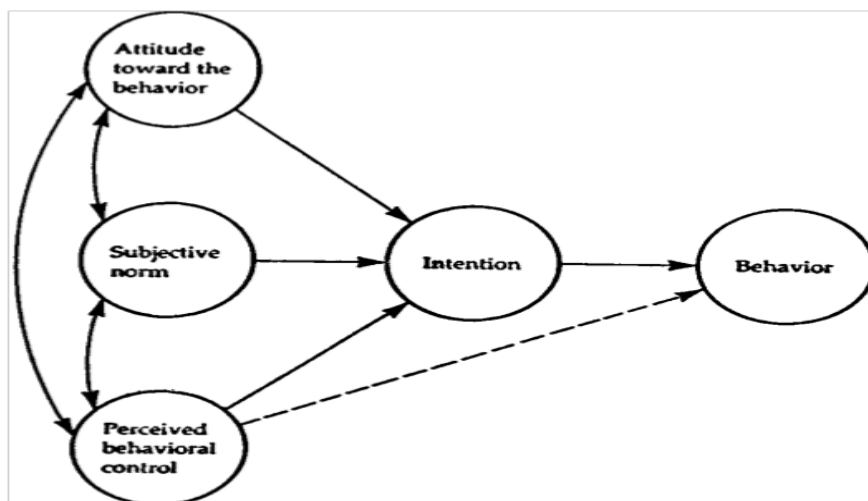


**Overview**

TPB and TRA were established in the 1970s and extended the attitude-behaviour relationship by introducing intention as the closest predictor of behaviour (Fishbein and Ajzen, 1975). In other words, both models assumed that consumers' behaviour is determined by their intentions. The initial model of TPB (see Figure 3.2) considers the effect of *attitude towards the behaviour*, *subjective norms* (SN), and *perceived behavioural control* (PBC) on the formulation of intention and behaviour. It was later expanded by adding corresponding antecedents for each of these constructs, namely

*behavioural beliefs*, *normative beliefs,* and *control beliefs*; adding *actual control* as a mediator between intention and actual behaviour; and replacing the construct *subjective norms* with *perceived norms* (i.e., perceived social norms) in order to increase the explanatory value of the model (Ajzen, 1991; Fishbein and Ajzen, 2010). The updated TPB (see Figure 3.3) also adds the background factors to understand what influences the formulation of the behavioural beliefs, normative beliefs, and control beliefs. It is a general and comprehensive social-psychological model for explaining a wide range of behaviours, taking into account internal (attitudinal) and external (social) factors, as well as personal capability to perform the given behaviour.

**Figure 3.3 Updated TPB model**

**Fishbein and Ajzen (2010)**
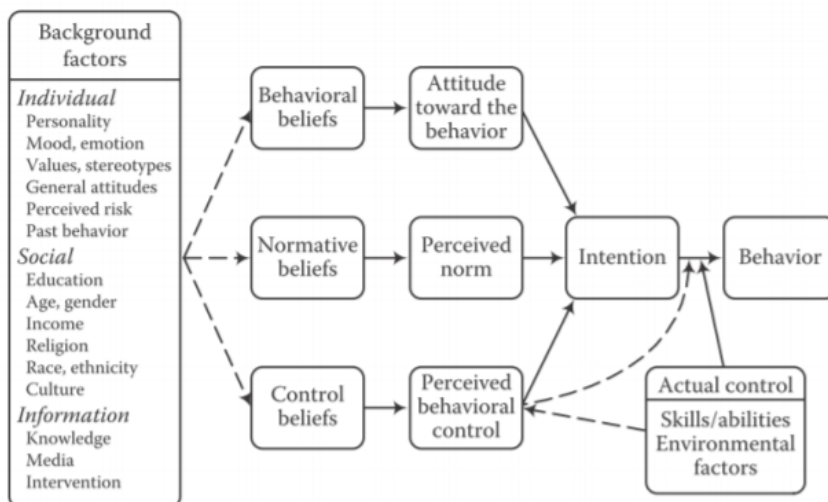


### *Key* constructs

***Behavioural intention*** refers to *a readiness to perform a given behaviour* (Fishbein and Ajzen, 2010, p. 39). Intention can be assessed directly through statements such as 'I intend to' or indirectly by evaluating its three determinants. The majority of the studies did not measure actual behaviour because of its unfeasibility and the high cost of measuring both intention and actual behaviour. They used intention as a proxy for actual behaviour and focused on the relationships between intention and its determinants (Jackson, 2005).

***Actual control*** refers to the extent of an individual's abilities, skills, and resources to perform a given behaviour. Theoretically, this construct considers the contextual

influence when actually performing the behaviour, but it is difficult to measure (Michal et al., 2010).

***Perceived behaviour control*** refers to people's perceptions of the extent of their abilities, skills, and resources to perform a given behaviour (Fishbein and Ajzen, 2010). PBC served as a proxy for the actual control used for the prediction (Fishbein and Ajzen, 2010). PBC has two components. Self-efficacy deals with the ease or difficulty of executing a behaviour, and controllability refers to the extent to which performance depends on the consumer (Ajzen, 2002a). According to this concept, the accuracy of PBC may be highly dependent on the individual's perception of self-knowing or judgment of capability. PBC is determined by a total set of accessible 'control beliefs'. These control beliefs relate to the internal (e.g., willpower, knowledge and skills) and external (e.g., unavailability) factors that may facilitate or impede the behaviour.

***Perceived social norms*** (SN) refer to the perceived social pressure to execute or not execute a prearranged behaviour according to the TPB (Fishbein and Ajzen, 1975). Existing research offers multiple definitions of social norms. As an approximation, a social norm is 'what people in some group believe to be normal in the group, i.e., what is considered a typical action, an appropriate action, or both' (Mackie et al., 2015, p. 7). Bicchieri (2010) defines a social norm as one's beliefs about the actions of others as well as others' beliefs about what should be done in the reference group (the expectations of others). These two dimensions of social norms have been distinguished by Cialdini et al. (1990) as descriptive norms (norms of 'is') and injunctive norms (norms of 'ought'). Cialdini's Focus Theory of Normative Conduct proposed that activating social norms could be done by making social norms salient or focal in a specific situation and increasing the salience through written messages. The original model of TPB assumed that social pressure only comes from important referents (i.e., subjective norms $\approx$ injunctive norms). The updated version of TPB (Fishbein and Ajzen, 2010) treated social norms (i.e., **injunctive norms**: what most others think I should do, and **descriptive norms**: what most others do) as a social influence that affects behavioural intention. It should be noted that most of the existing research used the term 'subjective norms' rather than 'social norms' in TPB, and only measured injunctive norms.

***Attitudes towards behaviour*** refer to an individual's evaluations of the outcome or consequences of performing in a specific green behaviour. The theory of attitude is based

on Fishbein's expectancy-value model. The attitude is determined by its need-satisfying expectancy (attitude determined by expected outcome) (Fishbein and Ajzen, 1975), which is based on an economic perspective and utility theory. This perspective assumes that consumers are rational and self-interested. Hence, attitudes should be ego-defensive and value-oriented (Moital, 2006). It has been assumed that the general attitude is determined by the total set of accessible behavioural beliefs towards behavioural outcomes and other attributes (Fishbein and Ajzen, 2010). A consumer could hold both positive and negative behavioural beliefs.

## Empirical work, critiques and limitations

TPB and TRA initially focused on health-related practices (Fishbein and Ajzen, 2010). They are now well recognised and have been widely applied in understanding and predicting a variety of human behaviours, including green consumption (Jackson, 2005; Tripathi, 2017). TPB has been often applied in the context of green consumption (Han and Stoel, 2017; Hassan et al., 2014; Joshi and Rahman, 2015; Kumar, 2019), and TPB is considered the most widely used framework for predicting pro-environmental behaviour (Ertz et al., 2016). However, many researchers have been motivated to extend or expand the model of TPB due to the persisting gap between intention and actual behaviour (Bray et al., 2011; Carrington et al., 2010; Chatzidakis, 2015; Tripathi, 2017), the inconsistency of empirical findings in environmental behaviour studies (Si et al., 2019), the adaptability of the original TPB model to new studies, and its openness to adding new variables (Fishbein and Ajzen, 2010). According to TPB, the correlation value between intention and behaviour seems to be based on individuals' volitional efforts (from a humanistic perspective).

Despite the fact that '*over 2000 empirical studies have used the TPB in attempts to predict and or change behaviour*' (Ajzen, 2020, p. 316), many papers have criticised the TPB (Armitage and Conner, 2001), particularly its application in environmental science (see bibliometric analysis in Si et al., 2019). The discussion below will clearly outline the criticism of TPB in general and the limitations of TPB in promoting green consumption in particular.

First, TPB is often criticised for its philosophical underpinnings. The premise of TPB is that consumers make rational, logical, and reasoned decisions (Fishbein and Ajzen, 2010). Therefore, it is assumed that the formulated intention is not influenced by any new

information received after the intention is formulated and that the situation is evaluated between the time gaps and is within the consumer's control. These assumptions are based on TPB's cognitive and humanistic perspectives. Sniehotta et al. (2014) pointed out that TPB underestimates the effect of unconscious factors, emotions, spontaneity, habit, and cognitive limitations, and overestimates the power of human volition (assuming full volitional control) to overcome all other factors such as situational and contextual factors at the point of making a choice (i.e., between the intention and behaviour). In sum, the TPB overlooks the dynamic nature of the cognitive progress after intention is formulated.

Second, the TPB, as a general model, does not take into account specific behavioural beliefs (such as which attitude), social normative beliefs, or control factors that lead to green intentions (Bagozzi, 1992). TPB is inadequate to explain intention and behaviour without knowing which specific beliefs are highly related to green consumption behaviour (Tong, 2016). In terms of the general feature of the attitude, the general attitude theory does not provide information about a goal/principle/expectation for greener choice evaluations. Hence, the measurement result of attitude cannot tell whether the behavioural consequences are good or positive for oneself, the environment, or others, and what values (extrinsic or intrinsic) underlie them. In addition, TPB did not provide information about the determining behavioural beliefs that contribute to the formation of a green attitude or which of these beliefs is more important for making a greener choice. Therefore, if promoting a greener choice is achieved through changing attitudes, as a general concept, it is unclear what behavioural beliefs should be targeted for testing. Furthermore, this could lead to unstable predictability, as attitudinal beliefs could be inconsistent across different behaviours, contexts, and situations. Some studies have shown that attitudes have no effect on intention prediction (Ogden, 2003); some have shown that they have a little effect on intention (Tripathi, 2017); and some have shown that they have the strongest effect on intention compared to SN and PBC (Han and Stoel, 2017; Mcdermott et al., 2015). It may depend on the type of behaviour studied (attitude is changeable towards different behaviours). '*The predictive power of this theory is limited, and around 40% of intention formulation cannot be explained by its three factors*' (Sun, 2019, p262). TPB fails to provide an accurate and stable prediction of green consumption behaviour (Sun, 2019). This also explains why the TPB has often been modified for specific studies (Lindh and Johnstone, 2017; Onel, 2017; Shaw et al., 2000). Researchers proposed additions to improve the predictability of green consumption, such as knowledge, environmental concerns, and awareness (Bagher et al., 2018).

Third, TPB is used to understand and predict a specific given behaviour, which fails to recognise that behavioural intentions towards a specific behaviour may be mediated by a longer-term goal (Tong, 2016). This may also explain why the prediction value is largely disparate in green contexts, as the given behaviour was not identical among researchers.

Fourth, the TPB does not provide explicit motivations for performing the given behaviour (Perugini and Bagozzi, 2001). According to the attitude formulation approach, it is more likely motivated by egoism from a value-orientation perspective. Meanwhile, an egoistic value orientation is more likely to negatively affect greener decision-making (De Groot and Steg, 2007; Steg and De Groot, 2019; Stern, 2000; Stern et al., 1999). A recent paper proposed a conceptual framework that integrates Schwart's value dimensions into TPB. According to this framework, attitude is influenced by personal values (e.g., self-directed, hedonistic, or universalistic), social norms are influenced by social values (e.g., conformity and benevolence), and PBC is influenced by economic values (Jain, 2019).

Fifth, from a normative perspective, although TPB considers the effect of social norms on the formulation of intention, the impact of personal norms is not taken into consideration. Studies in green consumption have treated personal norms as a substitute for attitudes, an antecedent for attitudes, and an additional antecedent for intention. Most of these results found an increased explanatory value for TPB (Turaga et al., 2010). Lind et al. (2015); Manosuthi et al. (2020);  and Onel (2017) included personal norms as an additional predictor of intention, which increased the explanatory value in intention. A study found that attitudes positively affect green intention only as a function of a sense of duty (i.e., personal norms) (Kumar, 2019).

Sixth, existing studies show the inconsistent predictability of subjective norms (which often only refer to the injunctive dimension of social norms) on intention in survey-type studies (self-report) (Joshi and Rahman, 2015). The majority of previous studies found subjective norms to be a poor predictor of intention (see meta-review:Armitage and Conner, 2001), but some found a positive correlation with intention (see meta-review: Han and Stoel, 2017) and customer loyalty (Lee et al., 2009). Meanwhile, many experimental studies demonstrated the powerful influence of social norms on changing intention or behaviour (Nolan et al., 2008). This implies that there are uncovered effect that are affecting social norms effects. For this reason, much research has been conducted to examine the impact of social norms on changing general consumer behaviour(review

papers: Melnyk et al., 2021; Melnyk et al., 2010; Rimal and Lapinski, 2015); and understanding and promoting green consumption (review papers: Bergquist et al., 2019; Keizer and Schultz, 2018; Minton et al., 2017; Schlegelmilch et al., 2021).

**Key conclusions**

TPB offers a comprehensive structure that shows how general behaviour/intention could be influenced by internal beliefs, external social beliefs, and self-related control beliefs. Applying this view to promoting greener choices requires consideration of which specific internal factors, social factors, and self-related factors are the key determinants affecting green consumption. Perceived social norms, based on the above discussion, are the only feasible ones that could be directly applied in an intervention study using established procedures (e.g., based on Cialdini's focus theory of normative conduct (Cialdini et al., 1990; Cialdini et al., 1991)). Both the injunctive and descriptive dimensions of social norms should be investigated to fully understand social norms.

### 3.4.2 The Model of Goal-Directed Behaviour

The Model of Goal-Directed Behaviour (MGDB) (Perugini and Bagozzi, 2001) is mainly built on a humanistic approach. MGDB is a broadened version of TPB developed to account for the limitations of TPB in explaining behaviours by combining social, physiological, cognitive, and psychological perspectives. MGDB incorporated desires, anticipated emotions and past behaviour into the TPB model. The model suggested that the 'will' or 'conation' behaviour could overcome existing obstacles, such as a shortage of resources (Bagozzi et al., 2016).

**Overview**

MGDB is designed to interpret behaviour as a means to achieve a goal (Perugini and Conner, 2000). It could explain a series of associated behaviours motivated by the same goal. According to the idea of hierarchical goals (an overarching goal and functional goals) (Bagozzi and Dholakia, 1999; Bay and Daniel, 2003), green consumption can be considered as a functional goal. Thus, to achieve an overarching goal, this can be done through the functional goals of environmental protection and human equity. To achieve the functional goal of environmental protection, this can be done through minimal goal-directed activities/behaviours (i.e., green consumption behaviours) such as recycling or purchasing green products. Hence, when applying MGDB to explain green behaviour, it

should first be assumed that a given green behaviour is goal-directed, i.e., it is justified to achieve the desired goal. According to MGDB (see Figure 3.4), goal-directed behaviour is determined by their behavioural intention, the recency and frequency of past behaviour (i.e., goal-directed behaviour), and PBC, rather than the single factor of intention used in TPB. In contrast to TPB, the effect of attitude, SN, and PBC does not influence behavioural intention directly but rather indirectly through desires. MGDB introduces the role of anticipated emotions in the formulation of desires (Bagozzi et al., 2016). In summary, MGDB describes a consumer making a choice to achieve a goal, and this decision is motivated by a desire towards the goal. Attitudes towards the goal/behaviour, SN, PBC, along with the anticipated emotions, affect the extent of the desire.

**Figure 3.4 MGDB model**

**Perugini and Bagozzi (2001)**
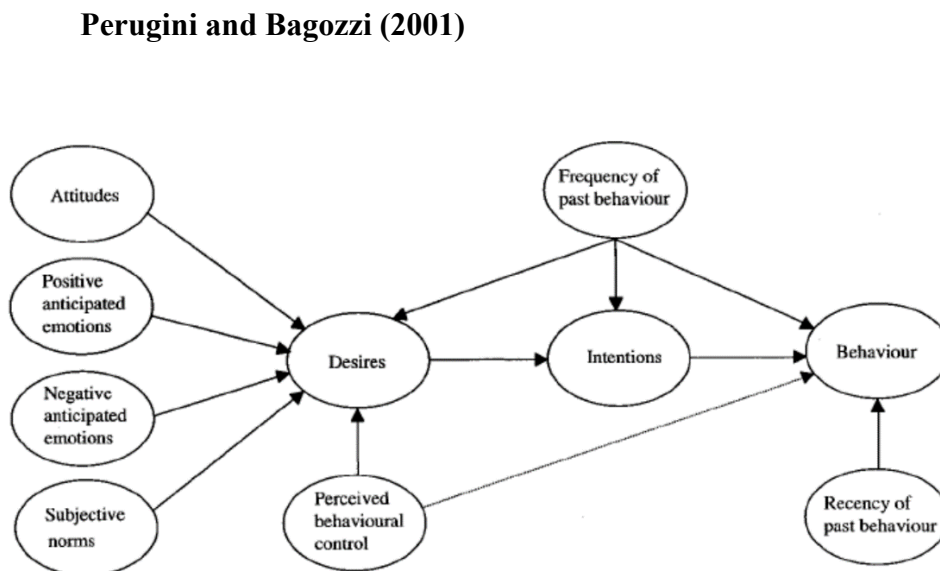


### *Key* constructs

*Behaviour* in MGDB is goal-directed towards achieving the desired goal. Performance of the behaviour is determined by *behavioural intention* and is also moderated by past experience with the intended behaviour and confidence in the ability to perform the behaviour (PBC). The effect of past behaviour has been divided into frequency and recency effects. It was adapted from the Theory of Trying: the frequency of past trying and the recency of past trying (Bagozzi and Warshaw, 1990).

*The frequency of past behaviour* refers to individuals' past experiences with the intended behaviour. The more frequently the intended behaviour has been performed in the past,

the more likely it is that the behaviour will be performed again (Ouellette and Wood, 1998). The frequency of past behaviour is assumed to be a direct predictor of desires, intentions, and behaviour, while the recency of past behaviour only predicts behaviour (Perugini and Bagozzi, 2001). In addition, the frequency of past behaviour has a direct impact on behaviour as it indicates the strength of the habit (it is perceived as a form of habit), which guides future behaviour (Perugini and Bagozzi, 2001). However, if the frequent behaviour differs from the given behaviour, the frequent behaviour or habit will negatively affect the intended behaviour.

***The recency of past behaviour*** complements the frequency of past behaviour's insufficient ability of prediction under certain conditions. For example, people may not follow a behaviour that they have not recently exhibited but have frequently exhibited in the past. The recency of past behaviour influences future behaviour in relation to the degree of availability and the adjustment of the recency bias during the information process (Perugini and Bagozzi, 2001). Recency bias occurs when the information-assessor is overly influenced by information that was presented recently rather than earlier. As a result, if the recent behaviour differs from the given behaviour, the recency bias will have a negative relationship with the intended behaviour.

***Desires*** towards the goal are assumed to be the main impetus for formulating intention (Esposito et al., 2016; Perugini and Bagozzi, 2001). '*People are capable of performing the behaviour if they so desire*' (Ajzen, 2020, p. 316). The inclusion of desire as a mediator between attitude, SN, PBC, emotion, and intention could increase the explanatory value of intention (Perugini and Bagozzi, 2001). According to Plato's and Aristotle's thoughts about desire, it is a rational desire for what is good (for what is judged to be good), rather than for what seems good because we desire it (irrational) (Kahn, 1987). Applying this view to green consumption, consumers desire to protect the environment as it is good for the environment and for themselves (the integrated relationship between environment and human). This desire should be accompanied by the belief that the given behaviour can support the goal of environmental protection. Therefore, the desire and beliefs explain the reason for action.

***Attitude, SN and PBC*** (see the TPB section) are the determinants of behavioural intention in the TPB. In MGDB, attitude, SN, PBC, and anticipated emotions affect intention indirectly through the mediator i.e., the role of desire (Fry et al., 2014).

*Anticipated emotions*

Before the discussion of anticipated emotions, this section first discusses the perspectives of emotion in MGDB. Emotions can be a: (1) physiological response; (2) spontaneous (such as facial expressions); (3) immediate **subjective experience** (emotional states: e.g., joy, fear, pride); and (4) a way of knowing through immediate and direct subjective experience. The immediate subjective experience (emotional states) provides information for the cognitive system to make an appraisal and judgement in response to stimuli (Chaudhuri, 2006). In MGDB, emotions are assumed to be defined by the cognitive appraisal of the stimulus, as distinct from the gut reaction (impulse buying) or unconscious behaviour. The interactional outcome between the emotional and cognitive (rational) systems that respond to the stimulus leads to goal-directed behaviour.

Anticipated emotions (AEs) refer to people who predict their emotional outcome (emotional experience: affect) of goal achievement or goal failure in decision-making (Fry et al., 2014; Mellers and Mcgraw, 2001). In other words, individuals anticipate how their choice will make them feel positive or negative (Fry et al., 2014). Anticipated emotions can be human motivations for performing the behaviour. According to Freudian's pleasure principle, people instinctively seek pleasure (a positive emotion) and avoid pain (a negative emotion) (Bagozzi et al., 2016; Fry et al., 2014). Some emotions are considered moral emotions (e.g., pride or guilt), which may be more appropriate for studying green behaviour as the environmental protection value is morally relevant (De Groot and Steg, 2009b). However, if the goal is to promote a greener choice by changing the anticipated emotion, preliminary studies would need to be conducted to define which specific positive or negative anticipated emotions are more effective in supporting the achievement of the desired goal.

## Empirical work, critiques and limitations

MGDB was initially applied to reduce or maintain body weight and to increase or maintain learning effort (Perugini and Bagozzi, 2001). It has since been applied to a variety of behaviours (Fry et al., 2014; Han, 2021; Kim et al., 2020; Kim et al., 2016) and has been highlighted in tourism and hospitality literature (Chiu and Cho, 2022). MGDB has also been applied in a green consumption context (Cheung et al., 2016; Song et al., 2012). However, in contrast to TPB, it has been used less frequently to understand green consumption behaviour based on the author's existing literature search results.

MGDB is an extension of TPB that includes habitual (past behaviour), affective (anticipated emotions) and motivational factors (desire). While, previous research has shown that MGDB predicts intention and behaviour better than TPB (Leone et al., 2004; Perugini and Bagozzi, 2001; Schuster et al., 2017), it has also been criticised for its inability to provide a clear picture of the relationships among existing variables with contradictory findings (Chiu and Cho, 2022). The following discussion will highlight the limitations of MGDB in promoting green consumption.

First, the limitations of applying MGDB as a general theory to specific consumption are similar to that of TPB. The limitations regarding attitude, SN and PBC proposed in TPB also applies to MGDB. For example, Fry et al. (2014) suggest that strengthening goal desire could enhance one's intention by linking intention to goal desire, and in MGDB, the desires assumed are formulated through the effects of attitude, SN, PBC, and anticipated emotions (Perugini and Bagozzi, 2001). As a result, if promoting a greener choice through increasing desires, further research is needed to determine which specific attitudes, SN, and anticipated emotions are more effective as facilitators of achieving the goal desire. In addition, MGDB only seems to consider that desires are learned and extrinsic (Perugini and Bagozzi, 2001). While desires can be instinctual or learnt according to the psychodynamic approach (intrinsic or extrinsic), the effect of instinctive desire may be overlooked. Instinctual desires may have negative effects, which need to be considered when focusing on activating desires to promote greener choices.

Second, the MGDB did not provide information on specific goals (the value orientation) that could be used as principles to guide green decision-making. MGDB deals with 'volitional' behaviour, since desire acts as the reason for the behaviour (people want to do something). However, green consumption may be motivated more by the obligation or moral proposition of achieving the goal (the right thing to do) than the desire. From a value orientation perspective, goal as a value proposition (egoistic or altruistic as a source generating instinctive desire) relates to considering the consequence of the goal's attainment: the self-benefits or self-sacrifice that motivate the desire. Achieving a goal through green consumption may require the willingness to self-sacrifice for others, and thus it may be motivated by altruism. However, according to MGDB's assumption that human nature is self-interest (*which it shares with TPB),* the suggested 'altruistic' motives of green consumption seem a means of serving the egoistic, although it has been argued that greener choice tends to have at least some altruistic reasons to achieve a goal

(Jackson, 2005). Therefore, it is important to know the value orientations for goal-directed behaviour in order to understand green consumption.

Third, MGDB assumes that the given behaviour is a justified behaviour that can help achieve the goal. This may be challenged by the green attributes of the purchased products (whether consumers believe the products are truly green to achieve the goal) and consumer perceptions of effectiveness (whether consumers believe that they can make a difference through their choices).

Fourth, MGDB only considers the direct impact of past behaviour on behaviour. A study by Albarracin and Wyer (2000) found that past experiences have a cognitive impact on beliefs, attitude, and behaviour by providing useful information either emotionally or cognitively for the assessments of the construction of attitude, SN, PBC, and anticipated emotions. This means that past behaviour not only has a direct impact on behaviour, but may also be an antecedent (predictor) of attitude, SN, PBC and anticipated emotions.

Fifth, while MGDB provides a rich ground for understanding the formulation of intention and behaviour, and the predictive value for intention is increased when compared to TPB, the predictability of intention to behaviour did not change significantly (Perugini and Bagozzi, 2001). MGDB, like TPB, overlooks the dynamic nature of cognitive process after intention is formed, allowing for behavioural intervention.

**Key conclusions**

MGDB assumes that a behaviour is goal-directed/motivated, and it improves the explanation of behaviour by TPB, which only explains each single behaviour. The MGDB could be used to explain a series of relevant green behaviours that would be performed from one type of green consumption behaviour to another in order to achieve the same goal. It incorporates past behaviour as a direct predictor of the given behaviour, which considers the automatic effect of habits. It could also explain why consumers find it difficult to make a greener choice when that choice is new to them. Applying MGDB to promote a greener choice, it may be achieved by promoting the goal (value) to motivate the desire, then the intention and behaviour. But it requires identifying the specific goal (value orientation) for green consumption. Without pre-studies, none of the factors could be suggested to be targeted directly to promote a greener choice; however, the effect of past behaviour should be considered when assessing the intervention's effect.

Both the TPB and MGDB models are designed for general consumption behaviour and do not explicitly consider moral influences (responsibility) on making a greener choice. The following subsections will discuss a set of models that are designed explicitly for altruistic, value-related behaviour.

### 3.4.3 Norm Activation Model

*'Altruism is not . . . an agreeable ornament to social life, but it will forever be its fundamental basis. How can we really dispense with it?'*

--- Émile. Durkheim, The Division of Labour in Society (1933, p. 228)

(cited in Piliavin and Charng, 1990)

The Norm Activation Model (NAM) (Schwartz, 1977) is a model built using an altruism-values approach. The term 'altruism' was introduced by Auguste Comte (Feigin et al., 2014) in contrast with 'self-interested' or 'egoistic' to describe a behaviour that is motivated to benefit others rather than oneself (Kraut, 2016). It stands as an expression of internal values to purposefully benefit others, but without any personal gain (Schwartz, 1977), and even entails costs (e.g., pain, time, loss) (Schwartz, 1970). Environmental protection is perceived as a public good or a common good. Therefore, environmentally friendly consumption should involve some altruistic motives or values. Schwartz (1977) believed that behaviours are reflected by a person's underlying value system. Therefore, he developed NAM to understand altruistic, value-motivated behaviour.

**Overview**

NAM describes a process of constructing self-expectations (activating personal norms) (Harland et al., 2007). It is a normative explanation for altruistic behaviour, which is different from the motive 'desire,' because altruistic behaviour is determined by the feeling of moral obligation, namely personal norms. The impact of personal norms on altruistic behaviour is assumed to be dependent on the activation of the individual's cognitive structure of values and norms (Schwartz, 1977).

As systemically cognitive processes of inner actives, NAM was created based on three different explanations for altruistic behaviour (Schwartz, 1977): arousal of emotion, activation of self-expectations, and activation of social expectations. Schwartz (1977) believed that these three types of explanations were not mutually exclusive, and thus those

explanations are assumed to possibly occur simultaneously. Schwartz (1977) treated the 'arousal of emotions' as an internalised process in the 'activation of self-expectations' (i.e., the activation of personal norms), rather than as a construct in NAM. Information received about others' needs through emotional arousal (empathic arousal), will lead to the activation of internalised values or norms supporting altruistic behaviour. 'Activation of self-expectations' assumes the activation of internalised values or norms supporting altruistic behaviour without regard to one's own cost or benefit and obedience to one's values to avoid self-concept distress. This is based on the assumption of an altruistic human nature. However, the nature of the motivation underlying altruistic behaviour, especially self-sacrifice behaviour, is questionable and under debate (Piliavin and Charng, 1990).

This debate is mainly about whether "true" or "pure" altruism could exist (regarding the ontological assumption of human nature). Batson et al.'s (1991) empathy-altruism theory supported altruism and suggested that empathy is the cause of genuine concern for others. Social exchange theory denied Batson's theory and proposed the existence of empathy-joy, which means that the 'altruistic' behaviour appeared to gain an emotional reward: pleasure. Alternatively, it is for social benefits/rewards, to maintain social identity, internal fulfilment, arousal reduction, and negative state relief. This view suggests that there is no true altruism, as the motive of the behaviour is egoistic for personal gain. Hoffman (1981) pointed out that altruism and egotism are compatible in human nature. Piliavin and Charng (1990, p. 28) concluded that the answer from either a biologist, a psychologist, a psychiatrist, a sociologist, or an economist is the same, expressed as "*anything that appears to be motivated by a concern for others' needs will, under closer scrutiny, prove to have ulterior selfish motives*". But they agreed with Hoffman's view that altruism is part of, but not the entire, human nature because people do contribute to public goods and benefit little, and they do sacrifice for their children and even for strangers. According to Feigin et al.'s (2014) classification of altruism, if an individual's end goal is his/her own welfare (e.g., emotional rewards as the drives or motives of his/her green behaviour), it would be included in pseudo-altruism (selfishly motivated). If an individual's end goal is to increase another's welfare (e.g., through emotional rewards as the outcome of his/her green behaviour), this would be included in true altruism (selflessness). However, Schwartz (1977) assumes that altruistic behaviour is motivated only by intrinsic rather than extrinsic reasons. Therefore, he rejected the use of 'activation of social expectations' (activation of social norms) as drivers or causes of altruistic

behaviour in NAM. If social norms (to get the social reward) are the cause of altruistic behaviour, it should be sorted into pseudo-altruism (not true altruistic behaviour).

'Activation of social expectations' assumes that the perceived information of others' needs often leads to the activation of social norms (i.e., social norms in TPB) as a response in a given situation (Schwartz, 1977). The drivers of this type of expectation can be social sanctions (social pressure). Schwartz (1977) employed the 'activation of social expectations' as the basis for the internalisation of self-expectations norms (personal norms). As self-expectations or personal norms could be learnt from shared expectations (social norms in a group are perceived to be shared by their members) during social interactions in the early stages. Meanwhile, one study supported this view that social norms could be internalised into personal norms (Thøgersen, 2014).

The NAM model (see Figure 3.5) mainly explained how and why altruistic behaviour occurs through the activation of personal moral norms (PN). Activating a sense of moral obligation (personal norms) (i.e., activation of self-expectations) is based on two premises. First, a person must be aware that certain conditions pose a threat to others (i.e., *be aware of adverse consequences to others* (AC)) and feel that he or she has the ability to control the consequences (some degree of personal responsibility for them). In other words, the altruistic actions perceived can avert those consequences (*ascription of responsibility to self* (AR)). Early studies show that prosocial behaviours (e.g., volunteering to raise funds or being a bone marrow donor) are more likely to be performed when AR and/or AC are activated (Liere and Dunlap, 1978; Schwartz, 1970, 1974).

**Figure 3.5 Norm Activation Model (moderator model)**
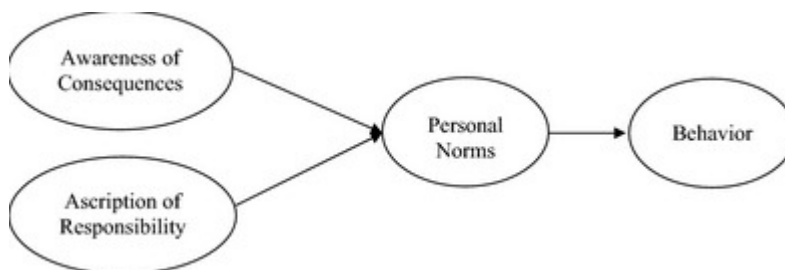


### *Key* constructs

*Personal norms* refer to the sense of moral obligation to perform a given behaviour (Schwartz, 1977). It is seen as the single direct determinant of green consumption behaviour. The process of forming a sense of obligation is a series of cognitive processes

that are influenced by the content of cognitive structure. This structure operates under the influence of the **external situation** and **internal emotional hints,** which together generate feelings of moral obligation (Leventhal, 1974, cited in Schwartz, 1977).The sense of moral obligation has been perceived as an unstable structure because it could be reconstructed depending on the situation. Reconstructing specific personal norms happens in two ways. First, the current personal norms draw from the pre-existing content-specific norms, which were developed and internalised in past circumstances. Second, current personal norms are internalised with general norms and values that have been internalised in the past. The process of norm construction produces current self-expectations (personal norms), which are experienced as feelings of moral obligation and are seen as activated personal norms (Schwartz, 1977).

*Awareness of adverse consequences (AC)* refers to the awareness of adverse consequences to others if one is not acting prosocially (De Groot and Steg, 2009b). The individual may fail to be aware of the adverse consequences because of self-interest or self-preoccupation, or an overload of stimuli that lowers attentiveness to external stimuli (Schwartz, 1977). AC was assumed to be positively related to the degree of seriousness of the adverse consequence to the public and the probability of activating personal norms (Schwartz, 1974).

*Ascription of responsibility to self (AR)* refers to '*feelings of responsibility for the negative consequences of not acting prosocially*' (De Groot and Steg, 2009b, p. 426). A sense of responsibility is assumed to be automatically triggered when individuals connect awareness of the adverse consequences with a sense of self-responsibility to solve this problem. If not, five ways can be used to promote a sense of responsibility (Schwartz, 1977). First, a person should recognise his own ability to perform that behaviour with evidence. Applying this to green purchasing behaviour, it can mean that consumers recognise that they have green options for the goods they are looking for that are also affordable. In fact, most consumers may have sufficient ability to pay for daily green products (e.g., organic milk, organic eggs), but they may need to reallocate the financial resources. According to the psychological account or mental account theory, people have different budgets for grocery shopping and eating out at restaurants (even different budgets for eating with family members and for social purpose eating). Following this theory, consumers may increase their budget for green purchases and decrease their budget for other values, which is inconsistent with their current most important value (or

less important value). For example, people can increase their budget to buy children's food (i.e., organic food, as it is perceived to be healthier than conventional food) compared to a decreased budget for fashion, which people may think is less important. Second, a person must develop a cognitive perception of a causal relationship between the need to solve the environmental problem and their own responsibility. For example, a consumer should recognise that humans cause environmental problems, which in turn cause global warming and destruction of the ecosystem. Therefore, he/she has the responsibility to solve them through green purchasing behaviour. Third, there is a need to find a way of letting the person know this is his responsibility or reminding him of his responsibility. Besides pointing to green purchase behaviour, other means (e.g., education, discourse, events, social norms, influencers, and important others) can be applied to let consumers know that by purchasing green products, they can fulfil their responsibility to protect the environment. Fourth, a person should possess appropriate skills and knowledge to perform green purchase behaviour (e.g., recognise the green products, have knowledge of the salience of the consequences of environmental problems, have knowledge of the salience of the consequences of making a greener choice) (Schwartz, 1974, 1977). Fifth, it requires paying attention to the existence of a need to solve the environmental problems, avoiding vagueness in the adverse consequences of the environmental problems, recognising and being salient to the adverse consequences, and ascribing personal responsibility to solving the environmental problems (Schwartz, 1977).

## Empirical work, critiques and limitations

The NAM employed in empirical studies was initially used to understand volunteer behaviour such as donations of money, bone marrow and blood (Schwartz, 1977). During the last four decades, this theory was frequently applied to understanding green consumption and revealed its usefulness for prediction (Ebreo, 2003; Liere and Dunlap, 1978; Manosuthi et al., 2020; Shin et al., 2018; Stern et al., 1993). A study conducted by Van Der Werff and Steg (2015), in particular, supports the notion that NAM can predict a wide range of green consumption. This finding implies that personal norms motivating green behaviour should be 'true' green behaviour according to the discussed definition of green consumption in Chapter 2.

Like TPB and MGDB, NAM has also been frequently extended and modified to better understand green consumption behaviour, and the explanatory value of personal norms

on green consumption behaviour has been confirmed in extant correlation studies (De Groot and Steg, 2009b; Han, 2014; Onwezen et al., 2013; Stern et al., 1999; Wang et al., 2022; Zhang et al., 2013). NAM has also been integrated with the full model of TPB (Manosuthi et al., 2020; Shin et al., 2018), or with one of the key factors from TPB such as including social norms along with personal norms as another key antecedent of intention/behaviour (Han, 2014) or from MGDB such as using anticipated emotions (guilt and pride) as the antecedent for generating personal norms (Onwezen et al., 2013). Self-efficacy (believing in one's own capability) as a component of perceived behaviour control has been included as an addition with other antecedents in the NAM to improve the understanding of green consumption (Wang et al., 2022). This phenomenon implies the limitations of NAM. In other words, NAM seems insufficient to account for all intended green consumption behaviours, only from a personal norms perspective. Schwartz (1977) only considered emotions and social norms as the learning information internalised into the process of generating personal norms. However, when social norms have not yet been internalised or cannot be internalised into personal norms, it may have an impact on making greener choices.

In NAM, the relationships between AC, AR and personal norms are also not clear (De Groot and Steg, 2009b). Earlier studies assumed that the effect of personal norms on green consumption is dependent on AC and AR (seen as a moderation model) (Liere and Dunlap, 1978; Schwartz, 1968). More recent studies have assumed that AC's effect on personal norms is through AR (seen as a mediation model) (De Groot and Steg, 2009b; Han, 2014; Onwezen et al., 2013; Stern et al., 1999; Zhang et al., 2013). In practise, when a mediator model is adopted, it should first target raising awareness of the problem before focusing on promoting responsibility. But it has been agreed that both factors should be activated whenever either model is adopted for manipulating personal norms.

Although NAM is built on an altruistic value approach, the model of NAM does not treat altruistic values as a construct. NAM's assumption of the 'true' altruistic nature of human beings is also debatable. In other words, the values that generate feelings of obligation or responsibility (i.e., personal norms), whether they come from 'true' altruistic values or whether they come purely from 'true' altruistic values, are questionable. Therefore, green consumption whether is to be motivated by obeying one's altruistic values in order to avoid self-concept distress which is also uncertain. This uncertainty would affect the

understanding of consumers greener choice making when one's self is activated based on one's self-concept or self-identity derived from egoism.

Furthermore, there is limited understanding of how the role of the self affects the activation of personal norms. NAM describes the process of activating personal norms, but few studies investigate its intervention power to promote a greener choice.

**Key conclusion**

NAM was created for understanding altruistic, value-motivated behaviour by explaining how and why pro-environmental behaviour occurs through the activation of personal norms. Applying NAM to promote greener choice can be achieved through the activation of a sense of obligation (personal norms) by activating AC and AR.

### *3.4.4 Value-Belief-Norm Theory*

*'What a person does (his behaviour) depends upon what he wants (his values) and what he considers to be true or likely (his beliefs) about himself and the world (his psychological ecology)'.*

----- William James, cited in Scheibe (1970, p. 1)

The Value-Belief-Norm model (VBN) is *an extension of the NAM and was tailored to explain* environmentally friendly behaviour (Stern, 2000; Stern et al., 1999). *VBN* was developed based on the mediation model of NAM, value theory, and the theory of the New Ecological Paradigm (NEP) (Stern et al., 1995). VBN proposed three value orientations (i.e., biospheric, egoistic, and altruistic) that could all possibly motivate green consumption, rather than only the altruistic value orientation in NAM. VBN was built on the assumption of the causal chain, which follows the sequence below: value, beliefs, norms, and behaviour. The causal assumption between value and beliefs suggests that motivations drive cognition, because beliefs are drawn from the field of cognition, and values are drawn from the field of motivation (Scheibe, 1970). In other words, what people believe depends on what they value. Personal norms, as in NAM, are assumed to be the single determinant of green consumption behaviour.

**Overview**

Specifically, VBN (see Figure 3.6) consists of five causally connected variables leading to behaviour, including personal values, an ecological worldview (NEP), adverse

consequences for valued objects (AC), perceived ability to reduce threat (AR), and personal norms for pro-environmental action. The arrows in Figure 3.6 represent direct effects between causal variables, but each variable possibly directly affects the variables further down the causal chain (Steg and Nordlund, 2019; Stern, 2000). According to the theory, pro-environmental behaviour occurs as a result of a moral obligation (personal norms) activated in individuals who believe that environmental conditions pose threats to their **value objects** and those who seek the ability to avoid the adverse consequences to their value objects. The extent of adverse consequences for objects valued by individuals is assumed to be determined by their worldview (NEP), such as individuals' primitive beliefs about human-environment and earth relations. The ecological worldview is guided by those basic types of values (Stern et al., 1999). The discussion below will start with values, as the definition of AC and AR relates to the value orientations.

**Figure 3.6 VBN model**

Stern (2000)
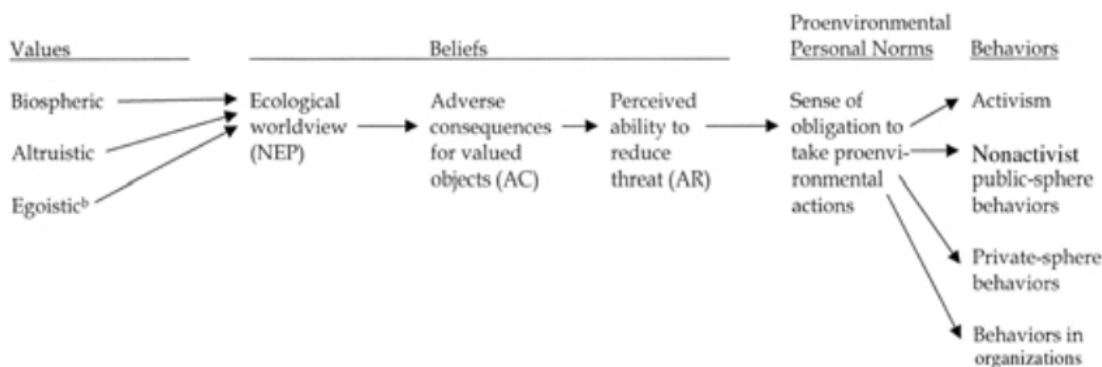


### *Key* constructs

#### *Value orientations*

> '*When we think of our values, we think of what is important to us in life.*'
>
> ---(Schwartz, 2012, p. 3)

Stern et al. (1993) identified ***value orientations*** according to the values' objects. The concept of value is based on Schwartz's (2012) value theory. Schwartz (1992) defined 'a value as a desirable trans-situational goal that varies in importance and that serves as a guiding principle in the life of a person or other social entities'. The desirable goal expresses the motivational concerns. Therefore, the value content can be used to

understand the motivational basis of attitude and behaviour (Schwartz, 2012). The concept of value here could be seen as the same as the end-state goal in MGDB. '*Values serve as standards or criteria to guide selection or evaluation of behaviour and events*" (Schwartz, 2012, pp. 3-4). However, most of the time, behaviour is guided by more than one value. Actions taken to pursue each type of value may conflict with other types of value. According to the features of values, '*values are ordered by importance*' and '*the relative importance of multiple values guides action*' (Schwartz, 2012, pp. 3-4). Conflicts should be solved through the individual's principle of priority of values.

VBN was developed based on the assumption that three value orientations all play a role as the base of motivations leading to pro-environmental behaviour. The altruistic value is concerned with the welfare of other human beings; the biospheric value is concerned with other species and the biosphere, and the egoistic value is concerned with self-interest (Stern et al., 1993). To better understand the distinction among those three value orientations, it can be through the identified items for measuring the value orientations. Altruistic orientation included value items such as 'a world at peace' and 'social justice'. The biospheric orientation emphasises the intrinsic value of nature (De Groot and Steg, 2008). It included value items such as 'unity with nature', 'protecting the environment', and 'preventing pollution'. The egoistic orientation included value items such as 'authority' and 'influential'. Stern et al. (1993) believed that each value orientation could cause environmental concerns under different conditions: i) for entirely self-interested individuals, the motivation to make greener choices is the expected behaviour outcome that results in benefits from environmental behaviour. In other words, when the expected benefits outweigh the expected costs (gain), individuals will show their preference towards greener choice; ii) for entirely altruism, the motivation to make greener choices is to protect other human beings and even bear the loss; iii) for entirely bio-spheric, the motivation to make greener choices is to protect other species and the natural environments, and even bear the loss.

These three value orientations may not be held independently but may be compatible and combined (Stern et al., 1993). It means that greener choices may be motivated by multi-value orientations. For example, an individual may be partly motivated by altruism to purchase green products, but he/she does not want to bear the loss (e.g., extra money, time, and effort that surpass the defined limit set by himself/herself). Meanwhile, an individual might still want to perform the altruistic behaviour, even if the cost exceeds

his or her limit, as has been noted with some social benefits (target in other values). This occurs frequently and is not solely due to altruistic or egoistic motivation.

VBN proposed that egoistic value, as one of the motives, has an indirect effect on green consumption via AC, AR, and personal norms (Stern et al., 1993). However, the relationship between egoistic value orientation and NEP, personal norms, or green consumption is unclear. Most studies found that egoistic value orientation was negatively related to NEP, personal norms, or green consumption (De Groot and Steg, 2007, 2008; Steg and De Groot, 2019; Stern, 2000; Stern and Dietz, 1994; Stern et al., 1999). Some studies found that it has a positive relationship with NEP (Chua et al., 2016). Theoretically, it is possible to promote green consumption by making these values more salient. However, the problem is that it is unclear which specific values (each value orientation contains many value items) are effective for increasing the targeted value orientation that is highly related to green consumption. Targeting values does not mean changing values, as these are relatively stable (Schwartz, 1992), but it could increase the cognitive accessibility of these values and then prioritise these values in a given situation (De Groot and Steg, 2009a). This idea is the same as the psychological processes underlying persuasion by changing the accessibility of targeted beliefs, attitudes, emotions or norms to change behaviour (Petty and Briñol, 2008). A study found that when targeted altruistic values made up part of the self-concept, activating the self (only in those whose altruistic values are central, and thus those participants' selves are assumed to be altruistic) could increase altruistic behaviour (money donation) (Verplanken and Holland, 2002). According to the previous discussion on altruism in NAM, if one's choice is not driven by purely 'true' altruism, when attention turns to the self, activated 'true' self (egoistic) or 'self-concept' may affect greener choice making. A study may be needed to find out what constitutes 'true' self that drives the formulation of personal norms.

## *Beliefs: NEP, AC & AR*

Beliefs refer to "a person's subjective probability judgments concerning some discriminable aspect of his world, and beliefs deal with a person's understanding of himself and his environment." (Fishbein and Ajzen, 1975, p. 131). Beliefs are not equally important and may be positioned differently in the central-peripheral dimension. Central-positioned beliefs are relatively stable and resistant to change. Primitive beliefs 'represent the innermost core of the belief system, namely a person's basic truths about physical reality, social reality and the nature of the self' (Rokeach, 1968, p. 6). Some of them are

a consensus with everyone (shared with others), whereas others are subjective without a consensus (learnt from personal experience). When primitive beliefs conflict, that could lead to inconsistency with many other beliefs within one's belief system (Rokeach, 1968, p. 3).

***Ecological worldview (i.e., the New Ecological Paradigm*** (NEP)) as an antecedent of AC refers to the ecological worldview about nature or one's environmental concerns (general environmental beliefs). It is 'a set of generalised beliefs about human-environment relations' (Stern et al., 1995, p. 724). NEP originates from Dunlap and Liere, 1978, cited in Dunlap et al. (2000). The items to measure NEP include beliefs about whether humans have the right to modify the natural environment to suit their needs, whether humans are able to control nature and are abusing the environment, and whether the earth and natural resources are limited (Dunlap et al., 2000). These beliefs belong to three dimensions: nature's rules, human rules, and growth limits (Dunlap et al., 2000). Theoretically, if consumers' NEP is extremely high under natural rules, it will be extremely low under human rules. Even if they do not know the specific consequence of the specific environmental issue, it seems possible to have a sense of obligation to solve this environmental problem through their efforts. NEP belongs to the 'primitive beliefs' about human-environment and earth relationship that are assumed to vary corresponding to one's value orientations. According to Chua et al. (2016), all three value orientations (biospheric, egoistic, and altruistic) are positively related to NEP. However, consumers who share the same level of environmental concern do not necessarily share the same sense of responsibility for making greener choices. It depends on the sources generating positive NEP (which value orientations affect the formulation of NEP). Consumers may still be concerned about the environment as it positively relates to egoistic (self-enhancement value) and altruistic (self-transcendence value) value orientations, but they are not likely to consume less since egoistic value orientation negatively relates to concern for overconsumption (Jackson, 2005). It explains why some consumers express their concerns for the environment but do not 'walk the talk'. Hence, promoting greener choices by increasing acceptance of NEP, such as accepting that humans are unable to fully control nature and humans are abusing the environment, does not seem like a good choice. This is because NEP, unlike values, could be activated indirectly by increasing the accessibility of the relevant beliefs (assumed to pre-exist among these three value orientations). First, NEP consists of 15 items, representing different beliefs about nature's rules, human rules, and growth limits. In addition, these beliefs are primitive (stable and

difficult to change) and very specific (pre-existing NEP beliefs may be contradictory). Second, it is unclear whether it needs to increase the acceptance of all of these beliefs, so that it could be used to effectively change behaviour. More studies are needed to understand and identify the determining beliefs of NEP in order to change behaviour.

*AC&AR* are regarded as the prerequisite conditions for instilling a sense of obligation to perform environmentally friendly behaviour. The cognitive process involved in formulating personal norms through the activation of AC and AR is the same to that in the NAM. However, in VBN, AC and AR are assumed to be determined by NEP. The difference of AC and AR in VBN is that both are seen as beliefs, but in NAM, AR is seen as perception, and AC is seen as awareness. In contrast to NEP (general environmental beliefs), AC is about specific environmental beliefs regarding performing or not performing the given behaviour. AC refers to their beliefs about adverse consequences for things they value rather than their awareness of the consequences shown in NAM, because the adverse consequence may not arise as it lies in the future. Meanwhile, there is a difference between knowing (awareness) and believing (belief). Stern et al. (1993) postulated that individuals who believe that an environmental condition has adverse consequences for things important to their values, will be inclined to take action to prevent that from happening. In other words, a greener choice is more likely to be made when one believes that an environmental condition has adverse consequences for other people ($AC_{alt:}$ altruistic orientation), the biosphere and other species ($AC_{bio:}$ biospheric orientation), and/or self ($AC_{ego:}$ egoistic orientation). The effect of AC on behaviour is assumed to be mediated by AR and personal norms. But AC may directly influence personal norms and intentions (Steg and Nordlund, 2019; Stern, 2000).

AR refers to beliefs in the perceived ability to reduce the threat in VBN (Stern, 2000), which is slightly different from AR (ascribing the responsibility to oneself) in NAM. AR in VBN has a similar function with the beliefs of 'perceived behaviour control' (PBC) to evaluate one's own ability to perform the behaviour (PBC as an antecedent of intention in TPB). Moreover, in AR in VBN, 'perceived ability to reduce threat' seems to be one of the beliefs that subsequently generated the belief of 'ascribing responsibility to oneself' (AR in NAM). However, there are potential issues that can impede ascribing responsibility to oneself, although one may have the ability to reduce the threat to oneself, others, and/or the biospheric. First, the individual may blame others like him for not taking responsibility. Second, the degree of responsibility that one has that affects the AR

generated may differ from the degree of other responsibilities, such as the mother's responsibility to raise children or the student's responsibility to receive an education. Third, the uncertainty of the adverse consequences to one's value objects may affect the strength of the beliefs of AC. In other words, if consumers are uncertain of the consequences, they can justify their non-environmentally friendly behaviour (which may be influenced by scepticism). Hence, promoting greener choice by activating AC and AR could also let consumers know what others have taken on the responsibility for, to eliminate their uncertainty of the consequence by providing information about the consequence of performing or not performing the behaviour.

***Personal norms*** (PNs) in VBN are seen as the same concept as in NAM. It refers to a sense of moral obligation to take green action. According to VBN, a greener choice would be made in response to activated PNs by individuals who believe that environmental conditions have adverse consequences for themselves, other people, other species, or the biosphere (AC), and believe that their actions can help to ease the threat (AR).

## Empirical work, critiques and limitations

Although VBN has been shown to predict pro-environmental behaviour better than other theories (Stern et al., 1999), like NAM, it is often adopted to merge with the full model of TPB, or one of the key factors from TPB (i.e., social norms) or MGDB (i.e., anticipated emotions) to understand green consumption (Han, 2015; Han et al., 2017; Han and Hyun, 2018; Kiatkawsin and Han, 2017; Paswan et al., 2017). VBN has also been integrated with psychological empowerment (consumers' perceived influence on product design and organisational decision-making) as a moderating factor that influences the effect of personal norms on pro-environmental consumer behaviour (Hartmann et al., 2018). This highlighted the importance of understanding the moderating factors to the influence of personal norms. A study by Jahari et al. (2022) highlighted that an enabling environment that promotes sustainability is more effective in determining consumers' norms than their competencies. This finding emphasises the importance of taking into account the external environmental factor when promoting green consumption.

In summary, the limitations of VBN, as in NAM, are as follows: First, taking only a personal norms perspective is insufficient to fully comprehend the intended green consumption. Second, the value sources for generating feelings of obligation or responsibility (i.e., personal norms), according to VBN, are suggested from three value

orientations. However, empirically, some studies found that the egoistic value suggested negatively relates to NEP, AC, AR, or personal norms. It is unclear whether egoistic values positively affect personal norms. In other words, it is unclear what constitutes the 'authentic self' (egoistic or altruistic self) for generating personal norms. Third, there is a theoretical gap in the formulation of PN in the concept of AR in VBN. In the PN formulation process, adding the ascription of responsibility to oneself (AR in NAM) after perceived ability to reduce threat (AR in VBN, similar to PBC) may be more accurate.

**Key conclusions**

VBN offers a detailed value-motivated causal chain on how pro-environmental behaviour could be driven by the feeling of obligation (i.e., personal norms). Applying VBN to promote greener choices, it is possible to activate personal norms by activating AC and AR, and indirectly activate values by prioritising values in a given situation.

The NAM and VBN models are both explicitly designed for altruistic value-related behaviour by focusing on personal norms, as well as specific environmentally friendly behaviour. However, both lack consideration for other motives, such as social norms.

### 3.4.5 A Synthesis

After reviewing these frameworks, it is possible to conclude that no single existing frameworks is sufficient to fully understand the underlying processes of how consumers make greener choices. According to TPB, the consumer is motivated by the attitude towards green consumption behaviour, subjective norms, and perceived behavioural control, but according to MGDB, the consumer is motivated by desire, past behaviour, and perceived behavioural control, and according to NAM and VBN, the consumer is motivated by personal norms. However, i) VBN and NAM lack the consideration of social influence; ii) MGDB and TPB, as general models, lack the specification of which behavioural beliefs determine green consumption and the consideration of moral influence (personal norms); iii) TPB lacks the ability to stand on a goal level (value motivation) to understand the meaning behind greener choices; and iv) TPB and MGDB view green consumption behaviour stimulated by egoistic values, while NAM and VBN offer altruistic values.

Integrating variables from these four frameworks, on the one hand, based on VBN's cognitive hierarchy, could suggest the following sequence of causal connections to

understand green consumption: values, beliefs (NEP, AC, AR), emotions, norms (personal norms, social norms), intention and behaviour. Norms are seen as the closest antecedent to driving green intentions and behaviours. On the other hand, according to ABC context theory (Guagnano et al., 1995; Stern, 2000), behaviour (B) is an interactive result of the personal-sphere attitudinal variable (A) and contextual factors (C). Therefore, combining the key frameworks of green consumption behaviour and the ABC general framework, green consumption should be influenced by i) attitudinal variables (including values, beliefs, and norms), personal capabilities (including knowledge and skills), the availability of time to act, general capabilities, and resources (such as literacy and money); ii) influenced by habit or routine (past behaviour); iii) and influenced by contextual factors (i.e., situational effect including interventional effect) (Stern, 2000). Based on the above view, it can be inferred that greener choices can be encouraged through altering attitudinal variables by manipulating contextual factors. In other words, promoting greener choices can aim to alter consumers' values, beliefs, or norms to change their intention and behaviour towards green consumption by manipulating contextual factors (through informational intervention). This research needs to identify a specific attitudinal variable to be the focus of the intervention to enable the design of the informational intervention, and designed interventions can be seen as contextual factors by consumers.

## 3.5 The Importance of Norms Activation

### 3.5.1 The Focus of the Intervention

Based on the discussion of key frameworks, the focus of the intervention is identified at the level of norms (both personal and social norms). This is because, first, from a normative perspective as motivation, these frameworks reveal two main types of motivational sources that drive intentional psychological processes leading to greener choices. According to the NAM and VBN models, green consumption is solely driven by personal norms. The model of TPB/TRA and MGDB encompasses the effect of social influences in driving green consumption (i.e., subjective norms (social norms)). Second, according to the discussion of the suitability of variables in key frameworks as intervention factors, personal and social norms could be targeted for the design of the intervention without prior research to identify which specific values, NEP beliefs, behavioural beliefs, control beliefs and moral emotions are highly related to green

consumption behaviour. Third, from a feasibility point of view, there is clear guidance on how to activate personal norms and social norms. NAM and VBN offer the mechanism of how to activate personal norms (a sense of obligation to make a greener choice), TPB and MGDB place the emphasis on social norms (what others do and what others think I should do), and Cialdini's Focus Theory of Normative Conduct offers the mechanism of how to activate social norms. Fourth, from the research gap point of view, although personal norms have been seen as a key reason for green consumption, excluding studies by Groot et al. (2013) and Trujillo et al. (2021), few other studies have used them as an interventional tool for promoting greener choices. It may be due to the lack of a standard operationalisation of this concept. Although the power of social norms in changing behaviour has been recognised, the results have been inconsistent, which may be due to unidentified moderators. Fifth, by investigating both personal and social norms as interventional tools in the same research, it would increase the feasibility of comparing their effectiveness, and provide a better understanding of how their underlying mechanisms of influence may differ.

Norms have been identified as the focus of the intervention to promote greener choices. To understand how the interventional role of consumers' personal norms and social norms can facilitate greener choice through informational intervention, the following section will discuss the mechanisms to activate these two groups of norms and explore their impact on green preference and greener choice.

### *3.5.2 Research Related to Activating Personal Norms and its Activation Mechanism*

Personal norms, in the context of green consumption, refer to one's sense of obligation to make a greener choices, based on the theories of NAM and VBN (Schwartz, 1977; Stern, 2000). Theoretically, personal norms can be manipulated and shaped according to external conditions and internal qualities (Leventhal, 1974, cited in Schwartz, 1977), yet this has rarely been empirically tested.

According to NAM and VBN, one's sense of obligation to make a greener choice can be activated by activating: (i) one's awareness (or beliefs) of the adverse consequences to valued objects (e.g., others, oneself, nature) if one does not make a greener choice (*awareness of consequence*: AC); and (ii) one's sense (or beliefs) of responsibility for the adverse consequences of not making a greener choice (*ascription of responsibility*: AR).

Few studies have focused on manipulating personal norms. One exception can be found in Groot et al. (2013); however, i) the ways in which they manipulated personal norms without a clear theoretical foundation. They focus on 'personal' rather than personal norms or obligations by linking personal pronouns to the intended message: 'WE THANK *YOU* FOR HELPING THE ENVIRONMENT BY CONTINUING TO REUSE YOUR BAGS'. The effect elicited by this message could potentially be a social reward (we thank you...) rather than a sense of obligation to reuse one's own bag; ii) the presumed effect shown cannot be justified without a manipulation check; and iii) there is little understanding of when and how the personal normative message might be effective. Furthermore, early studies that focused solely on environmental knowledge or problem awareness were ineffective at changing cognitions and behaviours to promote green consumption (Abrahamse et al., 2005; Nolan et al., 2008; Staats et al., 1996). Increasing environmental awareness alone is not sufficient for behavioural change (Abrahamse and Matthies, 2019). This is a concept similar to AC, but it is only one of the antecedents that generates a sense of obligation. Some research treated it as background information on every message card (a necessary but not sufficient condition) and added other information to distinguish treatment and control messages for behavioural change (Goldstein et al., 2008; White et al., 2019). This reveals the need to activate both antecedents of personal norms.

Therefore, this research will build on Schwartz's (1977) norm activation theory by activating both premises of personal norms to activate one's personal norms for promoting greener choices. As discussed in Section 3.4.3, the following five elements, as summarised by Schwartz (1977), are important to facilitate the activation of AR and thus lead to a sense of obligation to make a greener choice. The designed personal normative information should lead one to: i) recognise his own ability with evidence on how to perform the given behaviour; ii) establish the perception of a causal relationship between the need to solve the environmental problem and their own responsibility; iii) remind himself of his responsibility or find a way to let the person know this is his responsibility; iv) be aware of the salience of the consequences of environmental problems and making a greener choice and avoid vain repetition; v) pay attention to the existence of a need to solve the environmental problems and ascribe the personal responsibility to solve the environmental problems.

### 3.5.3 Research Related to Activating Social Norms and Their Activation Mechanism

Social psychologists have long studied social influence approaches to changing behaviour through social norms (Abrahamse and Steg, 2013; Cialdini and Goldstein, 2004; Johnstone and Hooper, 2016; Keizer and Schultz, 2018). The effect of social norms has been applied as a part of marketing campaigns (Schultz et al., 2007). Research on social norms mainly builds on Fishbein and Ajzen's (1975) models of TRA and TPB, Cialdini et al.'s (1990) Focus Theory of Normative Conduct, and Bicchieri's (2010) approach to changing social norms.

*Descriptive norms* refer to perceptions of 'what is commonly done' by Heinzen and Goodfriend (2018). Bicchieri (2017) highlights it as one's beliefs about what most others do in one's networks. It implies that the influence comes mainly from one's networks, who shape one's perception of the majority, and that such people have a higher weight of influence in one's decision-making than a group of 'strangers'. The examples of how to activate descriptive norms by message in previous literature can be seen in Table 3.2.

**Table 3.2 Examples of activating descriptive norms in previous research**

| Authors | Activation-Descriptive Norms |
| --- | --- |
| Goldstein et al. (2008, p474) | 'JOIN YOUR FELLOW GUESTS IN HELPING TO SAVE THE ENVIRONMENT. Almost 75% of the guests who are asked to participate in our new resource savings programme help by using their towels more than once. You can join your fellow guests in this programme to help save the environment by reusing your towel during your stay.' |
| Schultz et al. (2008b, p. 8) | 'Nearly 75% of hotel guests choose to reuse their towels each day. To support our guests who want to conserve, this hotel has initiated a conservation programme.' |
| Melnyk et al. (2011, p. 715) | The results of the large-scale survey have shown that most Dutch citizens have a preference for these environmentally friendly processed potatoes. A department spokesperson says: 'Yes, I always buy environmentally friendly processed potatoes', which indicated more than 64% of the respondents. |
| Kavvouris et al. (2019, p. 4) | 'A recent nationwide survey among US citizens showed that a large majority of participants recycle their electronics (computers, mobile phones, TVs, etc.).' |
| Nolan et al. (2008, p. 917) (DN message with the reason of why the household should adopt the energy-conserving behaviour). | Study1: The majority of the recipient's neighbours conserved energy.<br><br>Study2: 99% of people in your community reported turning off unnecessary lights to save energy. |

| White and Simpson (2013, p. 92) | '…your neighbours are grasscycling…'<br>'…our neighbours are grasscycling…' |
| --- | --- |
| Gössling et al. (2019, p. 276) | …In 2015, 82% of all guests in room (room number) used their towels. As we expect a similar result this year, we have donated the equivalent of your savings from not having to wash the towels and bed linen to a charity, Blut Planet, which engages in providing safe water to people living in water-stressed areas… |

The descriptive norm is determined by descriptive normative beliefs about what most others do. Sources to generate these descriptive normative beliefs (empirical expectations) may be one's own observations or through a trusted source (e.g., credible experts) (Bicchieri, 2017; Johnstone and Hooper, 2016). According to social influence theory, the influence derived from descriptive norms is considered an informative influence. Informational social influence explains why people follow along with what others are doing because they are unsure themselves what is the 'correct' answer or they believe others' behaviour is the 'right' behaviour (Heinzen and Goodfriend, 2018), and it could also be just a result of imitation. Hence, the underlying mechanism behind the influence of descriptive norms on behaviour is one's interest to seek information about what is the 'right' behaviour (Cialdini et al., 1991), or to imitate others' behaviour (Young Eun et al., 2014) in order to gain social proof (Melnyk et al., 2013; Schultz et al., 2007).

The power of activating descriptive norms to change behaviour has been evidenced across a variety of domains (Trudel, 2018), such as saving energy (Allcott, 2011; Schultz et al., 2007) and towel reusing in hotels (Bohner and Schlüter, 2014; Goldstein et al., 2008; Gössling et al., 2019; Schultz et al., 2008b). However, according to the operationalisation of descriptive norms in these studies, the effect does not appear to originate purely from descriptive norms. For example, Allcott (2011) found that sending feedback to users about their own energy usage history (self-usage comparison over a time period) and the usage comparison results with others (social comparison) reduces energy consumption by 2.0%. The examined effect of the descriptive norm is more likely to be the result of the combined effect with social comparison. Goldstein et al. (2008) revealed that consumers who received a descriptive normative message (e.g., 'join your fellow guests in helping to save the environment', 'almost 75% of guests reuse towel', etc.) had a higher rate of towel reuse (44.1% vs. 35.1%) than consumers who received the standard environmental message (e.g., 'help save the environment'), whereas there is other information on both message cards. It includes the messages about the positive consequences on the environment of guests participate in this towel reuse programme, the environmental

protection purpose for running this programme, and how to protect the environment (i.e., through towel reuse). This information may make the belief of 'awareness of consequence' salient. By giving instructions on how, through your effort, you can protect the environment, this may evoke the beliefs of 'ascription of responsibility to avert the noxious consequences by performing the particular action' (p.67). In other words, the effectiveness of the descriptive norms appeal, in their research is the result of the combined effect with other factors. Second, the findings about the effectiveness of descriptive norms, whether or not they are over environmental protection information, are inconsistent. Goldstein et al. (2008) and Bohner and Schlüter (2014) found opposite results regarding the effectiveness of descriptive norms compared with a standard environmental message.

*Injunctive norms* refer to the perception of what ought to be done (others' expectations) or what is commonly approved or disapproved of, essentially indicating which behaviour is socially accepted (Cialdini et al., 1991). The examples of how to activate injunctive norms by message in previous literature can be seen in Table 3.3.

**Table 3.3 Examples of activating injunctive norms in previous research**

| Authors | Manipulation-Injunctive norms (IN message) |
|---|---|
| Schultz et al. (2008b, p. 8) | 'Many of our guests have expressed to us their approval of conserving energy. Because so many guests value conservation and are in the habit of conserving, this hotel has initiated a conservation programme.' |
| Melnyk et al. (2011, p. 715) | The results of the large-scale survey have shown that most Dutch citizens have the same, positive opinion about these environmentally friendly processed potatoes. A department spokesperson says: 'Everybody should buy environmentally friendly processed potatoes', which was indicated by more than 64% of the respondents. |
| Kavvouris et al. (2019, p4) | 'A recent nationwide survey among US citizens showed that a large majority of participants think that everyone should recycle their electronics (computers, mobile phones, TVs, etc.)'. |
| White and Simpson (2013, p. 92) | '…your neighbours want you to grasscycle…'<br>'…our neighbours want us to grasscycle…' |
| Voisin et al. (2020, p. 3) | A recent survey found that '95% of psychology students approve of recycling waste and believe that people should recycle their waste.' |

The injunctive norms are determined by one's injunctive normative beliefs about what one believes about what most others think I should do. Following injunctive norms is to gain social approval or to reject social disapproval (the effect of social sanction: gain reward and avoid punishment) (Heinzen and Goodfriend, 2018). In addition, motivations to conform to injunctive norms may be motivated by affiliations with others (Rimal and Lapinski, 2015). The effect of injunctive norms may depend on the publicity of the information (whether the decision/performance is shared by others). In a situation involving public information, how people behave could be a way to signal to others what kind of person they are or what kind of person they wish others to think they are (i.e., social signalling). Moreover, if people publicly conform, they are more likely to pretend to agree with a group to fit in with that group. In contrast, in the situation where the information is kept private without the presence of social sanction, the effect of injunctive norms may be less significant/important, as people can behave freely without considering the punishment (e.g., reputation loss) or the fitness for a particular group.

The power of activating injunctive norms to change behaviour has been clearly demonstrated in past research (Cialdini et al., 2006; Cialdini et al., 1990; Keizer and Schultz, 2018; Schultz et al., 2008b). Injunctive normative information contains the explicit request of what one should do (e.g., 'everybody should buy environmentally friendly processed potatoes'; Melnyk et al. (2010). However, some studies have found that a single injunctive normative message may not be effective if not aligned with descriptive norms (Schultz et al., 2008b). Keizer et al. (2011) found that the effectiveness of injunctive norms can be threatened by conflicting descriptive norms. In contrast, Reno et al. (1993) found that the effectiveness of injunctive norms is independent of the consistency or inconsistency of descriptive norms. Moreover, the findings are inconsistent on the effect size and effectiveness of injunctive norms and descriptive norms. Melnyk et al.'s (2010) meta-analysis concluded that descriptive norms have a greater impact on behaviour than injunctive norms, and injunctive norms have a greater impact on attitudes than descriptive norms. Interestingly, some studies found that activating injunctive norms is more effective at promoting socially beneficial behaviour than descriptive norms (Cialdini et al., 1991; Kallgren et al., 2000; Reno et al., 1993).

The social normative effect on behaviour (i.e., witnessing others' behaviour and accordingly changing one's own behaviour) can be stimulated via the provision of written social normative information (Parks et al., 2001; Schultz et al., 2007). Regarding the

design of the social normative message, most researchers provide specific information about 'what most others do' to activate descriptive norms and 'what most others expect me to do' to activate injunctive norms without giving reasons (Goldstein et al., 2008; Smith and Louis, 2008; White and Simpson, 2013), according to Cialdini's Focus Theory of Normative Conduct (Cialdini et al., 1991). However, according to rational choice theory, it is crucial to establish rationality for conforming to social norms (Bicchieri, 1990). As a result, this research will build on Cialdini et al.'s (1991) approach to designing social normative information with the rationale for conforming to social norms in order to promote greener choices.

In addition, the social normative message had mixed success in changing behaviour (Schultz et al., 2007). It could be caused by unexplored moderators, such as when social norms are more or less effective (Melnyk et al., 2021). In other words, the effectiveness of the normative message is dependent on certain conditions. The existing literature has found that, first, it may depend on the salience of norms (when norms are activated, they have a stronger influence), the size of the group (larger groups have a stronger influence), and the reference of groups (the extent to which this group is considered an in-group: categorising oneself as an in-group has a higher effect than as an out-group) (Keizer and Schultz, 2018). Goldstein et al. (2008) conducted experimental research to promote the reuse behaviour of hotel towels. They varied the group identity with descriptive norms (75% of '…' have reused towels) to see which identity has the highest effect. They found that when people compared their actions with those who lived in the same room, 'same room identity' (i.e., other hotel guests who had stayed in the guests' particular rooms vs. other hotel guests vs. citizens vs. men and women) produced the highest effect on towel reuse. On the contrary, Schultz et al. (2008b) found that the towel reuse rate was slightly higher in the general (hotel guest) norm condition than in the 'same room' norm condition. The inconsistent result may reveal the existence of unexplored moderators. Second, the effectiveness of the normative message on attitude and behaviour may also depend on cognitive deliberation. Melnyk et al. (2011) found that cognitive deliberation increases the effect of descriptive norms and decreases the effect of injunctive norms. Third, the effectiveness of social norms may depend on the consumer's mindset of seeking promotion goals (to pursue the things they want) or prevention goals (to minimise loss). Descriptive norms are more influential when promotion goals (vs. prevention goals) are salient, while this is not the case with injunctive norms (Melnyk et al., 2013). Fourth, whether the individual or collective level of the self is activated influences the strength

of the normative message. White and Simpson (2013) found that when the collective level of self is activated, injunctive and descriptive normative appeals are most effective. Whereas, when the individual level of self is activated, benefit appeals are more effective. In addition, when the collective level of self is activated, descriptive normative appeals produce a lower psychological reaction than injunctive normative appeals, which subsequently leads to higher behavioural intentions. In conclusion, while a variety of moderators of the social normative influence on pro-environmental behaviour have been identified, more research is needed to determine under what conditions social norms are more or less effective.

### 3.5.4 Explore the Impact of Norms Activation on Green Preference and Greener Choice

The purpose of this section is to explore the potential impact of activating these two groups of norms on promoting greener choices through informational intervention.

**The need for exploring the impact of norms activation on green preference**

Activating the norms to promote greener choice should consider its impact on an overall green preference. The discussion of the reasons is based on Section 2.3.4 regarding the attributes of preference: First, not every motive/stimulus can construct the preference (Hoeffler and Ariely, 1999). Therefore, it is essential to understand whether activating norms, and which ones, would activate, reconstruct, or increase the overall green preference. Theoretically, although activating norms it is possible to activate, reconstruct or increase the underlying overall green preference, this preference is expected to be relatively stable across contexts without effective salient motivational intervention. Second, the importance of the role of an overall green preference is neglected in existing research on green consumption. Understanding the impact of normative intervention on green preferences could help in identifying which effective interventions are likely to have longer-lasting effects, as they activate overall green preference derived from stable inner motivational values. This understanding can help determine whether consumers under such normative intervention are more likely to engage in 'true' green consumption behaviour based on activated green preference from stable inner motivational values, rather than a one-time response to stimuli.

The need to consider the role of an overall green preference in the activation of norms has been identified. To understand the activation of which norms (personal or social

norms), theoretically, could form the overall green preference that leads to increased greener choice, the rest of this section will discuss the impacts of activating personal and social norms on promoting greener choice, respectively.

## The impact of activating personal norms

Based on the review of key theories and the intent-oriented definition of greener choice in Section 2.2, greener choice could originate from more stable underlying motives (such as a goal or values) that shape and influence one's beliefs and norms, and then result in a range of relevant green behaviours (goal-directed). Specifically, the theories of NAM and VBN suggested that greener choices are driven only by individuals' self-expectations (i.e., believing that oneself ought to make greener choices: personal norms) on how they should act based on their inner values and beliefs. It can be inferred that activating personal norms could positively impact greener choices. This inference is supported by Groot et al. (2013) on reducing the use of plastic bags using normative messages (to make norms salient); they found that a personal normative message (activating personal norms in a written message) significantly reduces the use of free plastic bags, compared to an environmental message with words (caring for the environment).

According to the relationship between value and preference (Riza Casidy and Tsarenko, 2009; Warren et al., 2011), and preference and choice (Bicchieri, 2010; Olson, 2013), values are seen as goals or principles guiding decision-making that can lead to the formulation of preference in making choices. Therefore, it can be inferred that the values that guide making greener choices can lead to the formulation of an overall green preference. There is empirical support for this view, and it was found that biospheric values are indirectly related to environmental preference, intention, and behaviour through environmental self-identity (Van Der Werff et al., 2013). Norms play a crucial role in an individual's choice by shaping individual preferences (Bicchieri et al., 2014). The effect of norm activation on promoting greener choices is thus possible via an overall green preference. According to the VBN theory, personal norms are activated in response to stimuli that prioritise green values, and green preference may also be activated as a result of green value prioritisation. Therefore, the increase in personal norms could lead to an increase in green preference and greener choices.

Bicchieri's (2017) approach to achieving 'collective behaviours' (to achieve green consumption as collective behaviour) by activating individual preference based on one's

*personal normative beliefs* (i.e., personal norms: one's beliefs about what I should do) can help to infer the causal chain relationships between norms, preference and choice. This inferred causal chain can help to justify that the increased green preference – resulting from the presumed effect of activating norms – increases greener choice. Bicchieri (2017) suggested that collective behaviour could be determined by unconditional '*individual preference*' (based on beliefs about moral injunctions and religious rules), and conditional 'individual preference' (based on *personal normative beliefs*). Both conditional and unconditional, individual preference is based on one's self-expectations (i.e., activated personal norms). Therefore, a green preference should be derived from one's self-expectations (i.e., activated personal norms) and thus can determine a greener choice.

## The impact of activating social norms

Theories of TPB/TRA and MGDB unpack the possibility that greener choices could be driven by social expectations. In other words, activating social norms could positively impact greener choices. This inference is supported by Cialdini's normative focus theory, which has been discussed in Section 3.5.2. The effect of social norms on behaviour changes through written social normative information has also been confirmed (Parks et al., 2001; Schultz et al., 2007). However, previous findings are mixed. Specifically, it is not clear whether the social normative effect is small or large, and whether this effect is mediated by green preference. According to Bicchieri (2017), green consumption behaviour could be an interdependent action (consumers prefer to do it if they experience social expectations). In other words, the motivation sources for making greener choices based on an overall green preference may not be a product of an 'independent mind' (purely driven by values and beliefs), but a matter of others' actions and/or views. According to the behaviourist viewpoint discussed in Section 2.3.2, external factors should be the initial source for forming values, beliefs, and preferences. Schwartz (1977) agreed with the above view that self-expectations or personal norms could be learnt from shared expectations (social norms in a group are perceived to be shared by their members) during social interaction in the early stages. However, he argued that activating social expectations would have no impact on pro-social behaviour as those influences would already be internalised in personal norms. A study by Doran and Larsen (2016) found that injunctive norms have a direct effect on behavioural intentions and also have an indirect effect through personal norms, suggesting that social norms may be partly internalised

into personal norms. Based on Schwartz's view, it can be inferred that an individual's green preference and greener choice could not possibly be influenced by the direct activation of social expectations (i.e., activated social norms).

According to the support from the theories of TPB/TRA and Cialdini's focus theory of normative conduct for a positive relationship between social norms and greener choices, this research takes the position that by activating social norms, it is possible to increase the likelihood of greener choices. However, it may not be sufficient to elicit and strengthen green preferences. This may occur based on two reasons. First, social norms as an exterior factor may not have much personal involvement. Sometimes, social norms are internalised into personal norms, but this is seen as superficially internalising personal norms that can only be perceived as a means to achieve ego enhancement or avoid guilt. Personal norms, according to the proposed norm taxonomy by Thøgersen (2006), are characterised by different degrees of internalisation and integration into the individual's self-concept. It is reasonable to assume that even the effect of social normative information on greener choices can be through internalised personal norms, but this degree of internalisation or integration will be superficial compared to those who are directly affected by personal normative information. Second, even if the source that generates deeper internalised personal norms originates from social norms (learned from others), it will most likely require intensive exposure for a long time and should affect the inner value of the person first and then the personal norms. In summary, while activating social norms can promote greener choices, it may not be able to elicit a green preference.

## The need to explore the interaction between norms activation and intrapersonal activities

Either activating personal norms or social norms, according to the cognitive approach discussed in Section 2.3.2, it is important to understand how consumers' intrapersonal activities affect their response to the interventions or external factors. However, whether consumers' intrapersonal activities affect their response to the normative intervention and whether the effect of norm activation on green preference depends on a specific condition(s), is unknown. In other words, the existing literature on green consumption did not provide a synthesised and systematic understanding of the underlying mechanism of activating expectations/norms (personal norms, injunctive norms, and descriptive norms). Existing theories did not adequately reflect consumer decision-making, especially when

there are contradictions between norms/expectations (e.g., follow self or others) or even different self-concepts (e.g., follow ought self or actual self).

There are two ways of interventions to dealing with competing norms/expectations. According to Bicchieri's (2010) view, the interactional outcome of green preference may depend on the weight of each expectation. First, it could be through presenting conflicting information that is opposed to a norm (expectation) they previously held, and this negatively pre-held norm would be swayed (Bicchieri, 2010). Second, it could be achieved by presenting motivationally salient information about the alternatives (Dietrich and List, 2012). This is a salient way to make the already-held positive norm salient and ignore the conflicted one. A green preference is more likely to be formed as a result of a previously held positive norm for greener choices. However, both types of interventions require information about the pre-held positive or negative norms before they are designed. The practicability of both strategies seems rather limited since this information is most likely not available. The second strategy shared a similar way of activating norms by making normative information salient. Activating norms assumes that the activated norm (increasing the target norm) would be sufficient to drive greener choice whether or not through green preference, with no need to consider the status of the pre-held norms. However, there is a lack of knowledge about how normative information interacts with the self that can activate consumers' inconsistent self-concepts.

In a trade-off situation dealing with inconsistent self-concepts, there may be an internal 'criterion' for consumers upon which they base their evaluations and decisions. To explore this internal 'criterion' and the potential underlying evaluation mechanism, it requires understanding a series of self-related concepts. No one theory seems to adequately explain how consumer decision-making is influenced by behavioural interventions without integrating the role of the self. The next section will discuss this in detail.

This section provides the literature related to the activation of personal and social norms in green consumption research and their activation mechanisms. It discussed the impact of activating personal and social norms to promote greener choices, as well as their potential impact on overall green preference under normative intervention. It also pointed out the need to explore the interaction effect between norm activation/intervention and consumer intrapersonal activities.

Therefore, the following section will explore how the self (self-related concepts) would affect the influence of normative information on the formulation of green preference and greener choice.

# 3.6 The Role of Self-Related Concepts

To understand how the self (self-related concepts) would influence the effect of normative informational interventions on consumers' decision-making for greener choices, this section reviews a series of self-related concepts, including self-concept, self-concept clarity, self-consciousness, self-consistency, the ideal self, the actual self and the ought self, and their roles in influencing decision-making and their potential effect on the normative intervention.

## *3.6.1 Introducing Self-Related Concepts*

### Self-concept

Self-concept is about a set of beliefs we have about our personal attributes, namely ideas of who we are. It is commonly accepted as a multifaceted set of self-relevant schemas (Oyserman, 2004). Campbell et al. (1996, p142) defined it as 'a cognitive schema – an organised knowledge structure that contains traits, values, episodic and semantic memories about the self and controls the processing of self-relevant information'. In line with this definition, Oyserman (2004) proposed that self-concept could be seen as a cognitive structure (as a tool of cognitive and social development), leading where attention pays and guiding what meaning we make of it to shape the new experience. Self-concept is based on past experiences (as a type of cognitive content) to controlling the information process. Based on the above information, it seems that self-concept has a filter function to select self-relevant information with its own bias to guide motivation, behaviour and understanding. This type of bias reinforces self-concept, resulting in repeated decisions or behaviours for expressing one's identity. It seems to imply that the self-concept is static and hard to change.

However, experimental researchers found that the self is variable and easily changed by experimental manipulations (Markus and Kunda, 1986). This is explained by the multidimensional, multifaceted structure of the self-concept, and the temporal accessibility of a part of the complete content of the self-concept at one time (Markus and

Wurf, 1987). The accessible or salient content of the self-concept in a particular situation is called the 'working self-concept', not *the* self-concept (Markus and Wurf, 1987; Oyserman, 2004). This allows for both the stable and malleable properties of a self-concept. This dual nature of the self-concept supports the changeability and manipulability of the contents of the working self-concept to respond to a certain circumstance. In other words, when the normative information acts as an external intervention/stimuli, it possibly makes some particular content of the self-concept salient (seen as a working self-concept).

## Multiple selves

According to Higgins' (1987) classification of self-conceptions (i.e., the subject of conscious reflection), some reflect the 'actual' self (i.e., *how an individual in fact sees him/herself*), some represent the 'ideal' self (i.e., *how an individual would like to see him/herself*), the 'ought' self (i.e., how an individual thinks he/she ought to be), the 'social' self (i.e., *how an individual feels others see him/herself*), and some represent the 'ideal social' self (i.e., *how an individual would like others to see him/herself*) (Jamal and Goode, 2001, p. 483). These selves can function as incentives for behaviour (providing the image of the ideal self or future self in desired end-states) or to provide evaluative context for the current view of self (Markus and Wurf, 1987). It can be inferred that the 'ought' self can be triggered by normative information, which is closely related to the main content of the working self-concept at that particular moment. Meanwhile, different working self-concepts could be inconsistent and unstable (Hertel, 2018; Markus and Wurf, 1987). For example, reading normative information regarding one's responsibility to protect the environment through reusing hotel towels can activate a consumer's ought self (being a responsible person by reusing hotel towels to achieve environmental self), but reusing hotel towels may not be consistent with the consumer's underlying actual self (wishing to use new hotel towels to maintain materialistic self). According to the idea of working self-concepts, the activated working self-concept or salient self-knowledge is more likely to be highlighted at a given point in time, leading to decision-making (the content of the self-concept becomes accessible) as long as no other working self-concepts are aware. This understanding of working self-concepts and multiple selves provides an explanation for why consumers behave differently across different contexts as the different conceptions become salient in different situations (Jamal and Goode, 2001). Therefore, purposefully activating consumers' working self-concept, such as through

normative information, should be able to help consumers change their behaviour accordingly. However, this behaviour or choice may not be the result of careful consideration by the underlying actual self.

## Self-consciousness

When one is aware of oneself as an object of attention (i.e., in a state of self-awareness) (Simon and Trötschel, 2008), it could allow consumers to make choices that better match their underlying personal preference/value and may result in higher satisfaction with choices (Goukens et al., 2009). This is the idea of 'self-consciousness', which refers to '*the enduring tendency of persons to direct attention towards themselves*' (Fenigstein, 1979, p76). Although self-consciousness is regarded as a person's chronic trait (Fenigstein et al., 1975), it can also be temporarily triggered or activated so as to highlight the self as the object of attention (Goukens et al., 2009; Lo et al., 2019). It can be inferred that when self-consciousness is activated, it may lead to the activation of the individual's underlying actual self. Furthermore, if the normative intervention acts as an external stimulus, it may activate different self-concepts such as the ought self. In such a trade-off situation, self-consciousness activates an internal 'criterion' for consumers, upon which they base their evaluations and decisions. It should be noted that, according to Duval and Wicklund's (1972) self-awareness theory, **the internal 'criterion' or standard can be malleable and flexible,** and can be changed to follow self-consistency (Silvia and Duval, 2001). This implies that the decision can be inconsistent between when in a trade-off situation with multiple salient/working selves and when only one is activated, depending on which standard is adopted. In this research, the trade-off situation occurs when a working self is activated by normative intervention and an underlying self is activated by self-consciousness.

## Self-evaluation

When one is aware of oneself as an object of attention (self-consciousness is activated) (Simon and Trötschel, 2008), the self-evaluation process could be initiated automatically to compare between selves (Carver and Scheier, 1981; Silvia, 2012; Silvia and Phillips, 2013). The evaluation components of the content of self-concepts can help consumers make decisions. Evaluative components are seen as affective; evaluative appraisal is seen as the product of viewing "the self" (Campbell et al., 1996). Campbell (1990) conceptualised the evaluative component as trait self-esteem. It is 'the degree to which

one considers oneself as a valued, capable, and worthy person' when the self is viewed as an object of evaluation (Mittal, 2015, p98). Therefore, the aim of self-evaluation can be to maintain, improve, promote a positive self-view, or enhance a positive image of the self.

## Self-concept clarity

When inconsistent and unstable working self-concepts are activated, the level of self-concept clarity (SCC) as a structural aspect of the self-concept can be influenced. Conflicts between values and end goals can also be seen as triggers of inconsistent self-concept thoughts. The behaviour and motivations or goals of that behaviour are guided by more than one value in most cases. Actions taken to pursue each type of value may conflict with other types of value. SCC is defined as 'the extent to which the content of an individual's self-concept (e.g., perceived personal attributes) are clearly and confidently defined, internally consistent, and temporally stable' (Campbell et al., 1996, p. 142). SCC relates to the degree of complexity of the set of self-beliefs, such as how they are organised or the levels of confidence and stability they hold. The complexity of the organisation or structure of the self-beliefs may be related to the susceptibility of the level of self-concept clarity. Low SCC is proposed to be associated with inconsistent thoughts and uncertainty about one's self-concept (the overall view of oneself is unclear) (Campbell et al., 1996; Furchheim et al., 2020). People with low SCC are more likely to be indecisive in their decision-making (Mittal, 2015). These inconsistent thoughts or uncertainty about oneself (confused self-concept) consequently inhibit the function of self-concept to give clear guidance for making a decision. In contrast, a high SCC is related to clear, confident, and stable sets of beliefs about oneself (self-concepts). However, this does not preclude people with high SCC from holding clear and strong sets of contradictory self-beliefs (different ideas about oneself may be contradictory). According to Furchheim et al. (2020), people can hold strong values both in terms of being materialistic and being green. As mentioned, different self-concepts can coexist, as long as a working self-concept (self-knowledge) is highlighted at a given point in time, which can guide decision-making. However, it is unclear whether it can influence the level of clarity of the self-concept when different and inconsistent self-concepts are activated.

**Key conclusions**

According to the above introduction of self-related concepts in order to understand how the self (self-related concepts) would influence the effect of normative informational interventions, it can be deduced that: i) when self-consciousness is not activated, the activated working self-concept (the ought self) alone by normative intervention can lead the decision-making; ii) when self-consciousness is activated, different self-concepts will be activated, and these inconsistent self-concepts can coexist; and iii) the decision can be inconsistent due to the adopted internal 'criterion' or standard changes under different decision situations (e.g., what selves and how many selves are salient at a particular point in time when making decision). It should be noted that this research accepted Oyserman's (2004, p. 9) assumption that 'people prefer a consistent sense of self to be able to use self-concept to make predictions about the world'. Therefore, in the situation where consumers are aware of their inconsistent working self-concepts, this research assumed that consumers are more likely to be motivated to maintain a consistent self by following past behaviour.

### 3.6.2 Explore the Moderating Impact of Activating Self-Consciousness (Private and Public)

After introducing the idea of self-related concepts, it was found that when normative information activates a norm, it may activate a working self-concept (ought self). As aforementioned, it is unclear how consumers would respond to the normative information, especially if a self-concept (activated by self-consciousness) is inconsistent with the working self-concept (activated by normative information). According to Duval and Wicklund's (1972) self-awareness theory, one acts as an evaluator to assess the self's ongoing behaviours and their physical appearance or personal attributes against internalised goals/values or the ideal or actual social self-image. Therefore, the outcome of the self-evaluation may potentially influence the extent of a normative message's impact and affect the elicitation of the overall green preference due to the activated internal 'criterion' or self-concept used as a reference for the self-evaluation. According to Hull and Levy (1979), self-consciousness could influence the process of selecting and encoding the information that one has brought in from the environment and be especially sensitive to self-relevant information. This is due to the self-concept filter function being activated by paying attention to the self. Hence, consumers would process the presented normative information differently at different levels of self-consciousness (activation or

not). In other words, the effect of presented normative information on decision-making could be different and conditional on one's self-consciousness (activated or not), as it affects the selective process and the encoding of the information.

In brief, resulting from either the outcome of self-evaluation or the outcome of selective and encoding information, the moderating effect of self-consciousness should be considered when activating norms. Understanding when the influence of normative information is more effective in promoting greener choice (activating or not self-consciousness) and whether it inhibits eliciting green preference is related to the effectiveness and design of marketing communication. Furthermore, self-consciousness's moderating role in consumer decision making has been recognised in marketing research (Goukens et al., 2009; Lo et al., 2019); Lo et al. (2019) identified a significant moderating effect of self-consciousness on the indirect relationship between perceived ethical benefit and 'willingness to recommend to try online second-hand apparel shopping' via perceived injunctive norms. Therefore, exploring the moderating effect of self-consciousness on normative intervention is crucial for providing valuable insights to marketers and policymakers seeking to promote greener choices.

The attention to self can be from an inward perspective or an outward perspective (i.e., the imagined perspective of others) and is termed private self-consciousness and public self-consciousness, respectively (Fenigstein et al., 1975). According to the characteristics of self-consciousness, activating either private or public self-consciousness can help consumers make decisions. However, the activated internal 'criterion' or the content of the self-concept may be different due to different perspectives on self-focus. Therefore, the rest of the section will discuss the effects of private and public self-consciousness on the normative intervention, respectively.

**The effect of activating private self-consciousness**

Private self-consciousness refers to "*the tendency to introspect about our inner thoughts and feelings*" (Stangor et al., 2014, p. 116). Consumers who are high in private self-consciousness are likely to let their inner beliefs and values (internal criteria) guide their choices and behaviours. A study found that for consumers with higher private self-consciousness, their reaction is not related to rejection by a peer group (Fenigstein et al., 1975). Private self-consciousness triggered by the situation can also be called 'private self-focused attention', which differs from the pre-existing chronic trait of private self-

consciousness. Any stimulus that directs attention back to the self is assumed to be capable of activating self-focused attention.

Research by Ybarra and Trafimow (1998) found that an individual's attitudes have a higher impact on the formation of behavioural intention than subjective norms (social expectations) when the individual is private self-focused (i.e., when the private self is made more accessible). It implies that by activating private self-consciousness, consumers may respond to personal normative information by focusing on personal aspects (e.g., self-expectation) rather than social aspects of self. Therefore, this research only examines the effect of private self-consciousness when activating personal norms.

Personal normative information can elicit a working self-concept (i.e., accessible self-knowledge) that is incompatible with those elicited when turning attention to one's private self. In this discussion, potential consumer mental and intrapersonal scenarios that could arise when both private self-consciousness and personal norms are activated, will be explored. Based on the understanding of self-concept and self-evaluation initiated by activating self-consciousness, the following discussion aims to understand how the potential underlying mechanisms triggered by the evaluative outcome could influence the extent of the impact of personal normative information. For example, imagine a hotel guest receives a message card asking her to take responsibility for environmental protection by reusing hotel towels for three days. In this scenario, her sense of obligation to protect the environment can be activated without a strong inclination to introspect her inner thoughts and feelings regarding the reuse of hotel towels, such as the disadvantages or implications for her self-concepts. However, when her private self-consciousness is activated, it can lead her to introspect about reusing hotel towels to her disadvantages or implications for her self-concepts or how it would affect her in any way. She may find that her enjoyment could be reduced by reusing hotel towels. As such, her decision may be adjusted or balanced compared to when self-consciousness was not activated. Although she may still be willing to reuse hotel towels, she may reduce the number of reuses. Alternatively, she may simply follow her desires to use new hotel towels in order to maintain her materialistic self. No matter which decision she makes, her choice will be adjusted. In other words, consumers whose private self-consciousness is not activated (less likely to experience a deep self-evaluation) should be more likely to follow the activated norms (a sense of obligation to make greener choices) or the intervention.

Several theoretical explanations of the underlying mechanism of self-evaluation can be drawn based on the existing understanding of the self-related literature.

For instance, the activated 'ought' self, activated by the normative information (input), would be evaluated using the internalised norms, reference, or internal criterion (e.g., *the actual self*) triggered by attention to the private self. Therefore, the evaluation outcome based on the consideration of both internal criteria and 'ought' self (dealing with value trade-off) could be different, with those decisions being only influenced by the activated 'ought' self or being only influenced by paying attention to the private self. The evaluation result (output) can indicate the nature of the 'true' self (egoistic or altruistic) or reflect the priority of the person's values (egoistic or altruistic) under the value trade-off. However, if one pays attention to the egoistic self when processing normative information, it may inhibit the induction of green value-related beliefs, according to the VBN model. The negative impact of egoistic value on green consumption has been discussed in Section 3.4.4.

According to Fransen et al.'s (2011) view, how deeply the presented information (i.e., in this case, the aspect of 'ought' self that is elicited by personal normative beliefs) influences behaviour depends on how strongly it fits with one's activated self-knowledge (i.e., the self-concept: in this case, the 'actual' or 'ideal' self as references to the evaluation when attending to the private self). Since the actual self is motivated by desire or ego, and the ought self is driven by responsibility, the actual self is less likely to be an exact match with the ought self. Moreover, based on Higgins's (1987) self-discrepancy theory and Strauman's (1996) test on the stability of self-discrepancy, self-discrepancy persists, although the specific content of the ideal and ought selves varies over time. A study by Hardin and Lakin (2009) also provides evidence on this. Hence, the unfit between the presented message (input) and the activated knowledge of the self (reference) will decrease the extent of the message's influence.

Moreover, any discrepancy between any two of these working self-concepts can produce a state of discomfort (i.e., negative affect) (Markus and Wurf, 1987). This discomfort could be more likely to be experienced when the self is the object of evaluation compared with those whose self-consciousness is not activated. According to Nguyen et al. (2015), this experience is occurs in the intra-negotiation process to resolve discordant views of the self in time to make decisions. The discomfort or a feeling of uncertain self-concept

may inhibit the accessibility of the activating routes needed to elicit a clear preference for green.

From a broad ego involvement perspective, when the private self-consciousness is activated compared to not activated, the salient green value (elicited by the personal normative information) is more likely to encounter conflicting ego-involved values, such as materialism, because the person will be ego-involved when the self is aware (Greenwald, 1982, cited in Markus and Wurf, 1987). 'Private self-focus reflects private, autonomous, and egocentric goals' (Mor and Winquist, 2002, p. 641). This explanation does not necessarily mean that activating private self-consciousness alone will have a negative influence on greener choice, as it depends on the person's pre-held green value. Rather, it suggests that the activating private self-consciousness can negatively influence the impact of personal normative information on greener choices. In other words, activating private self-consciousness may elicit and prioritise consumers' egocentric value under value trade-off, which can inhibit the elicitation of green preference and regulate behaviour.

The above theoretical explanations of the underlying mechanism of self-evaluation involve activating self-consciousness and persona norms together. It suggests that activating private self-consciousness possibly reduces the influence of personal normative information and inhibits the accessibility needed to elicit green preference.

## The effect of activating public self-consciousness

Public self-consciousness refers to '*the general awareness of the self as a social object*' (Fenigstein et al., 1975, p. 523). People with higher public self-consciousness are more likely to focus on the outer public image (Stangor et al., 2014, p. 116), namely the self-aspects that are socially visible (Fenigstein, 1979), and are associated with the tendency to adjust one's public display when anticipating some interaction with others or when others are actually present (Froming and Carver, 1981; Froming et al., 1982).

Those who are public-conscious are more motivated to make a favourable impression in their social interactions (Lo et al., 2019). It implies that by activating public self-consciousness, people can mainly focus on how to respond to social normative information, which is most likely reflecting social aspects (e.g., social-expectations) rather than personal aspects. Enhancing people's public self-consciousness – while

presenting them with messages containing social normative information – could potentially facilitate the process of accessing associated beliefs/thoughts related to their public image. The availability of activated associative beliefs would limit the effectiveness of the social normative information. Therefore, this research only examines the effect of public self-consciousness when activating social norms.

Consumers evaluate their actions while considering the impact that an action may have on others' impressions of oneself, when attending to the public aspects of the self (e.g., self-image) (Mor and Winquist, 2002). Self-image, along with self-esteem and the ideal self, is seen as components of the self-concept (Rogers, 1959). Different working self-images are activated that could be inconsistent (Hertel, 2018; Markus and Wurf, 1987). Social normative information may elicit a working self-concept (i.e., self-image) incompatible with those elicited when attending to the public self. When both public self-consciousness and social norms are activated, the following discussion deduces potential consumer mental and intrapersonal scenarios. Based on an understanding of self-concept and self-evaluation initiated by activating self-consciousness, the following discussion aims to understand how the potential underlying mechanisms triggered by the evaluative outcome could influence the extent of the impact of social normative information.

According to Fransen et al.'s (2011), the logic presented earlier applies again here, i.e., how strong the impact of presented social normative information on behaviour is (whether it follows the given behaviour) depends on how strongly it fits with one's activated self-knowledge (e.g., the increased accessible thoughts regarding public image). The unfit between them would reduce the effect of social normative information on greener choices. For example, a study found that people who read information about the ethical benefits of second-hand clothing shopping while experiencing higher levels of public self-consciousness believed that second-hand clothing shopping is less likely to be approved by others and thus they less likely to recommend it to others (Lo et al., 2019). Although shopping for second-hand clothing is a socially approved, recommended, and encouraged behaviour, when consumers' public self-consciousness is activated, they are concerned about the potential negative reactions from others if they follow this recommendation. It suggested that the perceived degree of social acceptance would decrease when people believed that their public image may potentially be levelled down, which can be explained by the theory of self-serving (Kunda, 1987). Individuals tend to generate causal theories that are self-serving (Nolan et al., 2008). Therefore, for a given behaviour, such as hotel

towel reuse, which is a socially acceptable behaviour, consumers may reduce their motives to reuse hotel towels to fulfil self-serving when their public self-consciousness is activated, due to a mismatch between their activated working self-concepts (for serving being green or enjoyment). These consumers will consider their 'actual social selves' rather than simply doing what the given normative information instructs them to do (their 'ought social selves'), especially if they know how to behave (high self-concept clarity). Activating public self-consciousness would adjust their decision to maintain their actual public self.

From a coexistent multi-conflict values perspective, when people start to evaluate themselves (by activating their public self-consciousness), they may find saliently conflicting self-images. Thoughts regarding the image of the self could be formulated differently in accordance with their corresponding value propositions. In other words, the activated public self-image (the 'ought social self': being green, formulated based on the 'green value') by presenting social normative information, may coexist with another public self-image ('actual social self': seeking a symbol of luxury or hedonic pleasure, formulated based on the 'hedonic or materialistic value') by paying attention to the 'public self'. Awareness of their salient coexistent conflicting self-images may lead them to experience a sense of discomfort. This discomfort may trigger self-consistency in following a previous behaviour that could reduce the effect of the social normative message on the likelihood of making a greener choice. According to Burnkrant and Page (1982, p. 454), 'people with high public self-consciousness may not be inclined to act according to the reward contingencies inherent in social situations' (in this research, social norms). This also reveals that activating public self-consciousness can reduce the effect of social normative information on greener choices.

This section discussed the effect of activating self-consciousness. Specifically, it pointed out the potential negative influence of private self-consciousness on the effect of activating personal norms and the negative influence of public self-consciousness on the effect of activating social norms. In this regard, based on the existing understanding of self-related literature, it discussed the potential theoretical explanations of the underlying mechanism of self-evaluation when different working self-concepts are aware by activating self-consciousness and norm. From the lens of intervention, this section suggests that consumers should be less likely to be influenced by external factors/interventions when their self-consciousness is activated. In other words, the

influence of the intervention to promote a greener choice should be reduced, when consumers' self-consciousness is activated.

### 3.6.3 Explore the Role of Self-Concept Clarity

Section 3.6.2 has pointed out that when inconsistent and unstable working self-concepts are activated, the level of self-concept clarity (SCC) may be influenced. However, it is unclear whether normative intervention and self-consciousness can influence the level of clarity of the self-concept. Moreover, it is unknown whether the change in self-concept clarity can cause a reduction in the impact of normative information on greener choices when self-consciousness is activated. This section first reviews the literature related to self-concept clarity to justify the importance of understanding the role of self-concept clarity, then discusses how self-concept clarity can be influenced and what the potential effect is on green preference and greener choice.

**The importance of understanding the role of self-concept clarity**

Self-concept clarity is positively related to happiness (Merdin-Uygur et al., 2018) subjective well-being (Furchheim et al., 2020; Ritchie et al., 2011), or life stratification (Mittal, 2015). Furchheim et al. (2020) pointed out that promoting green consumption, which encourages consumers to adopt green values, may negatively affect consumer well-being in current materialistic societies, including the western world (Furchheim et al., 2020). They found that consumers who experienced a value conflict (materialistic vs. green values) had a higher degree of stress and a lower level of satisfaction with life, which may be caused by a reduced level of clarity in their self-concept. Therefore, it can be inferred that whether and how the designed intervention affects consumer well-being can be understood through its impact on self-concept clarity. This is in line with the growing concern of the green consumption movement towards influencing consumers to adopt green consumption behaviour, which suggests that interventional strategies considered effective in changing behaviour should also ensure consumer well-being (Steg et al., 2019). Based on the concept of nudge intervention and its libertarian paternalism principle, which states that nudging helps guide people towards certain options in a direction to achieve their desired goals (to improve their lives by making a positive choice) while maintaining freedom of choice, developing interventional strategies to promote green consumption behaviours should benefit society and match the long-term interests of consumers (Thaler and Sunstein, 2008). Therefore, understanding SCC in this

research can provide insight into interventional strategies to understand their effect on consumer well-being and offer information on how to design marketing communication that would have positive well-being consequences (increased SCC), or avoid having a negative influence (decreased SCC).

## How self-concept clarity can be influenced, when activating private self-consciousness

It has been suggested that when activating private self-consciousness, the effect of personal normative information can be reduced, and the reduced effect of the normative information on greener choices could be explained by the underlying mechanisms when self-evaluation is initiated. These underlying mechanisms can affect the clarity of self-concept.

The idea of 'self-concept clarity' is related to the clearness, confidence, consistency, and stability of the individual's self-concept. It is reasonable to infer that the activated, inconsistently working self-concepts may affect the structure of the self-concept. For example, from a multi-conflict values coexistence perspective, activating private self-consciousness and presenting personal normative information may make multiple goals/values salient and make one aware of the conflicting values or inconsistent beliefs. This could lead to a sense of discomfort or even confusion when deciding which goal to pursue. According to the characteristics of the values, these conflicts must be resolved by prioritising the individual's values. As a result, the consumer's choice is adjusted to match one salient value (a set of compatible subset values), which is relatively important as a standard or principle for self-evaluation to guide behaviour in a specific situation. The resulting feeling of discomfort or self-concept confusion (e.g., mulling over or doubting the self-concept, so lowering the confidence of the self-concept), due to the awareness of coexisting conflicting values, can reduce the effect of personal normative information to elicit a clear green preference and/or a greener choice.

However, consumers who are aware of inconsistent self-concepts do not necessarily mean that their clarity level of self-concept will be reduced. This is because a high intensity of conflicts and threat to the self-concept may be required before clarity is affected. In other words, the feeling of discomfort and experiencing confusion about one's self-concept may not be strong enough to reduce the clarity level of one's self-concept, but it would trigger the self-consistency mechanism (Fransen et al., 2011). The self-consistency effect

of maintaining the consumer's previous self-identity (Markus and Wurf, 1987) may help ensure the stability and consistency of the self-concept, and thus increase the level of self-concept clarity. According to Savary and Dhar (2020), consumers often keep unused subscriptions to avoid identity changes that could threaten the stability of their self-concept. This result implies that consumers are more likely to avoid the change to reinforce the stability and consistency of their self-concept. It seems true, as people are more likely to resist change and avoid experiencing stress that could be caused by lowering their self-concept clarity.

## How self-concept clarity can be influenced, when activating public self-consciousness

It has been suggested that when public self-consciousness is activated, the effect of social normative information can be reduced, and the reduced effect of normative information on greener choices could be explained by the underlying mechanisms when self-evaluation is initiated. These underlying mechanisms may relate to the level of clarity of self-concept.

From a coexistent multi-conflict values perspective, the different values would form different thoughts regarding the image of the self, including the self-image we might be or expect to be. Oyserman (2004, p. 5) pointed out that '*the images of the self we might be, expect to be, or are afraid we might be, motivate the current behaviour and colour understanding'.* Paying attention to the public self (ought social self vs. actual social self) may reveal the salient coexisting inconsistent beliefs about self-image. For example, a hotel guest's conflicting self-images derived from different values, such as green vs. materialistic related to reusing hotel towels, can cause her to experience a feeling of discomfort in such intra-negotiation to determine which self-image acts as guidance to lead the current choice. During the trade-off or intra-negotiation process, this feeling of discomfort would be more likely to reduce the effectiveness of the social normative information on the greener choice when compared to consumers whose self-consciousness is not activated. However, this feeling of discomfort may not be strong enough to reduce the clarity level of self-concept; instead, it would trigger the self-consistency mechanism to regulate the consumer's thoughts to ease decision making. It does not mean that the hotel guest will just follow one type of self-image; the decision is based on the consideration of her two types of self-images. As mentioned earlier, the activated self-consistency mechanism reinforces the consistency, confidence, or temporal

stability of the previous self-image (i.e., self-image as part of self-concept) by maintaining the consumer's previous self-identity. As a result, the clarity of the self-concept increases during the self-evaluation processes that are triggered by the self-consistency effect.

This section has discussed the potential effect on the role of self-concept clarity, when activating norms and self-consciousness together. It should be noted that, based on Section 3.6.2, self-concept clarity is one of the various reasons for explaining the reduced effect of normative information when self-consciousness is activated. If there is no causal relationship between the reduced normative effect and self-concept clarity that can be found, examining the role of self-concept clarity is still important for this research. It is significant to understand whether the adopted behavioural intervention to promote greener choices affects one's stress level and, thus, life satisfaction as an effect of self-concept clarity.

## 3.7 Summary of the Chapter

This chapter reviewed the philosophical underpinnings of consumer decision-making and discussed their implications for the green consumption study. It also reviewed different approaches to promoting greener choices and identified an intervention approach. To understand what the underlying mechanism is to intervene in greener choice, this chapter reviewed the key frameworks of green consumption and identified the focus on activating personal and social norms to promote greener choice. To understand how consumer intrapersonal activities would affect the normative intervention, this chapter reviewed self-related concepts and discussed the moderating impact of activating self-consciousness when encountering a normative intervention. To respond to the need to find out how to encourage green consumption effectively with concerns about reducing adverse effects, this chapter explored how the potential interaction between normative intervention and self-consciousness can influence the level of self-concept clarity.

In brief, through the above literature review, this chapter identified the general research aim: to understand the impact of normative mechanisms as informational interventions on encouraging consumers to make greener choices and how self-consciousness affects these interventional impacts on promoting greener choices.

This study is based on cognitive behaviourism but adds a humanistic perspective by incorporating the influential role of the self in decision-making. Through the lenses of

decision-making and behavioural intervention, this study views normative intervention as using external contextual factors as informational input to facilitate internal decision-making. According to the review of the fundamental frameworks of green consumption in Section 3.4, the way self-consciousness interacts with the contextual factor (i.e., intervention) is overlooked. Therefore, consumers' decisions, would result from an evaluation based on their existing inner beliefs and external informational inputs. As informational interventions to promote greener choices, this chapter identified two groups of norm activation. The next chapter will propose the conceptual framework for examining how consumers respond to the activation effect of personal and social norms on promoting greener choices.

Chapter 3: Promoting Green Consumption

# 4 THE CONCEPTUAL FRAMEWORK

## 4.1 Introduction

This chapter aims to construct a specific framework as a guide for conducting the research and achieving the research aim. This framework provides an approach to understanding the activation of personal and social norms to encourage green consumption. This chapter identifies the moderating factor that influences how consumers respond differently to personal and social normative information, as well as the mediating factor that reveals the underlying mechanism of how they respond to personal and social normative information. Through discussion, this chapter develops hypotheses regarding the relationships among these terms, or variables.

The structure of this chapter starts with conceptualisation, then follows with the illustration of the conceptual framework, and finishes with two specific activation routes for encouraging green consumption (activation of personal norms and activation of social norms). The conceptual framework built a boundary for conducting this research that will inform the design of the research methodology in the next chapter.

## 4.2 Conceptual Framework

This section illustrates a specific framework in Figure 4.1 for 'activating perceived norms for promoting greener choice'. This framework is for achieving the general aim of this research: to understand the impact of normative mechanisms as informational interventions on encouraging consumers to make greener choices and how the self affects these interventional impacts on promoting greener choices.

The establishment of a conceptual framework involves identifying causal factors and outcomes. This conceptual framework identifies greener choice as the dependent variable (i.e., the choice is dependent on the influence of other factors), personal and social norms (descriptive and injunctive norms) as independent variables (i.e., the cause of the effect on greener choice), green preference as a mediator, and private and public self-consciousness as moderators. This framework describes two activation routes for promoting greener choices.

**Figure 4.1 The model of activating perceived norms for promoting greener choice**
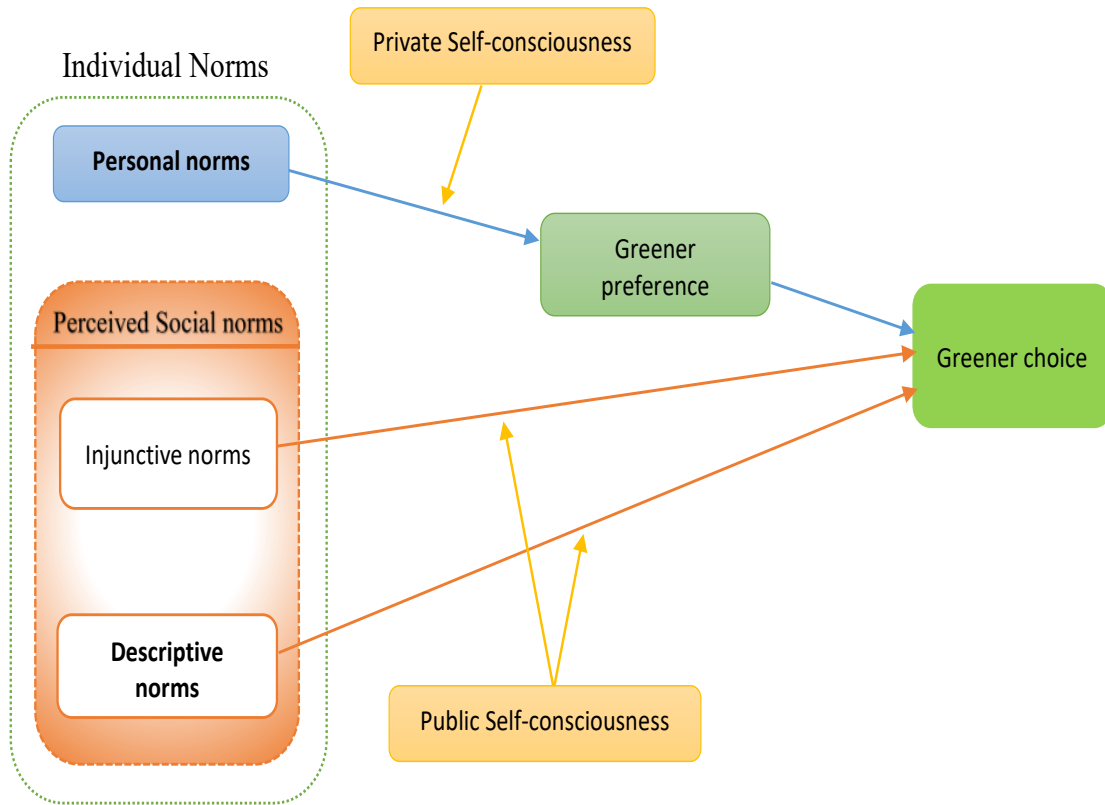


The first route is through activating personal norms to elicit the overall green preference and thus make greener choices. The framework determines the moderating role of private self-consciousness to understand how it would influence the strength of the influence of personal norms on greener choice, and to see whether the effect of personal norms on greener choice, through green preference, is conditional on the level (activation or not) of private self-consciousness.

The second route is through activating social norms (descriptive and injunctive norms, respectively) to promote greener choices. The framework determines the moderating role of public self-consciousness to understand how it would influence the strength of the influence of social norms on greener choices, and to see whether the effect of social norms on greener choices is conditional on the level (activation or not) of public self-consciousness. According to the discussion of hypotheses, the moderator should have a negative effect on the effectiveness of the normative information. If this is the case, this research will further test the role of self-concept clarity to explore the underlying mechanism of the interaction effect between activated norms and activated self-

consciousness (the role of self-concept clarity in two activating routes is illustrated in Figure 4.3 and Figure 4.5).

The rest of the sections in this chapter will discuss these two routes in detail. Section 4.2.1 will present the route related to personal norms. Specifically, it will discuss i) the relationships among personal norms, green preference, and choice; ii) the moderating influence of private self-consciousness on the activation of personal norms; and iii) the role of self-concept clarity in this relation between personal norms and green preference and choice. Then, Section 4.2.2 will present the route relating to social norms. Particularly, it will discuss i) the relationships among social norms, green preference, and choice; ii) the influence of public self-consciousness; and iii) the role of self-concept clarity in this relation between social norms and greener choice.

## 4.2.1 Conceptualising the Activation Route of Personal Norms for Promoting Greener Choice

There are two activation routes (activating personal norms and social norms) for encouraging greener choices, which can be inferred from existing theories. The first route was developed following a review of the theories of NAM and VBN to understand green consumption. The second route was developed following a review of the theories of TPB/TRA and MGDB's theories encompassing the effect of social influences (i.e., social norms) in driving green consumption. This section seeks to develop hypotheses relating to the activation of personal norms to promote greener choices, together with the theoretical justification. These hypotheses are summarised in Table 4.1, and more detailed justifications can be found in the remaining section.

**Table 4.1 Hypotheses related to activating personal norms**

|    | Hypothesis | Theoretical justification |
|----|------------|---------------------------|
| H1 | The impact of personal normative information on greener choice is mediated by consumers' overall green preferences. | • There are established positive relationships between:<br>○ personal norms and green consumption/greener choice (the theories of NAM and VBN)<br>○ preference and choice (Bicchieri, 2010; Olson, 2013)<br>○ values and preference (Riza Casidy and Tsarenko, 2009; Warren et al., 2011)<br>○ values and norms (the theory of VBN) |

| | | |
|---|---|---|
| | | • As suggested by Bicchieri et al. (2014), norms play a crucial role in an individual's choice by shaping individual preferences. |
| **H2** | The impact of personal normative information on greener choice through green preference is negatively moderated by private self-consciousness. | • According to cognitive behaviourism perspective (Bray, 2008), it is inferred that the impact of personal normative information on greener choice can be influenced by intrapersonal cognition.<br>• The moderating role of private self-awareness in consumer choice making has been supported in previous literature (Goukens et al., 2009).<br>• Private self-consciousness would elicit egocentric goals (Mor and Winquist, 2002), and egoistic value has negative impact on green consumption (De Groot and Steg (2007); Steg and De Groot (2019); and Stern (2000)).<br>• According to self-discrepancy theory, when activating private self-consciousness, activated working self-concepts are more likely to be inconsistent. Based on Fransen et al (2011), when activating self-knowledge that is unfit with the presented message/intervention, the influence of the message will be reduced. |
| **H3** | The level of self-concept clarity increases when both private self-consciousness and personal norms are activated. | • According to self-discrepancy theory, activated working self-concepts (when both private self-consciousness and personal norms are activated) are more likely to be inconsistent, and when consumers are aware of inconsistent values or self-concepts, they are likely to experience a feeling of discomfort.<br>• The feeling of discomfort would trigger the self-consistency mechanism to regulate the thoughts of the consumer to ease decision-making (Oyserman, 2004).<br>• The decision to follow a consistent self in a trade-off situation will reinforce a self-concept as well as its stability (i.e., increase SCC).<br>• According to Savary and Dhar (2020), consumers should be more likely to avoid self-concept change and avoid experiencing stress that could be caused by lowering their self-concept clarity. |
| **H4** | This change in self-concept clarity reduces the impact of personal normative information on greener choice through green preference, when private self-consciousness is activated. | • Based on H2, the reduced effect of the normative information on greener choices through green preference could be explained by the underlying mechanisms when self-evaluation is initiated. These underlying mechanisms can affect the clarity of self-concept.<br>• The resulting feeling of discomfort can reduce the effect of personal normative information to elicit a clear green preference and/or a greener choice.<br>• The self-consistency mechanism can adjust the decision when self-consciousness is activated, which would influence the formulation of green preference and then the greener choice. |

**Personal norms, green preference and greener choice**

To encourage greener choices, nudge intervention approach was adopted due to its effectiveness in changing behaviours (e.g., Trujillo et al. (2021) and see Cadario and Chandon (2020) for a review). The focus of the intervention was identified through activating norms, based on the discussion of key green consumption frameworks in Section 3.4, and justified in Section 3.5.1.

Numerous studies have delved into the correlational examinations, providing evidence of the positive relationships between personal norms and green consumption (Han, 2015; Han et al., 2017; Han and Hyun, 2018; Kiatkawsin and Han, 2017; Manosuthi et al., 2020; Shin et al., 2018). These studies are grounded in two fundamental theories of VBN and NAM which support the significant role of personal norms in motivating green consumption behaviour. However, the question whether the mechanism of personal norms (i.e., activating a sense of obligation to make greener choices) can be used for as an interventional tool to effectively change consumer behaviour remains unanswered. Two exceptional works were found that focused the activation effect of personal norms on changes in green consumption rather than the correlation between them, but one lacked a clear theoretical foundation for its activation (Groot et al., 2013), and the other focused on different aspects of personal norms and investigated its impact on emotional response (Trujillo et al., 2021). Drawing from the theoretical understanding from NAM provided for activating and manipulating consumers' personal norms (i.e., the sense of obligation to make a greener choice) by activating their awareness of consequence and ascription of responsibility (Schwartz, 1977), this allows this thesis to test the impact of personal normative information on promoting greener choice with a clear theoretical foundation for its activation.

Surprisingly, none of the existing studies have explored the mediating role of green preference between personal norms and greener choice, especially given the well-established direct, positive relationship between preference and choice (Bicchieri, 2010; Olson, 2013), as well as between personal norm and choice (based on theories of NAM and VBN). Moreover, building on the conceptualisation of green preference in Section 2.3.3, the relationship between values and preference (Riza Casidy and Tsarenko, 2009; Warren et al., 2011), and between values and norms (as described in the theory of VBN), both norm and preference are inherently driven by values. Norms, as suggested by Bicchieri et al. (2014), play a crucial role in an individual's choice by shaping individual

preferences. It can be inferred that personal norms are likely activated in response to stimuli that prioritise green values, and green preference may also be activated because of green value prioritisation. Therefore, the activation of personal norms could lead to an increase in green preference and greener choices. Understanding whether activating personal norms could contribute to the increase of one's overall green preference would reveal new insights about normative activation mechanism. It would enhance the understanding of the impact of activating personal norms on greener choices, potentially indicating a more prolonged effect driven by personal normative information due to the characteristic nature of preference.

Based on the in-depth discussion in Section 3.5.4 Explore the Impact of Norms Activation on Green Preference and Greener Choice, it has been suggested that the activation effect of personal norms on greener choice may be through overall green preference. Moreover, according to the multidimensional and multifaceted nature of the self-concept and the temporal accessibility of a part of the complete content of the self-concept at particular times (Markus and Wurf, 1987), manipulating personal norms may not only activate a knowledge component in a substructure of the self-concept (i.e., personal normative beliefs that represent an aspect of 'ought' self), but also possibly make the peripheral components salient in the upper-level structure. For example, an overall green preference (underlying preference), constructed as a product of past experience and internal values and beliefs, could be elicited to respond to the personal normative information, and then the reinforced or reaffirmed green preference (expressed preference) will guide the greener choice. Therefore, it is hypothesised that:

**H1:** The impact of personal normative information on greener choice is mediated by consumers' overall green preferences.

## Personal norms and private self-consciousness

Drawing from a cognitive behaviourism perspective (Bray, 2008), consumers' behaviour is not only entirely determined by the external stimuli, such as nudge interventions, but is also influenced by intrapersonal cognition. This suggests that the impact of normative information on consumers' greener choices may vary depending on their intrapersonal activities. In other words, consumers' intrapersonal activities can affect their response to the normative activation. Past research has highlighted the importance of investigating self-focus in decision making related to green consumption (Bamberg and Schulte, 2019),

and has identified the moderating impact of self-related concepts on green consumption behaviour such as self-construal as shown by White and Simpson (2013). However, the influence of the activation effect of personal norms on green preference and greener choice, whether can be affected by one's private self-consciousness has not be investigated. This gap in research is noteworthy, particularly given that the moderating role of self-consciousness in consumer decision making has been recognised in marketing research (Goukens et al., 2009; Lo et al., 2019). The detailed justification of the choice on investigating self-consciousness and its potential influence on greener choice can be found on the discussion in Sections 3.6.1 Introducing Self-Related Concepts and Section 3.6.2 Explore the Moderating Impact of Activating Self-Consciousness (Private and Public).

Based on the understanding of 'working self-concept' (Markus and Wurf, 1987), and Higgins' (1987) multiple selves, the 'ought' self can be triggered by normative information. According to the concept of self-consciousness (Goukens et al., 2009; Lo et al., 2019), when self-consciousness is activated, it may lead to the activation of the individual's underlying actual self with egocentric value. Self-consciousness can activate an internal 'criterion' for consumers. This implies that the decision can be inconsistent when in a trade-off situation with multiple salient/working selves and when only one is activated, depending on which standard is adopted. It can explain why consumers can behave differently, as the different self-conceptions become salient in different situations (Jamal and Goode, 2001). In other words, whether self-consciousness is activated or not can influence the impact of normative information on consumers' greener choices.

According to Duval and Wicklund's (1972) self-awareness theory and the evaluative components of the self-concept (Campbell et al., 1996), the underlying *introspection* process (activated by private self-consciousness) is that one acts as an evaluator to assess the self's ongoing behaviours or personal attributes against internalised goals/values. The outcome of the self-evaluation could potentially influence the extent of a normative message's impact and affect the elicitation of the overall green preference. Several underlying mechanisms can be triggered by the evaluation outcomes when both private self-consciousness and personal norms are activated, which have been discussed in Section 3.6.2. One of the explanations is that private self-consciousness would elicit egocentric goals under value trade-off, which can inhibit the elicitation of green preference and regulates the behaviour. This explanation is suggested based on a broad

ego involvement perspective, and draws views from Mor and Winquist (2002) on activating private self-consciousness, and the identified negative impact of egoistic value on green consumption as highlighted by De Groot and Steg (2007); Steg and De Groot (2019); and Stern (2000).

Different perspectives on underlying processes, including those deriving from Fransen et al.'s (2011) and Higgins's (1987) self-discrepancy theory, all suggest that triggering private self-consciousness would inhibit the accessibility of the activating routes to elicit green preference and could more likely reduce the effectiveness of personal normative information. It should be noted that the following hypothesis is conditional on the support of H1. It is thus hypothesised (i.e., a moderated mediation model; see Figure 4.2) that:

**H2:** The impact of personal normative information on greener choice through green preference is negatively moderated by private self-consciousness.

**Figure 4.2 The model of activating personal norms for promoting greener choice**
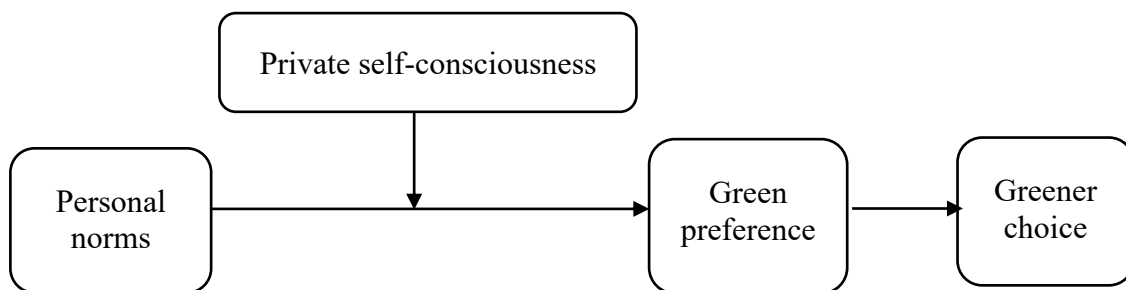


## The role of self-concept clarity

The discussion below applies to a situation when consumers' working self-concept is activated by normative information and, in the meantime, their self-consciousness is activated. Based on Section 3.6.3, the underlying mechanisms of self-evaluation under the interaction between private self-consciousness and personal norms are related to a series of self-related concepts and may influence the level of self-concept clarity directly and indirectly.

According to Higgins's (1987) self-discrepancy theory, activated working self-concepts (different selves: actual self, ideal self, and ought self) are more likely to be inconsistent with each other. When consumers are aware of inconsistent values or self-concepts, as suggested by Markus and Wurf (1987), they are likely to experience a feeling of discomfort. However, the feeling of discomfort may not be strong enough to reduce the clarity level of self-concept, but instead would trigger the self-consistency mechanism to regulate the thoughts of the consumer to ease decision-making. According to Duval and Wicklund's (1972) self-awareness theory, the internal 'criterion' or standard can be malleable and flexible, and can be changed to follow self-consistency (Silvia and Duval, 2001). The decision to follow a consistent self (seen as a repeated decision) in a trade-off situation will reinforce a self-concept as well as its stability (i.e., increase SCC). In this case, self-concept clarity will increase as a result of the effect of self-consistency during the underlying self-evaluation processes. The self-consistency mechanism can adjust the decision when self-consciousness is activated, which would influence the formulation of green preference and then the greener choice that has been discussed in Section 3.6.2. The repeated decision to follow the consistent self reinforces the clarity of the self-concept, which could signal that they know who they are. According to Savary and Dhar (2020), consumers should be more likely to avoid self-concept change and avoid experiencing stress that could be caused by lowering their self-concept clarity.

In the case when both personal norms and private self-consciousness are activated, self-concept clarity seems to be affected only by the need to verify and confirm the self-concept in a situation where one is aware of inconsistent values or self-concepts. It should be noted that the following hypotheses are made conditional on the presence of H2. It means that the following hypotheses will be examined only when H2 is valid. Since these hypotheses are looking for support from the underlying mechanism of the presumed effect of H2, it is thus hypothesised that:

> **H3:** The level of self-concept clarity increases when both private self-consciousness and personal norms are activated.

> **H4:** This change in self-concept clarity reduces the impact of personal normative information on greener choice through green preference, when private self-consciousness is activated.

(H4 can be tested using a moderated serial mediation model; see Figure 4.3). This is to test whether the moderated indirect effect of personal norms on greener choices by private self-consciousness is mediated first by the self-concept clarity and then by the green preference.

**Figure 4.3 The explanation model of the reduced effect of personal normative information on greener choice when private self-consciousness is activated**
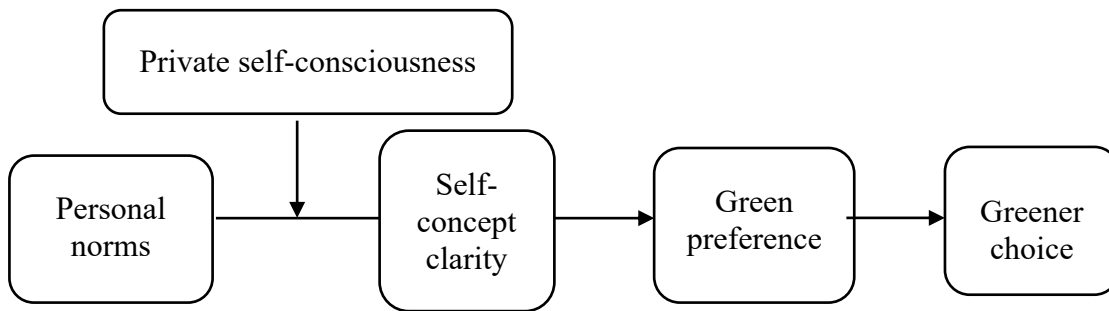


Based on the hypotheses (H1-H4), it is clear that self-concept clarity, green preference, and greener choice are assumed as outcome variables that are dependent on the activation of personal norms and private self-consciousness. As discussed in Section 3.6.3, understanding the impact on SCC through the input of personal normative information and the activation of private self-consciousness is essential to understanding how it might affect consumers' subjective well-being.

This section conceptualises the activation route of personal norms for promoting greener choices. It provides theoretical understandings of the underlying mechanism relating to the activation of personal norms and private self-consciousness. In addition, it suggests that activating private self-consciousness can reduce the impact of personal normative intervention. The role of self-concept clarity may explain the underlying process for the reduced effectiveness (the hypothetical effect) of personal normative information, when private self-consciousness is activated. Hence, this test should be conditional on the support of the preceding hypotheses (i.e., H1-H2).

## 4.2.2 Conceptualising the Activation Route of Social Norms for Promoting Greener Choice

This section seeks to develop hypotheses relating to the activation of social norms to promote greener choices, together with the theoretical justification. These hypotheses are summarised in Table 4.2, and more detailed justifications can be found in the remaining section.

**Table 4.2 Hypotheses related to activating social norms**

|  | **Hypothesis** | **Theoretical justification** |
|---|---|---|
| **H5** | The descriptive normative information positively impacts on greener choice. | • According to the Focus Theory of Normative Conduct, activating descriptive normative information has a positive impact on green consumption (Goldstein et al, 2008, Schultz et al, 2008b, Melnyk et al, 2011, Kavvouris et al, 2019, Gössling et al, 2019). |
| **H6** | The injunctive normative information positively impacts on greener choice. | • According to the Focus Theory of Normative Conduct, activating injunctive normative information has a positive impact on green consumption (Schultz et al, 2008b, Melnyk et al 2011, Kavvouris et al, 2019, White and Simpson, 2013, Voisin et al, 2020). |
| **H7** | The impact of descriptive normative information on greener choice is negatively moderated by public self-consciousness. | • The moderating role of public self-awareness in consumer choice making has been identified (Lo et al., 2019).<br>• Following the characteristic of self-consciousness, the activation of public self-consciousness would trigger self-evaluation. The underlying mechanism of evaluation would in turn affect the extent of the impact of normative message.<br>• According to self-discrepancy theory, when activating public self-consciousness, activated self-images are more likely to be inconsistent. Based on Fransen et al.'s (2011) finding that when activating self-knowledge that is unfit with the presented message/intervention, the influence of message will be reduced.<br>• According to the concept of self-consciousness, activating public self-consciousness is likely to increase personal involvement. Göckeritz et al. (2010) found that the effect of descriptive normative beliefs was weakened among individuals with high levels of personal involvement. |

| | | |
|---|---|---|
| **H8** | The impact of injunctive normative information on greener choice is negatively moderated by public self-consciousness. | • The moderating role of public self-awareness in consumer choice making has been supported in previous literature (Lo et al., 2019). <br> • According to self-discrepancy theory, when activating public self-consciousness, activated working self-images are more likely to be inconsistent. Based on Fransen et al.'s (2011) finding that when activating self-knowledge that is unfit with the presented message/intervention, the influence of message will be reduced. <br> • According to the concept of self-consciousness, activating one's public self-consciousness is likely to result in an increase in cognitive deliberation. Melnyk et al (2011) found that cognitive deliberation decreases the effect of injunctive norms. <br> • Lo et al. (2019) found that injunctive norms have a stronger effect on consumers' willingness to recommend second-hand clothes for ethical benefit when public self-consciousness is lower. |
| **H9&H10** | **H9a:** The level of self-concept clarity increases when both public self-consciousness and descriptive norms are activated. <br><br> **H9b:** This change in self-concept clarity reduces the impact of descriptive normative information on greener choices when public self-consciousness is activated. <br><br> **H10a:** The level of self-concept clarity increases when both public self-consciousness and injunctive norms are activated. <br><br> **H10b:** This change in self-concept clarity reduces the impact of injunctive normative information on greener choices when public self-consciousness is activated. | • Based on H7&H8, the reduced effect of the social normative information on greener choices could be explained by the underlying mechanisms when self-evaluation is initiated. These underlying mechanisms can affect the clarity of self-concept. <br> • Self-evaluation may result in the awareness of conflicting or inconsistent self-images, which may affect self-concept clarity. <br> • According to self-discrepancy theory, when consumers are aware of inconsistent self-images, they are likely to experience a feeling of discomfort. <br> • The feeling of discomfort would trigger the self-consistency mechanism to regulate the thoughts of the consumer to ease decision-making (Oyserman, 2004). <br> • The decision to follow a consistent self in a trade-off situation will reinforce a self-image as well as its stability (i.e., increase SCC). <br> • According to Savary and Dhar (2020), consumers should be more likely to avoid self-concept change and avoid experiencing stress that could be caused by lowering their self-concept clarity. |

**Social norms and greener choice**

According to the support from the theories of TPB, TRA, MGDB, there is a positive relationship between descriptive norms and green consumption, and between injunctive norms and green consumption. Based on the Focus Theory of Normative Conduct approach to activate social norms through written social normative information (Cialdini et al., 1991), well-documented evidence supports the activating impact of descriptive normative information on green consumption, as well as the activating impact of injunctive normative information on green consumption, as highlighted in example papers listed in **Table 3.2** and **Table 3.3**, respectively.

Based on the discussion in Section 3.5.4, it has been suggested that activating social norms (descriptive and injunctive norms) could positively impact greener choice, and the activation effect of social norms on greener choice may not be through overall green preference. Specifically, the underlying mechanisms of descriptive norms seem to suggest that descriptive norms influence choice without much conscious processing or personal involvement (Göckeritz et al., 2010). Hence, it does not seem that activating descriptive norms elicits personal green preference, which should be the result of cognitive processes involving personal involvement. However, it does not mean that activating descriptive norms cannot have a direct effect on greener choices. Likewise, the influence of injunctive norms on changing choices due to social expectations and social sanctions (gaining social reward or avoiding social punishment) seems unlikely to elicit one's personal green preference but can have a direct effect on greener choices.

In summary, activating social norms, both descriptive and injunctive norms, are less likely to elicit a green preference as a personal preference. This research will examine the single effectiveness of descriptive and injunctive norms and provide the rationale for following these norms to make a greener choice when operationalising these norms. It is thus hypothesised that:

> **H5**: The descriptive normative information positively impacts on greener choice.

> **H6**: The injunctive normative information positively impacts on greener choice.

**Social norms and public self-consciousness**

The social normative message had mixed success in changing behaviour (Schultz et al., 2007). It could be caused by undiscovered moderators, such as when social norms are

more or less effective (Melnyk et al., 2021). In other words, the effectiveness of the normative message is dependent on certain conditions.

Based on the discussion in Sections 3.6.1 and 3.6.2, consumers' intrapersonal activities can affect their response to social normative activation. Specifically, the influence of the activation effect of social norms on greener choices, can be affected by activating public self-consciousness. This investigation is crucial, especially given that public self-consciousness' moderating role in consumer decision making has been supported in previous literature (Lo et al., 2019). When the attention is based on the behaviour, speech, physical appearance, and image aspects of the self, the public dimension of self-consciousness should be activated (Fenigstein et al., 1975). Activating public self-consciousness has been suggested to have a negative influence on the effect of social normative information.

As mentioned earlier, self-evaluation processes would be initiated automatically when public self-consciousness is activated to assess the self's ongoing behaviours against its self-image. There are several theoretical explanations of how the underlying mechanism of self-evaluation can be triggered by attending to the public aspects of oneself. These evaluative outcomes have been suggested to potentially influence the extent of the impact of the social normative message on greener choices. For example, when consumers' public self-consciousness is activated, as long as they think of any potential negative public self-image if they follow this recommendation behaviour, the greener decision may be adjusted or balanced compared to when public self-consciousness is not activated (they are not likely to experience a deep self-evaluation). Consumers whose public self-consciousness is not activated should be more likely to follow the activated norms (descriptive and injunctive norms) or the informational intervention.

Moreover, according to Fransen et al (2011), the logic presented earlier applies again here, that is, how strong the impact of presented social normative information on behaviour is depends on how strongly it fits with one's activated self-knowledge (e.g., the increased accessible thoughts regarding public image). The unfit between them would reduce the effect of social normative information on greener choices. Additionally , Göckeritz et al. (2010) observed a reduced effect of descriptive normative beliefs among individuals with high levels of personal involvement. Similarly, Melnyk et al (2011) found that the effect of injunctive norms decreased with cognitive deliberation. These two

studies also provide support for assuming a reduced moderation effect of public self-consciousness, as activating one's public self-consciousness is expected to increase cognitive deliberation and personal involvement. Furthermore, Lo et al. (2019) found that injunctive norms have a stronger effect when public self-consciousness is lower.

In conclusion, triggering public self-consciousness would be more likely to reduce the effectiveness of social normative information on greener choices. It should be noted that the following hypothesis is made conditional on the support of H5 and H6. It is thus hypothesised (i.e., a moderated mediation model; see Figure 4.4) that:

>**H7:** The impact of descriptive normative information on greener choice is negatively moderated by public self-consciousness.

>**H8:** The impact of injunctive normative information on greener choice is negatively moderated by public self-consciousness.

**Figure 4.4 The model of activating social norms for promoting greener choice**
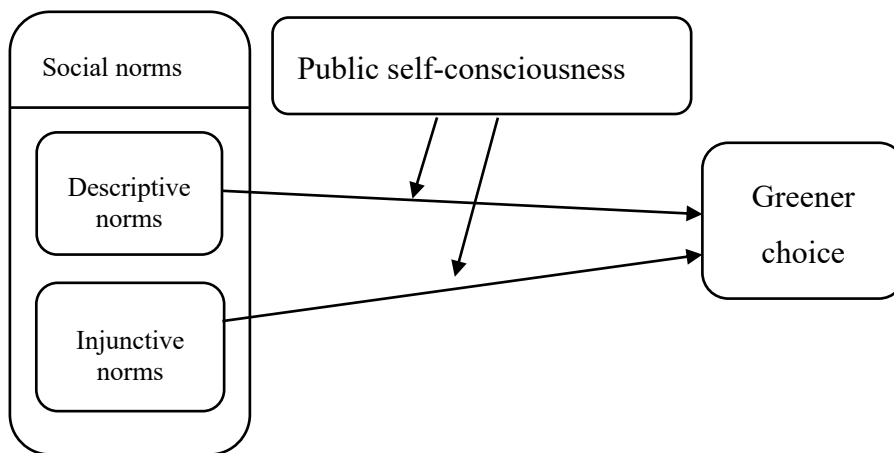


## The role of self-concept clarity

The discussion below applies to a situation when consumers' working self-image is activated by social normative information and, in the meantime, their public self-consciousness is activated. Based on Section 3.6.3, the underlying mechanisms of self-evaluation under the interaction between public self-consciousness and social norms are related to a series of self-related concepts and may be related to the effect on the level of self-concept clarity.

Previous discussions pointed out that when consumers are aware of inconsistent values or self-images, as suggested by Markus and Wurf (1987), they experience a feeling of discomfort. This feeling of discomfort during the trade-off or intra-negotiation process may not be strong enough to reduce the level of clarity in the self-concept. This self-consistency logic presented earlier applies again here, that is, experiencing a sense of discomfort due to the awareness of inconsistent self-images would trigger the self-consistency mechanism to regulate the consumer's thoughts to ease decision-making. According to Duval and Wicklund's (1972) self-awareness theory, the internal 'criterion' or standard can be malleable and flexible, and can be changed to follow self-consistency (Silvia and Duval, 2001). The decision to follow a consistent self (seen as a repeated decision) in a trade-off situation will reinforce a self-concept as well as its stability (i.e., increase SCC). Therefore, the clarity of the self-concept increases during the self-evaluation process. According to Savary and Dhar (2020), consumers should be more likely to avoid self-concept change and avoid experiencing stress that could be caused by lowering their self-concept clarity.

Self-concept clarity seems to be affected only by activating social norms and public self-consciousness together. The choice to examine the role of self-concept clarity is important, as it is significant to understand whether activating social norms and public self-consciousness affects one's life satisfaction, which can be reflected by its effect on self-concept clarity. It should be noted that the following hypotheses are made conditional on the support of H7 and H8. It is thus hypothesised that:

> **H9a:** The level of self-concept clarity increases when both public self-consciousness and descriptive norms are activated.
>
> **H9b:** This change in self-concept clarity reduces the impact of descriptive normative information on greener choices when public self-consciousness is activated.
>
> **H10a:** The level of self-concept clarity increases when both public self-consciousness and injunctive norms are activated.
>
> **H10b:** This change in self-concept clarity reduces the impact of injunctive normative information on greener choices when public self-consciousness is activated.

(H9 and H10 can be tested using a moderated mediation model; see Figure 4.5). This is to test whether the moderated effect of social norms on greener choices by public self-consciousness is mediated by self-concept clarity.

**Figure 4.5 The explanation model of the reduced effect of social normative information on greener choice, when public self-consciousness is activated**
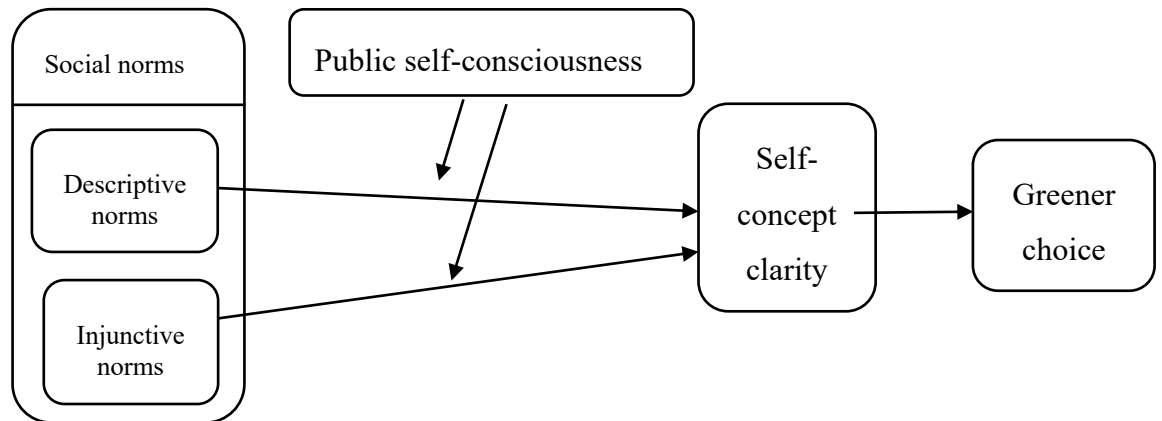


This section conceptualises the activation route of social norms for promoting greener choices. It provides a theoretical understanding of the underlying mechanism related to social norm activation and public self-consciousness. It suggests that activation of public self-consciousness can reduce the impact of social normative interventions (i.e., descriptive and injunctive norms). The role of self-concept clarity may explain the underlying process for the reduced effectiveness (the hypothetical effect) of social normative information, when public self-consciousness is activated. Hence, this test should be conditional on the support of previous hypotheses (i.e., H5–H8).

## 4.3 Summary of the Chapter

In this chapter, the conceptual framework of this thesis was presented as a guide for conducting the research. This framework, the model of activating perceived norms for promoting greener choices, conceptualises two norm activation routes for promoting greener choices by leveraging the effects of personal norms and social norms. The framework describes a moderating effect regarding how self-consciousness can affect the influence of personal and social normative information, and a mediating effect regarding how normative information, through the effect of green preference, impacts greener choices. The hypotheses regarding the relationships among these terms or variables have

been presented and will be examined through three empirical studies. The next chapter will introduce the methodology used in this thesis.

# 5 METHODOLOGY

## 5.1 Introduction

The previous chapter identified a specific framework for encouraging green consumption through activation of perceived norms. To test this framework, in this chapter three experimental studies are proposed to examine its associated hypotheses. The purpose of this chapter is to justify the methodology deployed in this research, to explain a series of decisions related to the research design, and to apply these to all three experiments. This chapter introduces the philosophical underpinning of the thesis, identifying the research paradigm behind the research design, the choice of research approach, the method, and the choice of strategy to test the research ideas. This chapter provides a foundation for justifying how the data and information was collected to answer the research objectives, informing the study's outcomes and conclusions.

This chapter starts by restating the research aim and objectives, going on to discuss the research philosophy. An overview of the research design follows, as well as justification of the adoption of the experimental method employed. This chapter discusses basic elements in the design of experiments and justifies a series of decisions made to ensure their validity, including that of the experiment setting. It then provides an overview of the three experimental studies and the data analysis method used. Finally, this chapter concludes with ethical considerations as to the implementation of the research.

## 5.2 Restatement of the Research Objectives & Implications for the Research Design

Existing theories provided a rich grounding for understanding how consumers could make green decisions, with those theories suggesting norms as key antecedents to green consumption. However, there is a knowledge gap relating to the effectiveness of green behaviour interventions, resulting from systematically focusing on the underlying mechanisms of both personal and social norms.

The aim of this thesis was to:

> **Investigate the impact of normative mechanisms as informational interventions on encouraging consumers to make greener choice and how**

**self-consciousness affects these interventional impacts related to promoting greener choice.**

This aim was designed to examine effective means (through activation of personal and social norms) of facilitating consumers making greener choices. To assess whether the activation of norms is effective, and how and when this works for promoting greener choices, it is important to conduct explanatory rather than exploratory research. Exploratory research is typically conducted to generate initial insights or deepen the understanding on a specific issue related to the research topic. But in this case, Chapter 3 has already discussed the antecedents of green consumption behaviour, which serves as an initial step before conducting explanatory research (Churchill Gilbert, 1995). Explanatory research, also known as causal research, aims to reveal causal relationships between variables 'if A then B' (Churchill Gilbert, 1995; Hart, 1998; Saunders et al., 2015) which shares a similar purpose of this research, wherein the researcher seeks to establish 'if activating consumer norms then it would help consumers to make greener choices'. This research aim guided the researcher towards a causal exploration research design. Four specific research objectives were identified to achieve the research aim.

To understand the effectiveness of personal normative informational intervention in making greener choices, the first research objective was:

> **Objective 1**: *to investigate how and under what conditions personal normative information prompts consumers to make greener choice.*

To understand under what conditions social normative informational intervention might be more effective in promoting greener choices, the second research objective was:

> **Objective 2**: *to investigate how and under what conditions social normative information (i.e., descriptive normative information and injunctive normative information) prompts consumers to make greener choice.*

As discussed in Chapter 3, if the hypothesised negative moderation effect (i.e., that the activation of private/public self-consciousness reduces the impact of personal/social normative information on making greener choices) does occur, Study 3a and Study 3b would be carried out to test potential explanations for the above effect. Hence, the third

and fourth research objectives, which are conditional on the achievement of objectives 1 and 2, were:

**Objective 3***: to investigate what may reduce the impact of personal normative information on prompting consumers to make greener choice, when private self-consciousness is activated.*

**Objective 4***: to investigate what may reduce the impact of social normative information on prompting consumers to make greener choice, when public self-consciousness is activated.*

These objectives sought to determine a series of causal relationships between norms, self-consciousness, green preference and greener choice. This nature of the objectives demanded a more quantitatively based, causation focused research design, requiring a method that be able to collect and analyse data to verify the causal connections between variables. Each objective will be addressed with respect to its associated hypotheses. Hypothesis testing is linked with the deductive approach (Saunders et al., 2015). This requires an appropriate method to allow for empirical testing (Eisend and Kuss, 2019). The experiment as one of the methods of the deductive approach has been suggested as an effective way to test causality (Bryman, 2012) 'Experiments belong to quantitative research methods that measure and quantify relationships between variables and then test the hypotheses and statistical relationships' (Koschate-Fischer and Schandelmeier, 2014, p. 4). In other words, the choice of experimental research strategy herein was led by the choice of objectivist philosophical assumptions, the post-positivism paradigm, a deductive research approach, and the quantitative research method, justifications for which will be discussed throughout the remainder of this chapter.

## 5.3 Research Philosophy

### *5.3.1 Assumptions and Paradigms*

Research philosophy refers to 'a system of beliefs and assumptions about the development of knowledge' (Saunders et al., 2015, p. 124). These assumptions, including ontological and epistemological assumptions, heavily shape the understanding of the research question, the choice of methods, and interpretation of findings (Crotty, 1998; Saunders et al., 2015). Ontological assumptions are related to how to answer questions

about the nature of reality and what the world is like. Whilst epistemological assumptions are related to how to answer questions such as 'how can we know what we know (the ways of knowing) and what is considered acceptable knowledge (the nature of human knowledge)' (Saunders et al., 2015, p. 135). Aligning with this, 'a cluster of linked assumptions about the world which is shared by a community of scientists investigating that world' is referred to as a paradigm (Deshpande, 1983, p101), providing a framework for the systematised investigation of the world. Thomas Kuhn (1962, p10) introduced paradigms as 'accepted examples of actual scientific practice which provide models from which spring particular coherent traditions of scientific research'. However, the coexistence of multiple research philosophies and paradigms reveals disagreement regarding ways of seeing reality and of 'knowing' between researchers even in the same discipline. Hence, it is very important to identify which paradigm is being adopted for this research, as this guides the design of the procedure, provides a viable approach, and offers the criteria for members of a discipline to assess what kind of knowledge has been developed and to ensure its legitimacy (Crotty, 1998).

Different types of philosophies and paradigms are defined based on their different assumptions in a continuum with two opposite orientations in terms of ontology and epistemology. According to Guba (1990), a paradigm can be characterised by its ontological, epistemological and methodological assumptions. In other words, the different answers to ontological or epistemological questions, can be distinguished from objectivist to subjectivist dimensions (e.g., the reality is real or nominal; the knowledge is facts or opinions), lead to different types of paradigms. For example, objectivist assumptions could lead to positivism, whereas subjectivist ones lead to interpretivism. The choice of paradigms is a much debated topic in social science, mainly between the two extreme positions of positivism and interpretivism (Tadajewski, 2014). Positivism has often been dominant in marketing and consumer behaviour research, which is based on the objectivist orientation (Arndt, 1985; Hunt, 1991). Whereas interpretivism is seen as an alternative paradigm and is often used in qualitative research for exploratory purposes, which is based on the subjectivist orientation (Goulding, 1999). The key difference between positivism and interpretivism could be discussed in terms of four types of assumptions, the details of which are summarised in Table 5.1. Identifying a paradigm for this research requires consideration of the objectivist or subjectivist positions of ontological and epistemological assumptions.

**Table 5.1 The difference between positivism/post-positivism and interpretivism**

(based onCunliffe, 2011, p. 654-655; and Saunders et al., 2015, p. 145)

| Types of assumptions | Paradigms | |
| --- | --- | --- |
| | **Positivism (&Post-positivism)** | **Interpretivism** |
| Ontological assumptions of the nature of social reality | • Science discovers the true nature of reality<br>• Reality as concrete structures (Reality as process)<br>• Behavioural patterns, subject to rules and laws (Generalisable or context-dependent)<br>• Real, external, independent | • The nature of reality is created through people's experience, interaction, and interpretation<br>• Multiple realities and truth.<br>• Reality/realities is/are subjective, and socially constructed |
| Epistemology | • Replicable or sharable knowledge leading to the accumulation of knowledge<br>• Causal explanation and predictions as contribution | • No-replicable knowledge<br>• Knowledge is subjective and depends on context, viewpoint and value and changes constantly<br>• New understandings and worldviews as contribution<br>• Knowing-from-within and transitory understandings |
| Assumption of human nature | • Human are determined by their environment, socialised into existing social and institutional practices (human as an element in the process, as information processors) | • Human as intersubjective, relational, reflectively, and embodied and embedded in research |
| The place of the researcher in the research | • Researchers are detached, neutral and independent of what is researched | • Researchers are part of what is researched and interplay between research participants |
| | Objectivism--------------------------------------------------------------------Subjectivism | |

## Objectivism vs subjectivism

Ontological objectivism involves seeing the world as existing regardless of whether you are conscious of it or not, with this way of knowing being derived from human beings' sense systems. This was challenged by the idealists' assumption (subjectivist ontology) that the world exists only in the mind (Crotty, 1998), and that the human mind is the source and creator of all knowledge (subjectivist epistemology) rather humans solely acting as observers (Filstead, 1970). This implies the incommensurability within ontological assumptions and within epistemological assumptions, and means that adopting a stand on one side of the portrayed continuum means rejecting a set of assumptions (other paradigms) on the other side. Moreover, given the inextricable links

between ontological and epistemological assumptions and methodology (Grix, 2019), beliefs surrounding the nature of the research object (reality) would affect beliefs about the nature of knowledge, ways of knowing, and the choice of research methods (see Figure 5.1). In other words, the ontological position taken impacts upon subsequent stages of research (Grix, 2019).

**Figure 5.1 The interrelationship between building blocks of research *(Grix, 2019, p. 62)***
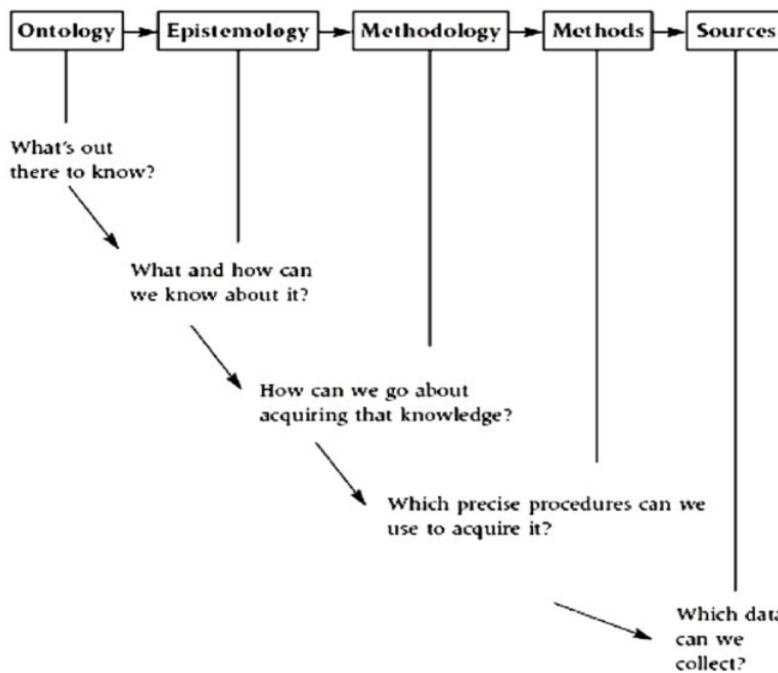


For example, in consumer behaviour research, consumers' psychological states such as 'beliefs', 'attitudes', 'norms', 'preferences' and 'intentions' (as research objects), are commonly studied. The ontological assumptions made determine whether these research objects are seen as existing independently of researchers' labelling of them or as embodied and embedded within researchers (the research objects arise from the perceptions and actions of researchers). If the psychological states of consumers are seen as real and measurable (usually in order to reify subjective states into categorised objects (Cunliffe, 2011)]), they could be used to explain, predict and solve problems (e.g., to promote greener choices) (Hunt, 1991). Because, when researchers believe that reality is truly real and exists (thus, the research object is real and exists), this affects how they view knowledge (the found knowledge of the reality). Therefore, knowledge, under objectivist assumptions, should be seen as facts rather than opinions (nature of

knowledge). Based on this nature of knowledge, it can be inferred that i) knowledge is discoverable rather than constructed or created by researchers based on how they interpret it; and ii) the identified knowledge can be used to explain an occurrence of events (e.g., a theory can be developed by developing 'a set of abstract concepts/constructs together with propositions about how those constructs are related to one another' (Manstead, 2008, p21)). The above assumption of the nature of knowledge (epistemology) could also inform how knowing is achieved, such as through theory validation.

The ontological and epistemological assumptions of this research seem closer to objectivism than to subjectivism, as the broad research question is to ascertain whether normative information could effectively change consumer behaviour. This is a hypotheses testing question and the expected research result reveals that norms are seen as causal explanations of behavioural change. Asking research questions in this way implies the researcher's ontological belief that normative information or norms (research object/reality) exist, and that this reality (object) could change human behaviour. This implies the researcher's epistemological assumption that the identified knowledge will be sharable and replicable, and that it is possible for the gained knowledge to be used to predict the occurrence of the event in the future (ThiéTart, 2001).

The objectivist view of ontology and epistemology points to the stance of this paradigm being positivism/post-positivism. Post-positivism is thinking which came after positivism. In general, the philosophical positions of both paradigms are close to objectivism, but some key differences should be noted, as will be discussed in Section 5.3.2. According to the above discussion of objectivist and subjectivist assumptions, the key difference between positivism and interpretivism, and the aim and objectives of this research, positivism/post-positivism is more suitable than interpretivism as the underpinning research paradigm for guiding this research design.

### 5.3.2 Post-Positivism vs Positivism

Post-positivism is an attenuated version of positivism (for the philosophical position of post-positivism see Figure 5.2), stating that their assumptions are more acceptable to social science researchers. Interpretivists, however, view positivism as directly linked to certainty, absolute objectivity, and Truth (Hunt, 1991). It is important to compare this view of positivism with today's positivists (i.e., post-positivists) in social science, as the

difference affects how knowledge and research design are formulated (ThiéTart, 2001). The key assumptions of post-positivism are discussed below:

**Figure 5.2 The position of post-positivism in the continuum with two sets of extremes**
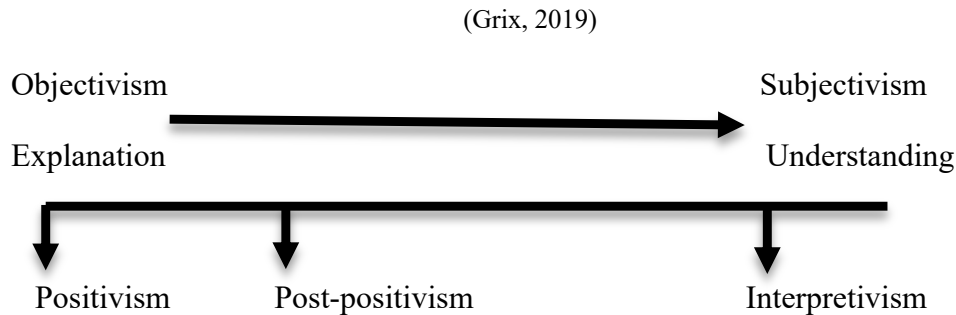
(Grix, 2019)



First, regarding the nature of reality and ways of knowing, post-positivists accept that not all research objects (reality) are 'concrete things' and thereby observable (Grix, 2019; ThiéTart, 2001). Some objects are unobservable directly by the five senses but can be inferred from (or indirectly observed from) their effect on the human body, mind and behaviour, such as the existence of 'viral', psychological states, cognition and so on (Hunt, 1991). Moreover, active manipulation (i.e., through experimentation), not solely based on passive observation of ongoing systems, has been seen as a new way of uncovering the world's regularities and possibilities. Post-positivists accept the possibility that knowing could result from inference and through observation after manipulation (Shadish et al., 2002). The study of abstract concepts often occurs through reified measurable items (which consist of a scale of the concept) (Cunliffe, 2011). Hence, the above assumptions render unobservable consumer states (e.g., personal norms, social norms, and green preferences) measurable, manipulable, and observable, through adoption of existing scales.

Second, regarding the certainty of the identified truth, Heisenberg's 'uncertainty principle' changes positivism into probabilistic prediction (Crotty, 1998) and acknowledges that the human being has limited ability to discover the truth as 'we don't know what we don't know' and no one actually knows what the real truth is. Thus, humans are unable to establish the truth as a certainty (ThiéTart, 2001). It is accepted that the identified 'knowledge' may be an approximate truth (before the truth is discovered). Therefore, it can be inferred that existing theories do not prove something (as we cannot know the real truth), but have different degrees of probability for prediction, and vice

versa, that is that 'we always infer but never prove a relationship' (Churchill Gilbert, 1995, p. 191). The identified knowledge is such that 'we can never be sure that it is true in every case and in all circumstances' (ThiéTart, 2001, p. 24). The uncertainty of the truth, hence, influences the view of the degree of generalisability (limited generalisation). The implication here is that the uncertain nature of the truth would affect how one views the research results. The hypothesis developed in this research could still be considered provably 'true' when supported by the collected data, but it should be accepted that it is valid under certain conditions, rather than within any space, time, and situation. This is arguably especially true in consumer behaviour and psychology research, which could easily be influenced by a variety of factors, including the choice of research area, implementation of data collection (e.g., the choice of sampling, how to collect data), and any point in the implementation of the research (Bryman, 2015). Hence, a valid cause-and-effect relationship is inferred based on observed data, which may be acquired in a very controlled experimental setting (e.g., controlling for extraneous factors), identifying under what conditions the relationship exists. Still, the interpretation of causality does not imply a wholly deterministic relationship, instead implying a probabilistic one. This suggests that 'X can be a cause of Y if the occurrence of X makes the occurrence of Y more likely or more probable', rather than that for 'X to be a cause of Y, X must always lead to Y' (Churchill Gilbert, 1995, p. 191).

Third, in terms of the view of causation, positivists believe that 'real causes exist' and seek to identify causal linkages (Hunt, 1991). This differs from the interpretivist view of a phenomenon, that it cannot be separated into cause and effect. While, due to the complexity of social reality, a cause may not be able to fully describe the underlying mechanisms of reality, post-positivists accept that multiple causes exist and agree that 'social scientists thus should seek to uncover the deep underlying mechanism' (Grix, 2019, p. 100). Hirschman (1986) described first stage, second stage and third stage causes (see Figure 5.3). This is consistent with most consumer psychological and behavioural theories (e.g., TPB, NAM, VBN) that include different levels of behavioural antecedents (e.g., values, beliefs, norms, intention, and behaviour) which could be seen to map onto the order of the causes stages detailed above. The conceptual framework developed herein (see Chapter 4) also assumes multiple causes and aims to describe the underlying mechanism of the normative effect. For example, personal norms (as a given intervention) are seen as the cause of green preferences, which lead to greener choice. Hence, the post-positivist position was adopted as the philosophical approach for this research.

**Figure 5.3 the schema of a phenomenon**

(Hirschman, 1986, p241)

$X_5$

$X_3$

$X_4$

$X_1$

Second
Stage
Causes

Effect

$X_6$

$X_2$

First Stage
Causes

Third Stage
Causes
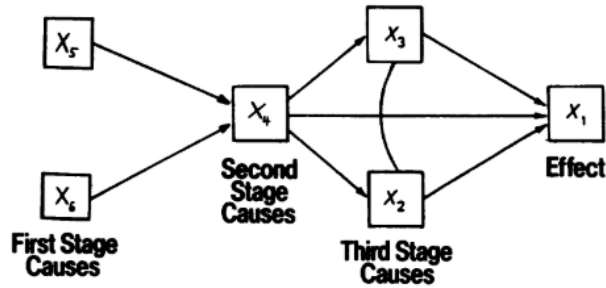
**Positivist Schema of Phenomenon**

beliefs

possessions

traditions

values

behaviors

**Humanist Schema of Phenomenon**

To conclude, the implication of the key assumptions of post-positivism on this research design is through: i) the view of the research objects (to make the subjective states possible as measurable objective items), which leads the ways of knowing by measurement (i.e., implies a quantitative methodological approach (ThiéTart, 2001)); ii) the view of objectivist ontological assumption of research objects which leads to an understanding of consumer behaviour as manipulable (i.e., behavioural change can occur through manipulation); iii) the acceptance of the uncertainty of identified knowledge, which leads to the understanding that the research findings have limited generalisability and the predictions made from them are bounded with different degree of probability (understand the criteria for the assessment of the quality); v) the view of the possibility of multiple causes with seeking underlying mechanism which influences how to interpret the findings and determines the choice of research experiment, experiment design, and so on. Understanding the shared assumptions of a community of scientists investigating

reality guides the design of the research procedure, provides a viable approach, and offers criteria for assessing the quality of knowledge produced.

This section justified the choice of objectivist ontological and epistemological assumptions to underpin this research, providing an understanding of how post-positivism has implications for the choice of research approach, method, and strategy.

## 5.4 Research Approach & Method

According to Saunders et al.'s (2015) diagram of the research 'onion' (see Figure 5.4), after deciding on the research philosophy (in this case post-positivism), the research approach, method and strategy must then be identified.

**Figure 5.4 The research 'onion'**

*(Saunders et al., 2015, p. 124)*
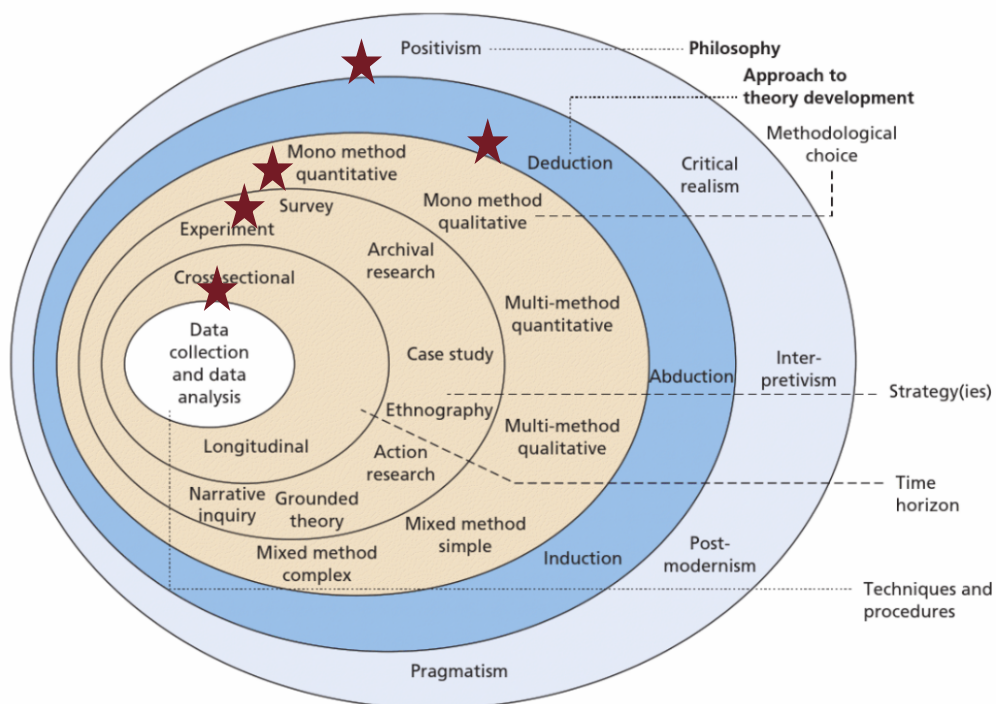


**Research approaches** may involve deductive, inductive, or abductive reasoning in terms of theory development. Positivism/post-positivism generally adopts a deductive approach to developing theories. The deductive approach develops a theory based on 'the conclusion that is derived logically from a set of theory-derived premises' (Saunders et al., 2015, p. 152). One step of the deductive approach involves forming hypotheses and then testing these in order to form a theory (Eisend and Kuss, 2019), which is consistent

with what has been done in Chapter 4. One method to test hypotheses derived from this deductive approach is the *hypothetico-deductive method* (see Figure 5.5) (Eisend and Kuss, 2019). This procedure is often used in marketing research to distinguish the theory concept A (e.g., personal norms) from the specific expression of A (here 'a' is personal normative information in this informational intervention study). In brief, if the relationship between the specific expressions of A (i.e., a) and B (i.e., b) is supported (i.e., the hypothesis is accepted), then their corresponding theory (i.e., the relationship between theory concept A and B) is seen to be supported.

**Figure 5.5 The hypothetico-deductive procedure**
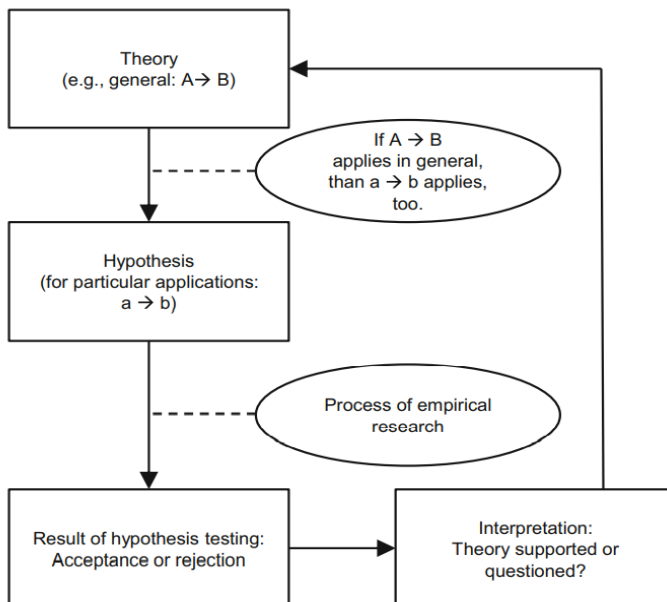


Therefore, a deductive approach is used when research is aimed at testing a theory through data collection rather than exploring a theory based on collected and analysed data (the inductive approach) (Saunders et al., 2015). The deductive approach was employed in this research, which sought to test the hypotheses derived from the literature review chapters (theoretical statements) in order to develop theories. The hypothetical-deductive procedure was then adopted to test the hypotheses. The deductive approach is often employed for testing consumer behaviour theories (see Appendix 2) and the hypothetical-deductive method is a common approach to theory development in marketing research (Eisend and Kuss, 2019).

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**Research methodological choice**, according to the research onion, includes quantitative and qualitative methods. Adopting objectivism assumptions or positivism/post-positivism research philosophy typically results in the use of a deductive approach and quantitative methods of analysis (Saunders et al., 2015). To utilise a quantitative research method means to 'emphasise[s] quantification in the collection and analysis of data', and involves a deductive view of the relationship between theory and research, inherent to the practice of positivism (Bryman, 2012, p32). Quantitative methods often employ scales, multiple choice questions, or other types of closed-ended questions to collect data, such as through questionnaires or surveys. Statistical and graphical techniques are used to analyse the resulting data. In contrast, following the qualitative research method involves emphasising words in the collection and analysis of data, which involves an inductive view of the relationship between theory and research, wherein the practices of positivism have been rejected (Bryman, 2012). Qualitative methods often use open-ended questions to collect data, such as in unstructured interviews or observations.

This research has used quantitative methods. As discussed, the literature provided a rich understanding of the underlying factors that influence consumer decision making, which led to the development of the conceptual framework for promoting greener choice, and related hypotheses. Testing the relationships between these concepts required a large number of people to use the same tool of measurement, so that patterns could be assessed. As such this research study involves collecting and analysing data in a quantitative manner. Developing hypotheses and devising measures of concepts are two important steps involved in quantitative research (Bryman, 2015). A specific research design should be determined before deciding how to measure concepts. Quantitative research also involves establishing an appropriate research setting, selecting research participants, collecting data, and analysing data and findings (Bryman, 2015). The specific decisions related to the above steps will be affected by the research design and the choice of research strategy. An overview of each step will be discussed later.

# 5.5 Research Strategy & Design

## 5.5.1 Experimental Research Strategy

### Justifications for choosing an experimental strategy

In using the quantitative methods approach, experimental or survey research strategies are typically employed to test a hypothesis. On the contrary, qualitative methods involve the use of case studies and ethnography to obtain initial insight into a problem. The research strategy, according to Saunders et al. (2015), is an action plan to achieve a research aim or objectives or to answer a research question. The choice of a research strategy needs to align with the quantitative method research design, and to be guided by a specific research objective which determines the purpose of the study (exploratory, descriptive or explanatory) (Saunders et al., 2015).

As aforementioned, this research investigates the impact of normative information on encouraging greener choice, and is designed to establish causation and uncover the underlying working mechanisms. 'The design of the investigation should stem from the problem' (Churchill Gilbert, 1995, p. 146). Thus, a causal (or explanatory) research design rather than an exploratory or descriptive research design should be conducted. While descriptive research can be used to test hypotheses and establish correlations between variables, 'causal research design is typically takes the form of experiments, which are the best suited to determine the cause and effect relationships' (Churchill Gilbert, 1995, p. 145). The literature review chapters showed that one stream of green consumption studies was based on previous theoretical frameworks, testing correlations between norms and green consumption through descriptive research rather than establishing causation between pertinent variables through causal research. Another mainstream study adopting an interventional approach for promoting green consumption relied on an experimental methodology to examine the effectiveness of interventions (Osbaldiston and Schott, 2012). An experiment is a test in which an investigator deliberately changes (manipulates) one or more input variables and may observe the change in outcomes with changes in input variable/s (Churchill Gilbert, 1995; Montgomery, 2012). In other words, when an intervention is effective this implies that the cause-and-effect relationship is established between a targeted factor and an outcome. An experimental strategy was chosen to carry out this research to investigate the effectiveness of normative intervention.

**Elements and conditions of establishing causality in an experiment**

An experiment 'seeks to determine if a specific treatment influences an outcome (Creswell, 2018, p13). The above definitions of the experiment point out some basic elements that should be included in running an experimental test, , as well as setting out some conditions for establishing causality. Regarding the basic elements, i) it should include the treatment/s (known as independent variables [IV]): 'the variable that an experimenter manipulates or modifies in order to examine the effect on one or more dependent variables'(Manstead, 2008, p30) and decide the way/s of manipulation; and ii) it should include the dependent variable/s (DV) that measure the effect of treatment/s on the dependent variable/s. If a mediator of that (IV-cause-DV) relationship is included in an experiment, it can be seen as another $DV_{(1)}$ due to which is assumed to be changed by a change in IV and then causes the change in $DV_{(2)}$ (e.g., IV-$DV_1$(mediator)-$DV_2$) (Hayes, 2018). For example, in the conceptual framework (p.106), green preference is assumed to be a mediator in the relationship between personal norms and greener choice. If a moderator is included in an experiment this could be seen as another IV as it is assumed that the different levels (change) of the moderator could result in a change in the DV (Hayes, 2018). For example, in the conceptual framework, (private/public) self-consciousness is a moderator that influences the effect of (personal/social) norms on greener choice. Researchers need to determine which IVs and DVs should be examined in an experiment to test a hypothesised causal relationship.

Regarding the conditions for establishing causality, the definitions imply that IV is seen to cause DV when: i) IV and DV vary together (i.e., concomitant variation). This means that when manipulating IV in a treatment group the change in the DV should be observed as a function of changes in the IV. The change can be determined through the comparison between the outcome of the DV in the experimental/treatment group and that in the control group. The experimental group refers to a group of participants allocated to the 'experimental' condition/treatment. The control group normally means the group that is not exposed to the independent variables (not receiving the treatment) used in experimental research and is seen as the baseline or reference for measuring the effect of IV (Manstead, 2008). In experimental design, therefore, researchers should determine the baseline to be compared with the experimental condition; and ii) IV should precede DV. It reveals the importance of the time order with respect to the occurrence of variables which determines the sequence of presenting IV and DV in questionnaire design.

Excluding the above two conditions, the 19th century philosopher John Stuart Mill also pointed out that other possible causal factors should be absent from the experiment (Shadish et al., 2002). This means that the effects of extraneous/confounding variables (other variables contributing to the effect of DV to be seen as alternative explanations for the change of DV) should be considered when designing experiments, thereby ruling out the plausibility of alternative explanations for observed effects, as far as possible, through a certain degree of control. Therefore, to establish valid causality the researcher should 'use various methods during the experiment to reduce the plausibility of other explanations and noise factors (uncontrollable factor) for the effect and ancillary methods to explore the plausibility of those that cannot be ruled out'(Shadish et al., 2002, p. 6). These methods for establishing causality are also related to an increase in the internal validity of the experiment, as will be discussed further in Section 5.6.

### 5.5.2 Three-Study Design

As proposed, four specific research objectives sought to establish a series of causation relationships associated with two norms activation routes to promote greener choices. Due to the elements and conditions that establish causality in an experiment, these objectives were investigated via different experimental studies. Therefore, three experimental studies were set up to address the research objectives (see Figure 5.6).

**Figure 5.6 Overview of research design**
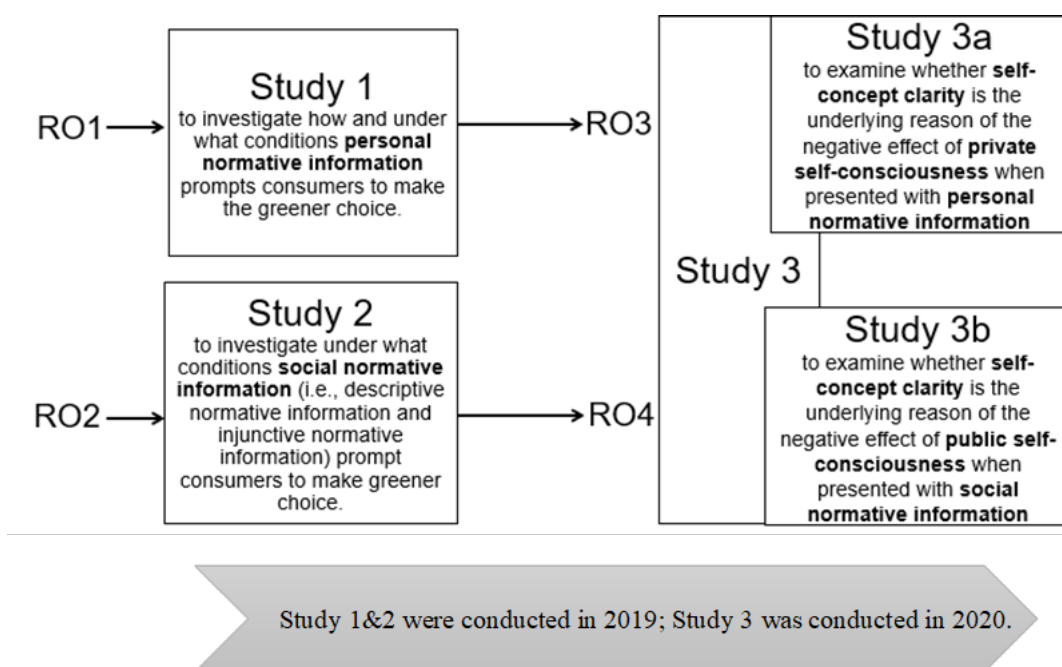
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Study 1 was intended to address objective 1 (RO1) and its detailed design, execution, data collection, analysis, and findings will be discussed in Chapter 6. Study 1 tested the effect of personal normative information (IV) on greener choice (DV) and investigated whether this effect is caused by the increase in overall green preference (answers 'how': the mediator role of green preference). It also examined whether/when private self-consciousness (another IV) influences the effectiveness of this type of normative information on greener choice (answers 'when': the moderator role of private self-consciousness). In simple terms, the experimental research design of this study only focused on testing causal relationships between personal norms, private self-consciousness, green preference, and greener choice.

Study 2 was intended to address objective 2 (RO2), and this study will be discussed in detail in Chapter 7. Study 2 tested the effect of descriptive and injunctive normative information (IV) on greener choice (DV) and investigated whether this effect is not caused by the influence of overall green preference. Study 2 also examined whether/when public self-consciousness (another IV) influences the effectiveness of these subtypes of social normative information on greener choices (answers 'when': the moderating role of public self-consciousness). In doing so, it compared the effectiveness of descriptive and injunctive normative information under the same conditions. In simple terms, the experimental research design of this study only focused on testing causal relationships between descriptive/injunctive norms, public self-consciousness, green preference, and greener choice.

Study 3 was intended to address objective 3 (RO3) and objective 4 (RO4), and will be discussed in chapter 8. Study 3 should be developed based on the results of Studies 1 and 2. Study 3a aims to test the interaction effect between the activation of private self-consciousness and the personal normative message on influencing self-concept clarity (another DV) and investigates whether self-concept clarity inhibits the effect of the personal normative message. Study 3b tests the interaction effect between the activation of public self-consciousness and social normative message on the self-concept clarity (another DV) and investigates whether self-concept clarity inhibits the effect of the social normative message. In simple terms, the experimental research design of this study only focused on testing the role of self-concept clarity in two normative activation routes of promoting greener choice.

As these three experimental studies have different foci, the experimental design of each study is also distinct. The next section will focus on understanding the key concepts involved in experimental design and justifying the decisions made in developing these experiments to establish valid causality.

# 5.6 Experimental Design

This section introduces the key concepts, definitions, and decisions related to experiment design. It introduces the concepts of validity and reliability and provides understandings of how these guide decision-making in experiment design.

## 5.6.1 Criteria to Guide Experiment Design

Validity and reliability are important criteria for evaluating research quality. Reliability refers to 'whether the results of a study are repeatable and mainly relates to whether the measures of concepts are consistent or stable' (Bryman, 2016, p. 41). Reliability was considered when determining the measurement of concepts, which will be discussed specifically in the empirical chapters to follow. Validity refers to 'the extent to which one is justified in drawing inferences from one's findings' (Manstead, 2008, p32). In research one seeks to increase validity with respect to three aspects: internal validity, external validity, and construct validity (Manstead, 2008). Researchers should prioritise these as much as possible, although it is impossible to maximise all three aspects (Chiang et al., 2013). Which aspect of validity needs to be prioritised in experiment design depends on the purpose of the research. Experiments are considered an appropriate method for empirically studying causation (Koschate-Fischer and Schandelmeier, 2014). It is essential to establish valid causality when designing experiments, and the criterion of causality assessment is related to internal validity.

*Internal validity* refers to 'the ability to attribute the effect that was observed to the experimental variable (the change in the independent variable) and not to other factors' (Churchill Gilbert, 1995, p. 202). It is related to the validity of the inference of the causal relationship (change in the independent variable causes change in the dependent variable) (Manstead, 2008), which involves enhancing the controllability of the experiment and eliminating alternative explanations. However, experiments with high internal validity would normally be expected to have lower external validity.

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*External validity* refers to 'the generalisability of research findings to settings and populations other than those involved in the research' (Manstead, 2008, p. 33). According to Shadish et al. (2002, p. 5) 'to different degrees, all causal relationships are context-dependent, so the generalisation of experimental effects is always an issue'. *Construct validity* is, viewed as a comprehensive, 'unifying form of validity for psychological measurement' that includes content and criterion validity (Strauss and Smith, 2009, p. 7). In contrast, traditionally, content and criterion validity are seen as different, and are not often suitable for being applied in the social science field (Drucker-Godard et al., 2001). Simply put, in experimental research, construct validity refers to 'the validity of the assumption that independent and dependent variables adequately capture the abstract variables (constructs) they are supposed to represent' (Manstead, 2008, p. 33). Researchers may only refer to it as the quality of the experiment's manipulations (Chiang et al., 2013). Construct validity is also like external validity as it relates to the generalisability of results, but it is actually about generalising from the measures/operationalisations to the concept of the measures (which measures can represent the theoretical constructs) rather than generalising results from the specific studies to a larger population, other settings, and/or the natural environment. Hence, construct validity relates to the operationalisation of the concepts/variables, and the methods used to ensure construct validity will be discussed in Section 5.6.4.

The primary goal of experiments is that internal validity should be prioritised, and in the meantime external validity increased to reinforce its reproducibility value and ensure construct validity to justify what measures can represent theoretical constructs. To establish this validity, researchers should carefully make a series of decisions throughout each step involved in designing experimental studies, including experiment design, data collection, and data analysis. For example, eliminating or reducing influences from extraneous variables to increase internal validity, can occur through statistical controlling, by holding other factors (i.e., control variables) constant. To enable this process, the experiment design should pre-identify control variables as covariables, include these in data collection, and then account for their variation in data analysis to enable better control (Churchill Gilbert, 1995). Increasing internal validity can also occur through choosing a better-controlled experiment setting (relating to the choice of the type of experiment) (Koschate-Fischer and Schandelmeier, 2014). Additionally, it could happen through conducting random assignments (e.g., randomly assign participants to different conditions during data collection procedures) (Shadish et al., 2002), identifying

the 'right' experimental design type (within-subject vs between-subjects design, depending on whether carryover/learning/order effects are likely to occur) (Koschate-Fischer and Schandelmeier, 2014), and determining the design type (single-factor designs or factorial designs). Further, it is possible to increase controllability through avoidance of bias (both experimenter and participant) and sampling control (e.g., through recruiting a similar ratio of males and females and focusing on one nationality to reduce the potential effect of gender and culture). Regarding the plausibility of explanations that cannot be ruled out (e.g., factors beyond the control of the researcher), it can be seen as a limitation to the research due to the control limits (the ability to control for other variables is influenced by the type of experiments chosen) that influence the validity of the research.

The above controlling techniques, related to a series of fundamental decisions, should be used to develop the experiments. According to Koschate-Fischer and Schandelmeier (2014), these decisions can be grouped into a number of areas: the determination of experiment setting (see Section 5.6.2), the specification of experiment design (see Section 5.6.3), the choice of participants (see Section 5.8), and decisions related to concept operationalisation and pre-identifying potential control variables (see Section 5.6.4). Table 5.2 lists the specific decisions related to each area. For example, decisions related to the specification of the experiment design determine factorial design (i.e., the number of independent variables), the design type (i.e., between-subjects design vs within-subjective design) and so on. Table 5.2 also presents the purposes of each decision, which is primarily to ensure and improve the validity of the experiment and to establish valid cause-and-effect relationships. In other words, ensuring the quality of the findings such that the produced effect is caused by the intervention.

**Table 5.2 A set of decisions involved in the development of the experiment**

| Decision types | Decisions | Purposes |
|---|---|---|
| Experiment setting: <br><br> • The type of experiment <br> • The choice of the experiment setting <br> • The design of the experiment scenario | Laboratory or true type of experiment | Ensure internal validity |
| | Web-based experiment and the online data distribution platform: prolific.co | Improve external validity |
| | A real-life scenario: reuse of hotel towels | To increase feeling of realistic to improve external validity |
| | Through the results of the pilot test to improve the design: control cleanness perception, and focus on a situation | To increase controllability to improve internal validity |

| | where guests are staying alone for three days. | |
|---|---|---|
| Data distribution | Random assignment | To improve the equivalence between groups and ensure internal validity |
| Specification of the experiment design:<br>• Specifying the types of experiment design<br>• Specifying the design type | Multi-factorial design | To determine the number of independent variables in an experiment |
| | Between-subjects | To reduce the potential carryover effect, learning effect, order effect for increasing internal validity |
| The choice of participants:<br>• Participants<br>• Sampling method<br>• Sample size | UK citizen | To reduce influences from other factors to increase internal validity |
| | Aged 18-78 | To increase feeling of realistic for improve external validity |
| | Simple random sampling | Allow for statistical inference for generalisation to increase external validity and reliability |
| | At least 30 participants per condition for the pretest and at least 50 participants per condition for the main test. | Although the decision of sample size is not calculated by formulae, earlier studies and the rule of thumb recommend 30 per condition (Hair, 2009; Koschate-Fischer and Schandelmeier, 2014), to avoid major mistakes in estimating sample size. The number of (at least) 50 per condition is a safer decision and the number increases accordingly in different studies when the variables increase. |

## 5.6.2 Experiment Setting

Decisions involved in determining the experiment's setting include the determination of the type of experiment, the choice of experiment setting, and the design of the experiment setting. The different decisions made relate to different levels of internal and external validity.

## 5.6.2.1 The Type of Experiment

Considering different research settings, traditional experiments are normally either of a laboratory type or a field type (Koschate-Fischer and Schandelmeier, 2014). With the development of Internet research (Reips, 2012) incorporating laboratory or field type experiments with web-based or internet-based data collection becomes common in psychological studies, especially the integration between laboratory and online experimentation (Dandurand et al., 2008; Reips, 2002; Skitka and Sargis, 2006). This section first makes a choice between laboratory and field experiments, and then determines whether integrating with online data collection approach.

## Laboratory vs field experiment

A laboratory experiment (designing treatments in laboratory-like conditions) is 'one in which an investigator creates a situation with the desired conditions and then manipulates some variables while controlling others' (Churchill Gilbert, 1995, p. 199). Therefore, in a laboratory experiment an experimental scenario should be devised which allows for extensive control of extraneous variables (Koschate-Fischer and Schandelmeier, 2014). In contrast, a field experiment often means that the experiment is conducted in a realistic or natural situation (Churchill Gilbert, 1995), which cannot generally be highly controlled as the complexity of the environment (Koschate-Fischer and Schandelmeier, 2014). A laboratory experiment, therefore, is seen as a true experiment in which participants are normally randomly assigned to different conditions, whereas a field experiment is seen as a quasi-experiment in which participants are normally not randomly assigned to different conditions.

Random assignment is a key for experimenters to be able to reach a conclusion regarding the observed difference between conditions resulting from a change in the independent variable (Manstead, 2008). *Randomisation* is a data-collection method used to prevent selection bias and to eliminate alternative explanations. It is assumed in order to equate the treatment and control groups at pretest, prior to any treatment delivery. In other words, by using random assignment, 'the means levels in the treatment and control group will, on average, be assumed to be equal for any measured or unmeasured variable such as the demographic characteristics, the attitudes, the motivations, the personality traits, the abilities, as well as any other participant attributes' (West et al., 2000, p. 42). Theoretically, this establishes the equivalence between groups in all aspects (Easterby-

Smith, 2008). Hence, using this technique in laboratory experiments enhances the controllability of the designed experiment, resulting in higher internal validity.

The type of experiment can be selected on the basis of the application goal of the research study. According to Calder et al.'s (1981) approach to 'designing research for application' (*theory application* or *effect application*), the different goals of the research application imply different philosophical assumptions and have different methodological implications. If *effect application* is being pursued this aligns with inductive reasoning (close to the interpretivist philosophical stance (Saunders et al., 2015)), through which observed effects, under correspondence procedures (the research setting must accurately reflect the real world), can be repeated in the real world. The findings are expected to be generalised directly to a real-world situation and to be generalisable in other populations and settings. In other words, achieving effect application requires having higher external validity, and the research settings and variable operationalisation need to parallel those in the real world. In contrast, if *theory application* is being pursued this aligns with deductive reasoning (close to positivist philosophical stances (Saunders et al., 2015)), where the theory or designed intervention is tested (based on accepted theories) before it can be applied in the real world. Calder et al. (1981, p. 206) pointed out that 'it is mistakenly assumed that accepted theories will yield usable interventions without any further work'. Achieving an applicable theory requires having higher internal validity, and the research setting can be artificial so as to ensure this validity. In brief, researchers cannot pursue both *theory application* and *effect application* and should decide upon which is their priority (though these could be balanced to some extent).

As discussed, ensuring good internal validity is the primary goal for achieving a valid conclusion about a causal relationship (Koschate-Fischer and Schandelmeier, 2014). The choice of a laboratory experiment design normally results in higher internal validity and lower external validity, while the choice of a field experiment design tends to involve lower internal validity and higher external validity (Churchill Gilbert, 1995). Therefore, the researcher decided to design laboratory experiments with random assignments to achieve higher internal validity as a primary goal. This was to ensure that the intervention effect on greener choice has been caused by manipulated norms rather than other factors. But in the meantime, this research aims to increase external validity without harming internal validity.

## Laboratory-online experiment

As mentioned above, researchers should decide whether to conduct laboratory experiments online. There is a general disadvantage to conducting a laboratory experiment in terms of external validity, due to it being conducted in an artificial setting rather than in a natural environment, and involving a specific participant population (due to limited access to wider populations) (Churchill Gilbert, 1995; Koschate-Fischer and Schandelmeier, 2014). Designing a web-ready laboratory experiment and distributing it on the Internet does not seem harmful, but rather beneficial in several ways, such as solving issues such as the experimenter effect, volunteer bias, and being able to inexpensively recruit a wider range of participants from a broader population in a shorter time (Koschate-Fischer and Schandelmeier, 2014; Manstead, 2008; Reips, 2000, 2002). Accessing a broader population can greatly increase external variability, such that the results could be better applied to the general population, as well as to other settings and situations (Reips, 2000, 2002). Previous evidence also indicates that web-based experiments can produce results that are similar to those obtained from laboratory experiments, regardless of whether they are directly comparable or not (Manstead, 2008; Reips, 2002). In other words, doing laboratory experiments online has various advantages in terms of increasing external validity without reducing internal validity.

For example, regarding the experimenter effect and participant bias in laboratory experiments, the actions of the experimenter throughout the experiment will be interpreted by the participants, which may elicit a social desirability effect (try to do the experimenter a favour) as the perceived *demand characteristics of the experimental situation* (Orne, 2002). This effect could be reduced through contactless, completely anonymous, and confidential online distribution. Some researchers may argue that participants could suspect the research treatments, hypotheses or experimenter's expectations through the presented information or instructions, such as a cover letter or debriefing statement, which introduces the research, and they may want to help with the results or alternatively respond in the opposite direction. To avoid this issue, this research needs to carefully introduce the research (and avoid any other procedure that potentially introduces demand characteristics) in a way that could prevent participants from knowing what the treatment/manipulation is, which can be checked in a pilot test.

There are other potential issues involved in conducting web-based experiments, such as multiple submission of data (Koschate-Fischer and Schandelmeier, 2014). Nevertheless,

with the development of online data collection platform functions such cases could be minimised. Prolific.co as an online data-collection platform, is designed to help solely with participant recruitment, not with creating a survey. Using some functions of Prolific.co in the design of the questionnaire and data collection procedures could increase the extent of researcher control. Prolific.co's system is set up for each participant, each of whom can only submit one response per study, and each participant has a unique participant ID that can be checked by researchers (Moodie, 2018). Moreover, Prolific.co allows for adding force response requirements for each question. This function could avoid the existence of uncompleted questionnaires. In addition, Prolific.co offers the option to add a timer to record the length of time a participant spends on a page and it also automatically records the time taken to complete the questionnaire. This can help to identify and exclude those invalid questionnaires that took too long to complete (which may indicate distractions during completion) or too little time (which may indicate inattention and hasty or random responses). Furthermore, researchers can use the 'previous studies screening' technique on Prolific.co to exclude anyone who has participated in this research (e.g., pre-test, previous experiments) which helps to avoid the learning effect. Prolific.co also has a feature that automatically increases the recruitment number to meet demand when participants drop off or fail an attention check. Therefore, web-based experiments provide greater control over data collection to a certain extent.

Web-based experiments, instead of correlational surveys, are the most common method used in web-based consumer psychological research, according to studies published in *American Psychological Association* journals from 2003-2004 and additional studies (Skitka and Sargis, 2006). However, this doesn't mean every project is suitable for web-based experiments, such as testing the effectiveness of actual physical products. As discussed, web experiments have some potential pitfalls, but these can be avoided, and they offer greater control in various ways. A more detailed overview of the advantages and disadvantages of web-experiments is available from (Reips, 2000, 2002). Considering the advantages of integrating laboratory experiments with online data collection, therefore, it was determined that this research should conduct laboratory experiments online. The design of a realistic and natural experiment scenario could increase external validity, and at the same time does not decrease internal validity.

## 5.6.2.2 The Choice of Experiment Setting

Choosing a laboratory-online experiment requires developing a setting for the experiment (i.e., designing an experimental scenario) to test the impact of normative interventions on encouraging greener choice.

Three aspects must be considered in the selection and design of a research context with respect to green consumption. Firstly, the researcher must consider choosing a research setting with fewer noise factors and extraneous variables in order to increase internal validity, such that valid causality can be established. Secondly, this research considers choosing a 'artificial' setting which needs to be as natural as possible to increase external validity. This relates to the natural manner in which independent variables are manipulated and dependent variables are measured. Participants should feel that it is usual to ask for their responses at certain points. For example, it is unusual if participants are asked to provide their feedback as they check out with their purchase, as this does not normally happen. It also relates to the realism of the experiment setting. In other words, as long as participants experience the situation in a natural way and behave in the same way as they would in reality, a laboratory experiment can produce generalisable findings (Koschate-Fischer and Schandelmeier, 2014). In sum, having ensured good internal validity, a created experiment setting should be as natural and realistic as possible (Manstead, 2008). Thirdly, the researcher needs to consider whether an experiment setting is applicable for nudge intervention. The experiment's design and setting should be guided by designing a theory-driven information/nudge. As discussed, the nudging approach aims to change behaviour with little cost, in order to ensure the feasibility of management implementation. Nudge types of interventions aim to change behaviour without limiting existing choices or affecting them by strong incentives. Nudging purposefully guides people towards certain options in a direction that aims to improve their life by making a positive choice (a greener choice is a choice for the common good which eventually benefits the self) which is in line with the UN Sustainable Development Goals (Thaler and Sunstein, 2008).

As a result, hotel towel reuse was selected as the research setting for all three experimental studies. There are five specific reasons for supporting this decision, which included consideration of the above three aspects. First, the specific behaviour of hotel towel reuse could be seen as a practice of green consumption. The practice of towel reuse in hotels has been found to be directly related to green consumption behaviours in daily life (Han

and Hyun, 2018; Han et al., 2018). The observed effect on hotel towel reuse behaviour specifically, therefore, could more likely be generalised to a range of relevant green behaviours (e.g., reusing, recycling, and reducing other products, using green services, and so on) exhibited in various situations and contexts. Second, selecting hotel towel reuse behaviour as a dependent variable in experiments is also consistent with the working definition of green consumption, as discussed in Chapter 2. It is in line with the identified focus on the environmental sustainability of green consumption and the underlying meaning of green: conserving environmental resources. The association between towel reuse in hotels and general green consumption behaviours also reflects the intend-oriented feature of green consumption, in that a single green behaviour or choice (e.g., hotel towel reuse behaviour) is an expression of general environmental protection. Third, hotel towel reuse is a real-life scenario in which it is quite common for travellers to encounter message cards placed in a hotel to encourage them to reuse the towels, such that participants are likely to feel this is realistic and less artificial, which makes for a good experiment design. The hotel towel reuse scenario has been applied in many studies (Baca-Motes et al., 2013; Cvelbar et al., 2017; Dimara et al., 2017; Gössling et al., 2019; Han and Hyun, 2018; Han et al., 2018; Schultz et al., 2008b), some of which were conducted as field experiments and some as scenario-based (laboratory), encouraging green consumption through attending an environmental/resource conservation (e.g., energy and water) programme (Bohner and Schlüter, 2014; Budovska et al., 2020; Dolnicar et al., 2017; Goldstein et al., 2008; Gössling et al., 2019; Mair and Bergin-Seers, 2010; Schultz et al., 2008b). Most tested the effect of descriptive norms through descriptive normative message/appeals. Fourth, using normative message cards or prompts is a nudge-type intervention, which is consistent with the identification of nudge-type interventions as changing behaviour via simple changes without forbidding any options or providing economic incentives. Fifth, hotel towel reuse behaviour was chosen as a dependent variable due to it having less noise factors and potential confounder variables. The reason is that the underlying motives for hotel towel reuse behaviour are more likely to be purely environmental and the performance of this behaviour is self-dependent and not inhibited by other hardware factors (e.g., relying on facilities and equipment). Hotel towel reuse is unlikely to occur because of factors related to individual benefits, such as health, utilitarian benefits such as monetary saving, or hedonic benefits such as entertainment. In contrast, testing normative effect on purchasing eco-certified products could depend on their utilitarian benefits, improved/decreased product quality,

or money-saving/expense. In sum, hotel towel reuse is a better choice with less noise factors and confounding variables, and this scenario can be considered to be realistic.

### *5.6.2.3 The Design of the Experiment Scenario*

After determining the specific green consumption context for designing the experimental scenario, researchers need to consider the specific design of the hotel towel reuse scenario. The primary goal is to maximise the controllability of the experimental setting to avoid any decrease in internal and external validity.

Some potential factors particularly related to the hotel towel reuse scenario that could influence consumers' greener choice (the dependent variable) and the scenario's realism, should be ruled out and controlled. A study found that for hotel customers who would not like to adopt the program, 42% of them cited reasons of hygiene and cleanliness (Dimara et al., 2017). Moreover, according to the results of the pilot study (questionnaires completed by convenient participants: friends and colleagues), used purposefully to test the feasibility of the experiment design, the perception of hotel towels as unclean affected consumer behaviour, with some of them never even having used hotel towels while staying at a hotel. Hence, in the scenario design, the perception of the cleanliness of hotel towels was controlled, to prevent it from negatively affecting the dependent variable, and those people who always use their own towels were screened out through a relevant question. In addition, this research also screened out participants who had never stayed in a hotel before. Furthermore, to make the scenario simple and rule out the potential influence of those sharing a hotel room on a participant's decision, the scenario only concerns situations where consumers are staying alone in a hotel. One study has stated that the reuse rate of hotel towels may differ where people share a room due to the diffusion of responsibility involved (Bohner and Schlüter, 2014).

The scenario was set for participants staying in a hotel for three days because this research is interested in knowing how likely participants are to reuse a hotel towel for three days, rather than two days or more than three days.

First, regarding the lack of interest in knowing how likely it is that participants will reuse hotel towels for more than three days, this is based on Gössling et al.'s (2019) findings that the effects of the intervention on hotel towel reuse dropped dramatically from day 2 to day 3, with the effect disappearing from day 5. This means that reusing a towel for

more than 3 days is not likely to be realistic in a hotel. The pilot result of this study further confirmed this. The initial design of the measurement of the dependent variable in the preliminary questionnaire was a categorical question (reuse towel for five days, four days, three days, reuse towel once, or towel changed every day). The result showed that no one chose to reuse the hotel towel for more than three days, with seven out of ten electing to reuse it for three days in whatever experimental conditions. Participants in the pilot study pointed out that staying in a hotel typically means being on holiday. Therefore, the behaviour of reusing towels is different in a hotel than at home. A participant mentioned that vacations should give people a feeling of pleasure and luxury (reusing hotel towels would not contribute to that feeling). Another participant said that nice clean towels were needed as guests paid a lot to the hotel. Moreover, it was pointed out that the towel couldn't quickly dry itself if it is used twice a day. In general, participants took more showers in a hotel than at home, and thus towels were used more frequently in the hotel. In brief, some participants thought that, while there was an obligation to protect the environment through reusing towels, this was not practicable in a hotel as they are on holiday. These results suggested that it was unrealistic to ask participants to reuse hotel towels for more than three days (but participants confirmed that the hotel towel reuse scenario was realistic).

Second, regarding not being interested in knowing how likely participants would be to reuse hotel towels for two days, Gössling et al. (2019) also found that the rate of reuse of hotel towels did not differ significantly between days 1 and 2 (people normally do not change towels when staying only for a night). The regular practice is to change towels daily, excluding five-star hotels, where they are changed twice daily (Gössling et al., 2019). This implies that encouraging participants to reuse hotel towels for two days may not require much effort and the effect of the treatment would be small, as existing results show that under standard conditions (the baseline) participants already had a relatively higher rate of reusing hotel towels.

A study conducted in 2008 (US sample) found that the hotel towel reuse rate for the descriptive norm message condition increases to 44.1% from 35.1% in the standard environmental message condition (Goldstein et al., 2008). While another study conducted in 2014 (German sample) found that the towel reuse rate (determined in the same way) was 93.3% in standard environmental message condition compared to 79.4% in descriptive norm messages and 64.3% in the no-message baseline (Bohner and Schlüter,

2014). These results reveal two things. First, the rate of reuse of hotel towels (to use for 2 days) increased over time, even without any messaging promoting the practice. This could be explained by increasing awareness over time as a result of the efforts made by the entire society to achieve sustainability. Therefore, promoting hotel towel reuse for two days seems effortless as there is already a higher rate of reusing hotel towels for two days and the research would have less opportunity to see the tested effect. Seeking statistical significance with a small effect size would require a large sample size and result in higher costs (ThiéTart, 2001). Second, the baseline rate of hotel towel reuse varies in different countries. Gössling et al. (2019) found that visitors from Nordic countries had the highest towel reuse rate compared to Germany and the UK, and the UK had the lowest towel reuse rate (compared to the towel reuse rate in the control group). This may be explained by the 'different degrees of belief in common values and cooperation as well as levels of environmental awareness in different societies' (Gössling et al., 2019, p278).

In brief, the above discussion suggests that it is more reasonable to test how likely participants are to reuse hotel towels for three days than for two or four. Moreover, according to the design of the real scenario in hotels to generate attention (Gössling et al., 2019; Schultz et al., 2008b), in this experimental scenario, the same message card (the conditions are distinguished by the different content in the message card) is presented in multiple places so as to generate attention (nudge type of intervention). In addition, the introduction of the scenario is presented in a video format (e.g., scenario with control message card: https://youtu.be/IVye1ho5vLU). This is expected to increase participation engagement and to improve scenario acquisition and understanding, according to findings regarding the performance of learning conditions (text vs video) (Allcoat and Von Muhlenen, 2018) (for the script of the scenario see Table 5.3).

**Table 5.3 Hotel towel reuse scenario**

| Scenario Script |
| --- |
| Imagine that you just checked into a hotel **for 3 days** and that you are **staying alone**. Also, you did not bring your own towels as the hotel offers **clean** towels. Those towels are all cleaned professionally, with high-temperature sterilisation (75-80 ºC wash temperature, 80-90 ºC drying temperature and 150-180 ºC ironing temperature, chemical sterilisation and Ozone sterilisation). You found the following same message-card in the bathroom, on the desk and bedside table, and you read it carefully when you are free: |

## 5.6.3 The Specification of the Experiment Design

According to Koschate-Fischer and Schandelmeier (2014) the next step in experiment design should determine the number of independent variables (i.e., factorial design), the number of levels of independents, and the design type. This section first discusses the factorial design (single-factor design vs factorial design) which determines the number of independent variables in an experiment. The design type is then explained (between-subjects design vs within-subjects design), which identifies how participants are allocated to groups in an experiment. Table 5.4 describes each type of experiment design and shows the benefits and drawbacks of adopting different types of design.

**Table 5.4 Types of experimental design**

**Koschate-Fischer and Schandelmeier (2014), West et al. (2000)**

| Types of design | Description | Benefits | Drawbacks |
|---|---|---|---|
| **Between-subjects** | Each condition (control and treatments) is randomly allocated to different participants. One participant only experiences one condition, | It can avoid the problem of demand characteristics (avoid the effect of learning from the last treatment and responding accordingly). Each participant has shorter sessions than participants in a within-subject design. This design fulfils the assumption of independence of samples (no repeat measurements) of using the ANOVA analysis. | It requires a larger number of participants and needs to consider extraneous variables that have an influence on the dependent variable because of between-subject differences that could contribute to 'noise'. But this issue can be minimised by randomisation (according to the assumption of randomisation assignment that could establish equivalent groups) |
| **Within-subjects** | The same participant is allocated to all conditions. | It requires fewer participants and the influence of participant's characteristics on the dependent variable is eliminated. Also, it avoids the potential problem of non-equivalent groups. | It has a risk of carryover effect It occurs when the responses in one condition are affected by the prior condition. It also has a possible learning effect and the order/sequence effect. This design cannot satisfy the assumption of no multicollinearity (no repeat measurements) of using the ANOVA analysis. |
| **Single-factor** | One independent variable is manipulated and tested in an experiment. | It is a simple design to compare different levels of the independent variable (2-levels, basically compare two groups) and the statistic analysis is also more simple | Testing more complex theories usually requires more complex designs rather than the single factor design. |

| Multi-factorial | Multiple independent variables are included and manipulated in an experiment. | It allows testing the interaction effect and testing all combinations of the levels of the independent variables. | It increases the complexity of the design and requires a larger sample size. |
|---|---|---|---|

## Single-factor vs multi-factorial

Regarding the decision to use factorial design, adopting a single-factor design means using one independent variable that is manipulated and tested in an experiment. In contrast, when multiple independent variables are manipulated and tested in an experiment, this is a multi-factorial design (Koschate-Fischer and Schandelmeier, 2014). A factorial design with two independent variables is appropriate for this research in all three studies. According to the objective of each study, two independent (manipulated) variables (IV and a moderator) are examined in each study. For example, Study 1 aimed to investigate the effect of personal norms on greener choice under the different levels of influence of private self-consciousness.

After determining the number of independent variables included in an experiment, the next step is to determine the number of levels for each independent variable and whether to conduct a full-factorial design (Koschate-Fischer and Schandelmeier, 2014). Two levels designed for each variable could be appropriate as the goal of each study. For instance, Study 1 tests the effect of personal norms (present personal norms message card vs absent personal norms message card) on greener choice and whether private self-consciousness (activation vs no activation) influences the effect of personal norms. In terms of examining descriptive norms, this tests the effect of descriptive norms (present descriptive norms vs absent descriptive norms) on greener choice and whether public self-consciousness (activation vs no activation) influences the effect of descriptive norms. This type of factorial design is the simplest case with two variables where each variable involves two levels, resulting in four conditions. The full combination factorial design can be represented as follows (see Table 5.5, where a letter stands for a variable, the number stands for the level of each variable, O stands for observation (the dependent variable) and R stands for random assignment of participants to conditions (Manstead, 2008, p32)). These combinations of factors are often referred to as 2*2 designs. In other words, in total four conditions can be allocated to participants in an experiment.

**Table 5.5 Factorial design**

| Variable | Level | |
|---|---|---|
| A | 1 | 2 |
| B | 1 | 2 |

R | *A1B1* | O1
R | *A1B2* | O2
R | *A2B1* | O3
R | *A2B2* | O4

## Between-subjects vs within-subjects

Regarding the design type, it is necessary to decide whether the same participant is allocated to both control and treatments groups (different conditions). Within-subjects design means that the same participant is allocated to all conditions. In contrast, the between-subjects design means that each participant experiences only one condition (West et al., 2000).

The between-subjects design, instead of the within-subjects (or repeated-measures) design, was applied in this research for all three studies. The reason is that carryover effects are likely to occur in the within-subjects design. Participants would easily learn from the first message card and understand the treatment and purpose of this experiment which would result in the problem of demand characteristics or participant bias. Although the between-subjects design is related to the equivalence problem between groups/subjects (need more control for these related potential confounding variables that may affect DV), randomisation assignment could solve this issue to establish equivalent groups. As mentioned previously, using random assignment determines that the mean levels in the different groups will, on average, be assumed to be equal for any measured or unmeasured variables.

In summary, this section specifies the types of experiment design (factorial design) and the design type (between-subjects design) used in this research. These choices can impact decisions about the necessary sample size and the appropriate statistical methods for analysing the data (Koschate-Fischer and Schandelmeier, 2014). Further details about sampling decisions and statistical method choices will be discussed in Sections 5.7 and 5.8.

## *5.6.4 Establishing Valid Concept Operationalisation in Experiments*

The next step is to determine the operationalisation of concepts involved in experiment design. These decisions have to satisfy the construct validity introduced in Section 5.6.1. Construct validity is related to the extent to which a measure actually measures what it is intended to measure. In experimental research this is related to the quality of the experiment's manipulations (Chiang et al., 2013), such as manipulating personal norms, social norms, and self-consciousness. This section discusses the techniques that can be adopted in each study to ensure construct validity (valid manipulation) in concept operationalisation. Operationalisation decisions also involve pre-identifying which potential variable/s should be measured. In doing so, this section discusses the principle employed to identify potential control variables, to allow for later statistical control. The operationalisation of concepts (how to be manipulated or measured) for each study will be discussed in detail separately in its corresponding chapter.

### Establishing the construct validity of independent variables

Regarding establishment of the construct validity of independent variables (often manipulated in an experiment), or ensuring the manipulation is a valid instantiation of the variable in concept operationalisation, researchers often include the measures of manipulation in the study (Fayant et al., 2017). These measures, termed a *manipulation check*, 'are used to check whether the manipulation conducted in an experiment is perceived by the subjects as the experimenter wishes it to be perceived'(Kane and Barabas, 2019, p. 234). According to the guideline for designing experimental studies in marketing research, a manipulation check is used to test the effectiveness of the variation of variables (Koschate-Fischer and Schandelmeier, 2014). Perdue and Summers (1986) emphasise the important role of the manipulation check in establishing the construct validity of the manipulation.

However, this doesn't mean every manipulation should use a manipulation check to assess construct validity. Researchers have recognised the issues of using the manipulation check in marketing experiments by conducting a meta-review of experiments involving latent independent variables. Latent independent variables are usually psychological and sociological variables that are unobservable and abstract in nature. Such variables cannot be changed directly, but could be manipulated indirectly by changing particular aspects of the subject's environment (Perdue and Summers, 1986). The 'take' of the manipulation

check could produce an unexpected effect (e.g., manipulation check could be manipulation). Perdue and Summers (1986) pointed out the timing issues of the manipulation check in the main experiment. First, when measuring the manipulation (i.e., manipulation check) after measuring the dependent variable, the effect produced by manipulation could disappear. Hence, the results of these measures would not be representative for manipulation. However, the temporality length of the effect could depend on the nature of the manipulated variable. For example, the length of the manipulation effect on personal normative information and self-consciousness would be different (attention to self could easily be redirected to other objects by answering other questions). Second, when measuring the manipulation before completion of the dependent variable question, the issue is that the unexpected potential influence of the manipulation check question could have an effect on the dependent variable. According to the above discussion, there is no appropriate timing for conducting a manipulation check for self-consciousness during the main experiment.

Regarding solutions to these issues, one possibility is to check the manipulation in a pre-test to avoid the potential issues caused by the 'take' of manipulation check (Hauser et al., 2018). Perdue and Summers (1986) also discussed situations where a manipulation check is unnecessary. In a situation where the manipulation operation of the intended latent (independent) variable is known, such a latent variable will require no manipulation check (Sawyer et al., 1995). In addition Sawyer et al. (1995) identified three other situations where there is no requirement for a manipulation check. First, no manipulation check is needed when using standard operationalisation of the intended constructs to test the effect on dependent variable/s. This is based on 'the assumption that a body of published consumer research allows them to have such confidence in the strong path of manipulation and the intended latent construct, and there is not a strong path between manipulation and other potential confounding constructs that might plausibly influence the dependent variable' (Sawyer et al., 1995, p. 592). Secondly, there is no need for a manipulation check 'when the operation uses common sense knowledge or there is a generally accepted proposition that is believed to be valid' (Sawyer et al., 1995, p. 592). Thirdly, 'when empirical results of manipulation check do not cause researchers to change the estimate of the relationship between the operational and theoretical independent variable' (Sawyer et al., 1995, p. 592) it makes no sense to conduct a manipulation check. The above understanding would impact upon whether taking a measure of the manipulation of self-consciousness in this research would be appropriate if it is adapted

from a known and standard operation. In contrast, the manipulation check of personal norms should be essential if the operation of manipulating personal norms is less known. In brief, whether to conduct a manipulation check, and where to conduct this to ensure construct validity, depends on the nature of the variables. Moreover, when to manipulation check will also be taken into consideration in the design, as this could potentially introduce demand characteristic if conducting a manipulation check prior to measuring the dependent variable. This is related to the ordering issues in data collection.

A manipulation check is not the only way to assess construct validity (Perdue and Summers, 1986). For example, using several replications of an experiment could strengthen the particular interpretation of the manipulation. Moreover, factual manipulation checks, such as attention checks and instructional checks, are also seen as a new form of manipulation check to establish validity. The factual manipulation check involves asking a single question of the treatment content, and the given choice of answer should be either factually correct or incorrect with respect to the specific treatment. This type of manipulation check would be more suited to a situation where two treatments (variables) are similar. Kane and Barabas (2019, p. 234) noted that 'the essential to the validity of an experiment is the extent to which participants in the study are actually "treated"' (Kane and Barabas, 2019, p. 234). To be attentive to treatments is a prerequisite for being treated. Hence, they proposed a factual manipulation check to ensure participants' attentiveness, through checking the carefulness of their reading. To conclude, ensuring construct validity, may occur through manipulation checks but depending on the features of the variable, these may not be compulsory and may not need to be checked in the main experiment. Including attention check questions is essential to ensuring that participants are attentive to the full experiment, and employing factual types of questions could further differentiate the two variables which are similar (e.g., descriptive norms and injunctive norms), which establishes the concurrent validity of the concept (viewed as a component of construct validity from a broad sense and viewed as a separate validity of the concept).

**Establishing the construct validity of dependent variables**

Regarding ensuring construct validity of dependent variables (i.e., greener choice and green preference [a mediator is a form of dependent variable]), this ensures that the translation of a construct/concept into the measurement is valid. This is related to the quality of the measurement.

In the case of measuring green preference, this research will adopt an existing scale to ensure its validity. This is similar to the approach proposed by Sawyer et al. (1995), where a manipulation check is not required to assess the validity of operationalisation. When researchers adopt an existing scale of the construct (a scale previously validated, and adopted or cited in a number of research studies), the measurement can be considered more valid. Researchers may choose to use a scale to measure variables that is not identical to the original label or term of the scale. However, this can be justified by the definitions or contents of the measure. For example, in this research, Haws et al.'s (2014) GREEN scale will be used to measure green preference, even though the label of the scale does not directly correspond to the construct being measured. The use of this scale is justified by its content, which is representative of the concept of green preference. The effectiveness of the GREEN scale in predicting the preference for environmentally friendly products has been demonstrated in previous research (Haws et al., 2014). Although the GREEN scale was originally developed to measure green consumption value, its definition suggests its suitability for representing green preference, as it refers to the tendency to express the value of environmental protection through one's purchases and consumption behaviours. Compared to other indicators, including eco-preference and preference for green products, as discussed in Section 2.3.4, the GREEN scale captures the idea of the working definition of the overall green preference for this research, by considering multiple dimensions (not just a willingness to pay more). It considers i) the importance of using products that do not harm the environment; ii) the potential environmental impact of one's decisions and actions; iii) whether purchase habits are affected by concern for the environment; iv) wasting resources; v) the perception of self as environmentally responsible; vi) a willingness to be inconvenienced in order to take actions that are more environmentally friendly. The choice of the GREEN scale therefore makes sense for this study. Also, it is reasonable to infer that the reliability and validity of the measuring instruments that have been used for the development of the GREEN scale can be applied to this research. Moreover, reliability tests should be conducted for each scale that is used in this research to ensure a measuring instrument that will give similar results to different observers or the same observer at different times. Cronbach's Alpha coefficient (using the scale reliability test) is often used to indicate the degree of reliability of a measuring scale (Drucker-Godard et al., 2001).

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Measuring a dependent variable (DV) is necessary to observe the effect of manipulating independent variables. Determining the operationalisation of a DV (i.e., greener choice) should involve a specific behaviour (to be a specific expression of greener choice in reality) to be measured, and the levels of its measurement. The specific measurement for indicating participants' greener choice has been introduced in Section 5.6.2.3, as it depends on the experiment setting/scenario. Discussion has mainly focused upon the rationale for, i) the consistency and representativeness of the specific behaviour of hotel towel reuse behaviour with the concept of greener choice/green consumption, and ii) the choice of assessing the likelihood of hotel towel reuse for three days rather than two days or four days or more, as the specific greener choice.

Regarding the decision as to the level of measurement, there are four major levels/scales of measurement, nominal, ordinal, interval and ratio (Churchill Gilbert, 1995). A nominal (or categorical) level of measurement, for example, could assess people's identity (e.g., gender: male-female, and occupation). The ordinal level of measurement involves a nominal scale but categories can be rank ordered. It could assess the value of the variables in order (e.g., preference for brands and social class) but does not specify how far the intervals between the orders are. The categories question to assess the DV is seen as the nominal level or ordinal-level measurement. The pilot study, through using a categorical question (reuse towel for five days, four days, three days, reuse towel once, or towel changed every day) to measure the DV, confirmed that participants answering that they would reuse towels for three days showed different levels of engagement with respect to their general consumption behaviours. Therefore, the categorical level of measurement cannot uncover the different extent of the intended willingness to reuse hotel towels for three days.

In contrast, the interval level of measurement is more suitable than using a categorical question to assess the variation of the DV. The interval level of measurement is used to compare the intervals, which are based on the assumption that the size of the interval is known and the difference between two values is equal (Balnaves, 2001). Along with a classic example of the temperature scale, participants were asked to rate strongly agree, agree, disagree, and strongly disagree about an item (e.g., attitude to a brand) which is often regarded as the interval-level measurement in modern and marketing research (Balnaves, 2001; Churchill Gilbert, 1995). This research used this measurement to depict greener choice (i.e., different levels of green), assuming that the more likely someone is

to reuse the hotel towel for all three days, behaviour is perceived as greener. Moreover, using this measurement can enable the suggested statistical methods for data analysis. The decision on the levels of the measurement of the DV would determine the mathematical possibilities available for quantitative analysis (Balnaves, 2001). Using ANOVA analysis and Mediation, Moderation and Conditional Process analysis (see Section 5.8.4 regarding the suggested statistical methods for experimental analysis), the DV must be a continuous (interval or ratio) level of measurement (Hayes, 2017). In brief, how to ensure this measurement's validity is discussed and justified.

**Determining the principle for identifying potential control variables**

As stated previously, in experimental studies one of the most important purposes is to be able to conclude that the observed outcome was caused by the experimental manipulations (Churchill Gilbert, 1995). A series of decisions has been made to achieve this goal, including employing randomisation assignment to eliminate systematic differences between participants (e.g., sample characteristics) (Easterby-Smith, 2008). However, in the experiment design and measurement development stage, it is still important to identify potential variables that could affect dependent variables. This pre-identification could provide possibilities for later statistical controlling and analysis to rule out these explanations.

Normally, such a variable is considered to be controlled (held constant), which may produce a difference between the control and treatment groups. This variable can be a type of confounding variable, that is an alternative, independent variable (an antecedent of DV) explaining the effect of DV. It can also be another type of confounding variable that affects both the IV (the treatment) and the DV. Looking at 'what is a confounder' closely, a variable needs to satisfy all three conditions to be a potential confounder (Jager et al., 2008). First, the confounder should be a potential factor for making greener choice. Second, the confounder should be unequally distributed between control and treatment groups. For example, if the mean of general green consumption behaviour is rated higher in the treatment group (e.g., personal norms present condition) than in a control group. General green consumption behaviour can be the confounder of making greener choice. In other words, if this is the case personal norms cannot be confidently claimed to be the 'real' cause of greener choice. Third, the potential confounder should not be influenced by the treatment. This also means that the confounder cannot be part of the causal process (Skelly et al., 2012).

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Three conditions provided by Jager et al. (2008) will be used to determine what the potential confounding variables are and to identify which of them need to be measured in each study. These will be discussed separately in the corresponding chapter.

## 5.7 Sampling

A key set of decisions involved in experimental design relates to the choice of sample, the method of sampling, and the sample size.

Regarding the choice of sample, UK citizens have been chosen as the experiment's participants, and they need to meet pre-set eligibilities. The decision to select participants who are UK citizens was taken to increase the equivalence between groups/subjects. A relatively homogeneous sample could reduce extraneous effects (Koschate-Fischer and Schandelmeier, 2014). It is known that country-related variables (e.g., nationality or culture) can impact upon the dependent variable, greener choice. These include the general level of environmental awareness, green consumption practices, the social environment, policy relating to green consumption, and educational input. The online data collection platform Prolific.co did not offer direct options to identify UK citizens but there were different indicators such as UK nationality, currently resident in the UK, born in the UK, and first language. This research used multi-selection criteria instead of a single indicator to select UK citizens. Because people with UK nationality or born in the UK do not necessarily grow up in the UK and stay there, the influence of things like awareness and knowledge of environmental protections, and childhood environment protection experience, may be different. Moreover, using a single indicator of current UK residence may not be accurate. Many students hold UK residence permission but are not really resident in UK (the effect would be different if not growing up in the UK). Therefore, it seems better to use the indicators 'UK Residence' and 'English as your first language' together to further refine the demand sample. Moreover, gender differences may influence greener choice. Despite previous review articles showing inconsistent results on the effect of gender on green consumption, more recently researchers have found that females have more socially and environmentally friendly behaviour (Gifford and Nilsson, 2014; Tripathi, 2017; White et al., 2019). Therefore, a similar ratio of gender will be ensured in each condition group to eliminate the gender effect.

Chapter 5: Methodology

 After identifying the UK population, it is time to discuss further eligibility criteria. The pre-set eligibilities work to increase the realism of the experiment setting. Participants must not always use their own towels when they stay in a hotel, and those who have never stayed in a hotel should be ruled out. It seems unlikely that any participant under 18 years of age and over 78 years of age will stay alone in a hotel. Therefore, the age range also needs to be specified to ensure a realistic scenario. Moreover, from a green consumption point of view, this research focuses on how adults respond to normative appeals (which theories developed based on an adult sample's behaviour rather than with minors), with those who are aged over 78 years more likely to be care recipients, with their consumption behaviours more likely to be dependent on their carers. Hence, the questionnaires were distributed to participants who are UK citizens, aged 18-78, who met pre-set eligibilities, through pre-screening techniques on the online data collection platform Prolific.co.

In relation to the sampling method, the probability sampling method was adopted due to its advantage of allowing for using statistical inference to generalise the results from the sample to the general population (Churchill Gilbert, 1995; ThiéTart, 2001). Simple random sampling is one of the selection methods of probability sampling that randomly selects participants. It is assumed that a member of the identified population has an equal probability of being selected into a sample and could choose whether or not to participate in the study (Balnaves, 2001; ThiéTart, 2001). This differs from random assignment in experiments, where participants who have agreed to participate are randomly assigned under various conditions. The advantage of random assignment is to establish equivalence between groups to control potential noise (e.g., traits of human subjects), in order to ensure internal validity. Whereas random sampling allows for sample generalisation to increase external validity.

The selection of a sample often relates to the issue of selection bias which is more common in non-random sampling (ThiéTart, 2001). However, web-based experiments rely on consumers who are also Internet users, which may cause some selection bias. But 91% of adults in the UK were Internet users in 2019, increasing to 92% in 2020 (Office for National Statistics, 2020). Therefore, UK online users could still be representative of the UK's adult population. Moreover, the data collected from online platforms such as Prolific.co are more demographically representative (e.g., with a range of education levels, different age groups, and a range of employment experience) than a lab sample which involves a narrowed participant group. Therefore, this is not considered much of a

problem in research. If it is an issue, all types of experiments would risk selection bias (relating to the topic, reward, length), because voluntariness implies self-selection bias (Prolific Team, 2018). If there are cases of selection bias, participant bias, and experimenter bias, the sum of these biases is counted into the total error of the experiment (ThiéTart, 2001).

The decision regarding sample size for each condition could be made according to similar existing studies and rules of thumb (Koschate-Fischer and Schandelmeier, 2014; ThiéTart, 2001). As discussed, 'in most experimental studies, the use of samples 30 or greater for each condition is recommended' (Balnaves, 2001, p. 94; Hair, 2009; Koschate-Fischer and Schandelmeier, 2014). Although a range of factors may affect the decision of sample size, including significance level (and confidence interval), the variance of the studied phenomenon (or the number of variables in the experiment), effect size, and desired power of the test, the purpose of the study determines which factor should be taken into account (Balnaves, 2001). For example, in hypothesis testing studies in management science the power of the test is not often considered, and most studies only report significant effects. When no significance is found between the variables it is suggested that a power test be carried out. One way to simply increase the power of the test is through an increase in the sample size (Balnaves, 2001). According to Kelley and Rausch's (2006) suggestion of the necessary sample size to achieve different confidence intervals for the mean difference, 30 participants per condition are necessary for 90% confidence intervals for a medium mean difference. This research takes into account variances of the variable in each experiment and imitates the decisions of previous research to make the decision accordingly for different studies. It is decided to have at least 30 participants per condition for the pretest and 50 participants per condition for the main test.

## 5.8 Experimental Data Collection

A set of key decisions related to experiment design and how decisions have been influenced by the validity of the experiment have been discussed. However, there are still a series of specific decisions that should be made to develop and implement experiments involving different studies. These decisions depend on the objective of each study. These decisions include how to operationalise each variable (manipulation and measurement) and ensure operationalisation validity (manipulation check), determining control

variables, questionnaire design, the data collection process, preparation of the resulting dataset for analysis, and the specific method of data analysis. It should be noted that after developing the experimental questionnaire for each study, a pretest was conducted. The pretest was conducted in the same data distribution platform (Prolific.co) as the main test, and the same procedures were used to collect data in the same population with the same pre-screening criteria. The purpose of this pretest is to see whether the questionnaire works, including wording, instructions, administration or measurement scales, and thereby to determine whether the main test can go ahead. Identifying and addressing problems on a small scale through a pretest before testing them on a full-scale basis helps save time, money, and effort (Hunt et al., 1982). The result of the pretest for each study will be discussed in the corresponding chapter.

The following discussion will provide an overview of the three empirical studies carried out in this research, and list available data analysis methods.

## *5.8.1 Overview of Each Study*

**Chapter 6** is about Study 1, which focuses on the intervention of personal normative information. This study tests the impact of personal norms on greener choice, investigating whether private self-consciousness influences the impact of personal norms, and whether that impact is mediated by green preference. Hence, the experiment used a 2 (personal norms - PN: present vs absent) * 2 (private self-consciousness: present vs absent) between-subjects design, with randomisation assignment, to test the conceptual diagram of Study 1 (see Figure 4.2).

Table 5.6 provides an overview of the main test experiment in Study 1, including purpose, sample, design, manipulation, and data collection procedure. Detailed explanations and justifications for these decisions will be provided in Chapter 6.

**Table 5.6 Study 1-Experiment overview**

| | | |
|---|---|---|
| **Study 1**<br><br>**Experiment**<br><br>**1 (S1-E1)** | ***Purpose*** | To test H1: The impact of personal normative information on greener choice is positively mediated by consumers' overall green preference. |
| | | To test H2: The impact of personal normative information on greener choice through green preference is negatively moderated by private self-consciousness. |
| | ***Sample*** | 200 participants, each condition had 50 participants (49.2% female, $M_{age}$=36 years, UK citizens), filtering out people: i) who never stayed in a hotel, ii) who always use own towels while staying at a hotel |

| | | | |
|---|---|---|---|
| | **Design** | Two-way between-subjects design (2 [personal norms - PN: present vs absent] × 2 [private self-consciousness: present vs absent]) | |
| | **Manipulation** | PN present: manipulated by personal normative message<br><br>PN absent: read control message | Manipulation check by the scale of personal norms |
| | | Private self-consciousness present: primed with first-person pronouns by using a scrambled sentences task<br><br>Private self-consciousness absent: no scrambled sentences task | Manipulation check |
| | **Procedure** | All participants completed the question about their past hotel towel reuse behaviour. They were randomly assigned to either PN present condition or PN absent condition, and either private self-consciousness (Pri-sc) present condition or private self-consciousness absent condition (i.e., PN+ pri-sc absent condition, PN+pri-sc present condition, Control+ pri-sc absent condition, or Control +Pri-sc present condition).<br><br>In PN present condition, participants read PN message. In PN absent condition, participants read a control message card with simple words "help save the environment" which is assumed to have minimal influence on the dependent variable. In Pri-sc absent condition, participants were asked to watch a video that introduced the scenario, then read the message card (PN present or absent), before they rated the likelihood of reusing hotel towels for all three days. In Pri-sc present condition, the process was identical, but participants were first asked to complete a scrambled sentences task before watching the scenario video. All participants complete questions on the manipulation check of private self-consciousness, the mediator of green preference, the manipulation check of the perception of the cleanliness of the hotel towel, the manipulation check of personal norms, control variables of the descriptive norms, the injunctive norms and general green consumption, and the demographic questions. Two attention check questions across the experimental survey. | |

**Chapter 7** describes Study 2, focusing on the interventions of social normative information (descriptive and injunctive norms). It tests the impact of social norms on greener choice, investigates whether public self-consciousness influences the impact of social norms, and whether this impact is mediated by green preference. Hence, the experiment used a 3 (social norms: injunctive norms [IN] vs descriptive norms [DN] vs control) * 2 (public self-consciousness: present vs absent) between-subjects design, with randomisation assignment, to test the conceptual diagram of Study 2 (see Figure 4.4).

Table **5.7** provides an overview of the main test experiment used in Study 2. Detailed explanations and justifications for related decisions will be provided in Chapter 7.

**Table 5.7 Study 2-Experiment overview**

| | | | |
|---|---|---|---|
| **Study 2**<br><br>**Experiment**<br><br>**1 (S2-E2)** | *Purpose* | To test H5: The descriptive normative information positively impacts on greener choice.<br><br>To test H6: The injunctive normative information positively impacts on greener choice.<br><br>To test H7: The impact of descriptive normative information on greener choices is negatively moderated by public self-consciousness.<br><br>To test H8: The impact of injunctive normative information on greener choices is negatively moderated by public self-consciousness. | |
| | *Sample* | 306 participants, each condition had 51 participants (50.7% female, $M_{age}$=38 years, UK citizens), filtering out people: i) who never stayed in a hotel, ii) who always use own towels while staying at a hotel | |
| | *Design* | Two-way between-subjects design (3 social norms: injunctive norms [IN] vs descriptive norms [DN] vs control) * 2 (public self-consciousness: present vs absent) | |
| | *Manipulation* | Descriptive norms present: manipulated by descriptive normative message (i.e., regarding actual hotel towel reusing behaviour for environmental reasons from the majority of other guests)<br><br>DN absent: read control message | Manipulation check using the scale of descriptive norms |
| | | Injunctive norms present: manipulated by injunctive normative message (i.e., regarding approval from the majority of other guests of hotel towel reusing behaviour for environmental reasons)<br><br>IN absent: read control message | Manipulation check using the scale of injunctive norms |
| | | Public self-consciousness present: priming by asking what they think others will think about them if they choose to and choose not to participate in the towel reuse programme<br><br>Public self-consciousness absent: no priming questions | Manipulation check through three items assessing public self-consciousness |
| | *Procedure* | All participants completed the question about their past hotel towel reuse behaviour. They were randomly assigned to either IN present, DN present, or IN/DN absent condition, and either Public self-consciousness (Pub-sc) present or public self-consciousness absent condition (i.e., DN+ pubi-sc absent condition, DN+pub-sc present condition, IN+ pubi-sc absent condition, IN+pub-sc present condition Control+ pub-sc absent condition, Control +Pub-sc present condition).<br><br>In IN present condition, participants read IN message. In DN present condition, participants read DN message. In IN/DN absent condition, participants read a control message card with simple words "help save the environment" which was assumed to have minimal influence on the dependent variable. In Pub-sc absent condition, participants were asked to watch a video that introduced the scenario, then read the message card (DN present, IN present or DN/IN absent [control]), then rated the likelihood of reusing the hotel towel for all three days. In Pub-sc present condition, the process was identical, | |

| | | but participants were first asked to rate what they thought others would think about them if they chose to or chose not to participate in the towel reuse programme. All participants complete questions on the mediator of green preference, the manipulation check of public self-consciousness, descriptive norms and injunctive norms, control variables of the personal norms, and general green consumption, and the demographic questions. Two attention check questions across the experimental survey. |
|---|---|---|

**Chapter 8** examines Study 3, focusing on the exploration of the role of self-concept clarity in activating routes for encouraging greener choice. Study 3a deals with the role of self-concept clarity in the activation of personal norms. This is to test the conceptual diagram of Study 3a (see Figure 4.3). Study 3b deals with the role of self-concept clarity in the activation of social norms, in order to test the conceptual diagram of Study 3b (see Figure 4.5). The general experimental design for each sub study is similar to that of its corresponding study. Studies 3a and 3b were mainly replications of Studies 1 and 2, with little change in the manipulation operation but including an additional measure of self-concept clarity. Hence, they re-examined the Study 1 and Study 2 hypotheses to check the reliability of the previous findings.

Table 5.8 provides an overview of the main test experiment in Study 3. The detailed explanations and justifications for these decisions will be provided in Chapter 8.

**Table 5.8 Study 3-Experiment overview**

| | | |
|---|---|---|
| **Study 3a**<br><br>**Experiment**<br><br>**2-main test**<br><br>**(S3a-E2: M)** | *Purpose* | To test H3: The level of self-concept clarity increases when both private self-consciousness and personal norms are activated.<br>To test H4: This change in self-concept clarity reduces the impact of personal normative information on greener choice through green preference, when private self-consciousness is activated. |
| | *Sample* | 249 participants, each condition with around 60 participants (48.2% female, $M_{age}$=33 years, UK citizens), filtering out people: i) who never stayed in a hotel, ii) who always use own towels while staying at a hotel |
| | *Design* | Two-way between-subjects design (2 [personal norms - PN: present vs absent] × 2 [private self-consciousness: present vs absent]) |
| | *Manipulation* | PN present: manipulated by personal normative message<br><br>PN absent: read control message<br><br>Private self-consciousness present: primed with first-person pronouns by using a scrambled sentences task<br><br>Private self-consciousness absent: no scrambled sentences task |
| | *Procedure* | All participants completed the question about their past hotel towel reuse behaviour. They were randomly assigned to PN+ pri-sc absent |

| | | |
|---|---|---|
| | | condition, PN+pri-sc present condition, Control+ pri-sc absent condition, or Control +Pri-sc present condition. |
| | | In PN present condition, participants read PN message. In PN absent condition, participants read a control message card with the simple words "help save the environment" which it was assumed would have minimal influence on the dependent variable. In Pri-sc absent condition, participants were asked to complete a scrambled sentences task without first-person singular pronouns before watching a video that introduced the scenario, then read the message card (PN present or absent), before they rated the likelihood of reusing hotel towels for all three days. In Pri-sc present condition, the process was identical, but including the scrambled sentences task with first-person singular pronouns before watching the scenario video. All participants completed questions on the mediators of self-concept clarity and green preference, the manipulation check of personal norms, control variables of the descriptive norms, the injunctive norms and general green consumption, and the demographic questions. Two attention check questions across the experimental survey. |
| **Study 3b**<br><br>**Experiment**<br><br>**2-maintest**<br><br>**(S3b-E2:M)** | ***Purpose*** | To test H9a: The level of self-concept clarity increases when both public self-consciousness and descriptive norms are activated.<br><br>To test H9b: This change in self-concept clarity reduces the impact of descriptive normative information on greener choice, when public self-consciousness is activated.<br><br>To test H10a: The level of self-concept clarity increases when both public self-consciousness and injunctive norms are activated.<br><br>To test H10b: This change in self-concept clarity reduces the impact of injunctive normative information on greener choice, when public self-consciousness is activated. |
| | ***Sample*** | 481 participants, each condition with around 80 participants (50.5% female, $M_{age}$=36 years, UK citizens), filtering out people: i) who never stayed in a hotel, ii) who always use their own towels while staying at a hotel |
| | ***Design*** | Two-way between-subjects design (3 social norms: injunctive norms [IN] vs descriptive norms [DN] vs control) * 2 (public self-consciousness: present vs absent) |
| | ***Manipulation*** | Public self-consciousness present: priming by asking what they think others will think about them if they choose to or choose not to participate in the towel reuse programme<br><br>Public self-consciousness absent: using same format of question with the present condition by asking their view about the video watched regarding the design of the video and the performance of the operation of the video.<br><br>DN present: manipulated by DN message card<br><br>IN present: manipulated by IN message card<br><br>DN/IN absent: read control message card |
| | ***Procedure*** | All participants completed the question about their past hotel towel reuse behaviour. They were randomly assigned to either IN present, DN present condition or IN/DN absent condition, and either Public self-consciousness (Pub-sc) present condition or public self-consciousness absent condition (i.e., DN+ pubi-sc absent condition, DN+pub-sc present condition, IN+ pubi-sc absent condition, IN+pub-sc present condition, Control+ pub-sc absent condition, or Control +Pub-sc present condition). |

| | | |
|---|---|---|
| | | In IN present condition, participants read IN message. In DN present condition, participants read DN message. In IN/DN absent condition, participants read a control message card with the simple words "help save the environment" which it was assumed would have minimal influence on the dependent variable. |
| | | In Pub-sc absent condition, participants were asked to rate their view about the video watched regarding the design of the video and the performance of the operation of the video, before participants were asked to watch a video that introduced the scenario, then read the message card (DN present, IN present or DN/IN absent [control]), and then rated the likelihood of reusing the hotel towel for all three days. In Pub-sc present condition, the process was identical, but participants were asked to rate what they thought others would think about them if they chose to or participate or not in the towel reuse programme, before watching the video. All participants complete questions on the mediator of self-concept clarity, the manipulation check of descriptive norms and injunctive norms, control variables of personal norms, and general green consumption, and the demographic questions. Two attention check questions across the experimental survey. |

## 5.8.2 Overview of Data Analysis Methods

Statistical tests should be conducted in quantitative research to understand how the results address the hypotheses (Creswell, 2018). According to Koschate-Fischer and Schandelmeier (2014), the choice of statistical methods can be affected by the specific experiment design which also influence the decision of the number of samples. For example, the factorial design allows for testing the interaction effect, and thus affects the methods of the data analysis. The statistical methods available for the analysis of experimental data can be chosen in Table 5.9.

**Table 5.9 Statistical methods for analysing experimental data**

(based on Creswell, 2018; Hayes, 2018; Keselman et al., 1998; Koschate-Fischer and Schandelmeier, 2014)

| Type of design/model | Between-subjects | Within-subjects |
|---|---|---|
| Single-factor design (factor has 2 levels, with only one DV) | T-test (independent samples t-test) (used to compare the means between two groups) | T-test (paired samples t-test) |
| Single-factor design (factor has $\geq$ 2 levels, with only one DV) | Analysis of Variance (ANOVA) (F-test) (used to compare the means among two or more groups) | Repeated Measures ANOVA |
| Factorial design (only one DV in the model; when more than one DV in the model use Multivariate analysis of Variance (MANCOVA) | Analysis of Covariance (ANCOVA)/Univariate analysis (one DV in the model) (similar to ANOVA, but is used to include control variables or covariates) | Repeated Measures ANOVA |
| Testing linear relationships | Mediation, Moderation and Conditional Process Modelling (PROCESS) | Linear Mixed Model |

The decision regarding the choice of data analysis also depends on the purpose of the analysis. For example, checking the success of the manipulation and testing of the hypothesised models would involve different statistical analyses. In general, ANOVA analysis can be used to analyse manipulation, and Mediation, Moderation and Conditional Process Analysis (PROCESS) can be used for analysing hypothesised models.

**Understanding key concepts/criteria in statistical testing**

To understand the results of these statistical tests necessitates understanding some key concepts in statistical testing. According to Eisend and Kuss (2019), results of hypotheses testing are based on statistical conclusions, especially conclusions surrounding significance. *The Publication Manual of the American Psychological Association* suggests reporting descriptive statistics, statistical significance testing, confidence intervals and effect size to understand the meaning of results (Creswell, 2018). Indeed, reporting these is crucial to answering what the 'significance' of the results is in hypotheses testing. For instance, statistical significance testing as statistical inference for generalising the result from a sample to a population (Bryman, 2012), could tell that if an observed difference/effect is statistically significant, then the observed results are likely

to happen by pattern, not by chance (Creswell, 2018). The tested hypothesis is assumed to be true when the result is at the significance level (Sawyer and Peter, 1983). In other words, statistical significance testing allows researchers to claim the theory is supported or not as statistical significance tells us only what is likely. It cannot prove anything with absolute certainty. It states that particular outcomes are more or less probable' (Eisend and Kuss, 2019, p. 154). Hence, it is important that, before statistically analysing the dataset, researchers select a statistical significance level (a level of error probability) and choose a confidence level for the sample result (a level of certainty) to determine the significance of the results and whether the hypotheses are supported.

**Selecting a significance level**

The significance level (alpha) is also known as the p-value or the smallest level of significance. The common levels of significance are 0.1, 0.05 and 0.01 (Eisend and Kuss, 2019). Researchers should select a p-value (i.e., alpha 0.1 or 0.05 or 0.01) as the smallest level of significance for rejecting the *null hypotheses*. In other words, when the calculated outcome of the p-value is less than the selected p-value or the value of alpha (i.e., $p < 0.1$, $p < 0.05$ or $p < 0.01$) this would lead to rejection of the null hypothesis. The null hypothesis holds that there is no relationship between certain variables (Eisend and Kuss, 2019; Montgomery, 2012; Sawyer and Peter, 1983). This is the opposite of the *alternative hypothesis*/the corresponding research hypothesis looking for effects. Rejecting the null hypothesis is expected by researchers as it allows them to accept the corresponding research hypothesis. If the null hypothesis is true, choosing a smaller p-value (e.g., 0.05 rather than 0.1) indicates a smaller probability of getting the sample results (i.e., having such a sample show the hypothesised relationship where none exists in the population) (Levine and Stephan, 2010, p. 147). Researchers usually seek to set a smaller p-value or lower error probability level (a consequence of publishing bias), as this indicates less possibility of getting such a sample supporting the alternative hypothesis (Bryman, 2012). However, it has been said that choosing a smaller or larger p-value does not determine the possibility of the hypothesis being true or not (Churchill Gilbert, 1995; Sawyer and Peter, 1983). It has been mistakenly believed that 'a high p-value is a reason for the rejection of the research hypothesis' (Levine and Stephan, 2010, p. 147).

Selecting different levels of significance (refers to *error probability*) or p-value affects the extent of the risk of obtaining different types of errors rather than the degree of validity of the research results, the degree of significance of the result, and the probability of a

null hypothesis (Churchill Gilbert, 1995). There are two types of error. A type I error means rejecting a null hypothesis which should not be rejected as it is true. Type II errors mean not rejecting a null hypothesis which should be rejected as it is false. It should be noticed that both types of errors are always possible as the results are not drawn from the whole population but from selected samples (no one knows what exactly is true) (Churchill Gilbert, 1995), and differences between them are always likely (Bryman, 2012). Choosing a smaller p-value could result in a higher risk of obtaining a Type II error (rejecting a true research hypothesis) but a lower risk of obtaining a Type I error (Eisend and Kuss, 2019). Hence, researchers are responsible for the trade-off as to which type of error they want to reduce, considering the potential consequences of rejecting or not the null hypothesis (Field, 2018). This research selected an accepted significance level of 0.1 (i.e., p<0.1), instead of the more frequently used 0.05 as the smallest significance level, to reduce the risk of obtaining the Type II error, as a smaller p-value could increase the risk of a Type II error occurring (Bryman, 2012). A Type II error may have more serious consequences than a Type I error, as this failure could result in rejecting the real effect and losing the opportunity to further explore a new pattern or making use of an innovative result (Churchill Gilbert, 1995; Eisend and Kuss, 2019).

**Choosing a confidence level**

In contrast to testing the p-value for accepting significance by assessing error probability, the estimated confidence interval is another approach, favoured by experimenters, for assessing statistical significance (Montgomery, 2012). Experimenters are interested in calculating the mean difference between treatment and control groups and whether this difference is significant. Estimating the confidence interval answers this question. The estimation produces an interval (lower confidence limits, upper confidence limits) of the mean difference. It provides information about for what percentage of samples (according to the predefined coefficient of confidence =[1-significance level alpha]) the true value of the population mean will fall within its limits (Field, 2018). Using the confidence interval to assess significance is based on whether the interval contains zero. When the estimated interval contains zero this indicates a chance that the means between the groups will have no difference (i.e., no effect from the treatment). Hence, only if the estimated interval does not contain zero can it be concluded that the effect is significant (Eisend and Kuss, 2019). In this case, the confidence interval can be interpreted as below. For instance, when the confidence coefficient is 0.9 (i.e., the significance level is 0.1), the

result suggests that in 90% of samples the true value of the population mean will fall within a range of the mean values calculated from the research result. It can also be interpreted that there is a 90% chance that the calculated confidence interval contains the true population mean. It should be noted that if researchers want higher confidence of containing the true parameter this will result in wider intervals (less precise with respect to the mean range) and vice versa (Churchill Gilbert, 1995). The confidence interval coefficient is affected by the researchers' choice of the level of significance (as 0.1 level was selected); this research thus uses a 90% confidence level to estimate the interval of the population mean difference for assessing the statistical significance.

Different statistical tests have their preferences as to the approach used for assessing significance. Researchers normally report p-value when conducting the AVOVA test and report a *Bootstrap Confidence Interval* when conducting Mediation, Moderation and Conditional Process Analysis (i.e., PROCESS). Bootstrapping is a statistical technique used to estimate a confidence interval by re-sampling the research sample (takes X random sample from the sample with replacement, X normally choose 10000). It has become standard for conducting a mediation analysis in the 21st century, and there are no p-values in PROCESS output (Hayes, 2017). Hence, the bootstrapping technique constructs a 90% confidence interval for testing hypotheses by Mediation, Moderation and Conditional Process Analysis.

## Assessing effect sizes

After determining statistical significance, the substantial significance of the research results is of concern to marketing researchers and practitioners (Eisend and Kuss, 2019). Researchers are concerned about the statistical success but this may fail empirically (regarding the explanatory power). It is known that the calculated p-value could be adjusted by a series of factors such as sample size (the larger the sample size the smaller p-value for accepting an alternative hypothesis). Substantial significance could be assessed via effect size, which is not dependent on the sample size. When the effect size is too small the practical relevance is reduced (Eisend, 2015). Effect size can be measured in different ways and thus has different expressions. It could be used to describe the strength of a relationship between two variables (the common indicators are correlations) and the magnitude of an effect (common indicators are unstandardised regression coefficients) (Eisend and Kuss, 2019; Sawyer and Peter, 1983). The magnitude of an effect represents *'the extent of change in a dependent variable due to the change of an*

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*independent variable*' (Eisend and Kuss, 2019, p. 157). Regarding the magnitude of an effect in a simple design of experimental studies, it is important to consider how much difference in the dependent variable results from the manipulation (the change from the control group to the manipulation group). This study is focused upon the mediation effect and the moderated mediation effect. Hence, the effect sizes of indirect effect and the index of the moderated mediation will be reported.

To summarise, this section provided an overview of three experimental studies and the available statistical tests for experimental research. It also introduced key concepts in statistical analysis and selected an accepted significance level, 0.1, choosing a 90% confidence interval in data analysis to determine whether the hypotheses are supported. Detailed discussion of statistical tests, factor development, pre-tests, manipulation, data collection and analysis for each study will be shown in its corresponding empirical chapter.

## 5.9 Ethical Considerations

'Ethical concerns are greatest where research involves human participants, irrespective of whether the research is conducted person-to-person' (Saunders et al., 2016, p. 232). Ethical issues are considered during each stage of research, including formulating the research topic, designing research, collecting data, processing and storing data, and analysing and reporting data. The main concerns are related to whether you meet the ethical principles below (see

Table **5.10**) at each stage (Saunders et al., 2016). In general, these ethical concerns are related to privacy, confidentiality, anonymity, harm and risk, informed consent, and so on. These concerns were discussed with the supervisors of this research and ethical approval was attained from Strathclyde University Ethics Committee for investigations involving Human Beings. The participant information and consent forms can be seen in Appendix 3.

**Table 5.10 Ethical principles**

(Saunders et al., 2016, p. 243)

| Ethical principle | Ethical rationale for and development of this principle | Assessment and action taken |
|---|---|---|
| Respect for others | The rights of all persons should be recognised, and their dignity respected. | Participants were informed in participant information and consent form that their anonymity had been respected at all times and that they were free to withdraw at any time without giving reason. |
| Avoidance of harm | Any harm to participants must be avoided. Harm may occur through risks to emotional well-being, mental or physical health, or social or group cohesion. | It is not likely to occur, based on the research topic and data collection method. |
| Privacy of those taking part | Privacy is a key principle that links to or underpins several other principles considered here. Respect for others, the avoidance of harm, the voluntary nature of participation, informed consent, ensuring confidentiality and maintaining anonymity, responsibility in the analysis of data and reporting of findings, and compliance in management of data are all linked to or motivated by the principle of ensuring the privacy of those taking part. | The participants were informed in the participant information and consent form that all the information they gave had been treated with utmost confidentiality and their anonymity had been respected at all times and they were free to withdraw at any time without giving reason. |
| Voluntary nature of participation and right to withdraw | The right not to participate in a research project is unchallengeable. This is accompanied by the right not to be harassed to participate. | |
| Informed consent of those taking part | Researchers should provide sufficient information and information and assurances about taking part to allow individuals to understand the implications of participation and to reach a fully informed, considered and freely given decision about whether or not to do so, without the exercise of any pressure or coercion. | Participant information and consent form were given to each participant to provide sufficient information about the research. Participants were informed of the confidentiality of the data and anonymity and their rights of voluntary participation. |

| Ensuring confidentiality of data and maintenance of anonymity of those taking part | Researchers should remain anonymous and the data provided should be processed to make it non-attributable. | The type of data collected cannot be used to identify any personal information. The data collected were fully anonymised and confidential. |
|---|---|---|
| Responsibility in analysis of data and reporting of findings | Assurances about privacy, anonymity and confidentiality must be upheld when analysing and reporting data. | |
| Compliance in management of data | Research is likely to involve the collection of personal data. It is essential for researchers to understand and comply with the legal restrictions and regulations that relate to the management of research data within the country or countries within which they conduct research. | Anonymity data and the type of data cannot be used to identify any personal information. Data are stored for 3 years only for research purposes and stored safely and locked. |
| Ensuring the safety of the researcher | The researcher should identify possible risks of social interactions including 'risk of physical threat or abuse; risk of psychological trauma and risk of being in a compromising situation…' | Not likely to occur, as online data collection and topic content is not likely to lead to these risks |

## 5.10 Summary of the Chapter

This methodology chapter introduced the philosophical underpinnings of the research and identified the ontological and epistemological positions which determine the post-positivist paradigm used herein. The implication of the key assumptions of post-positivism on research design and the choice of experiment method were discussed. Essentially, this provides a ground for the assessment of the quality and meaningfulness of the findings, and criteria to guide the experiment's design. This chapter introduced key decisions involved in designing an experiment, justified the decisions made for establishing a controlled experiment and ensuring the validity of the experiment and thus the valid causation, and finally provided an overview of the experiment design for each study.

The detailed experiment design, the development of manipulation, questionnaires for each experiment, data collection procedures, data analysis, results and findings of each

study will be shown in the following chapters to justify how the data and information has been collected to answer all the research objectives.

# 6 STUDY 1: THE INTERVENTIONAL ROLE OF PERSONAL NORMS

## 6.1 Introduction

This chapter describes and presents experimental study 1, which addresses research objective 1: to investigate how and under what conditions personal normative information prompts consumers to make greener choices. The chapter begins with the purpose of the experiment and the study overview, then shows the operationalisation of each concept, including the manipulation of personal norms and private self-consciousness, as well as the measurement of green preference and greener choice. Next, it presents the results of the pretest, an overview of the questionnaire, participants, and data collection procedure, and presents the data analysis methods and criteria. Finally, the experimental results are presented and discussed.

## 6.2 The Purpose of the Experiment and the Study Overview

The purpose of Study 1 is to test hypotheses H1 and H2 that are listed below.

> H1: The impact of personal normative information on greener choice is positively mediated by consumers' overall green preference.
>
> H2: The impact of personal normative information on greener choice through green preference is negatively moderated by private self-consciousness.

H2 is made based on the premise that H1 is supported. It tests the moderated mediation model as shown in Figure 6.1. In brief, Study 1 will test whether the model below is supported. The rationale for proposing these hypotheses has been justified in Section 4.2.1.

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**Figure 6.1 Conceptual model of Study 1**
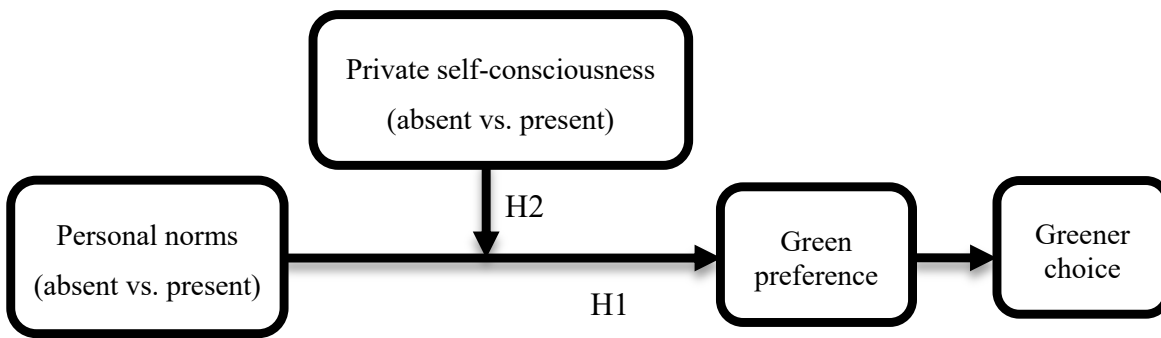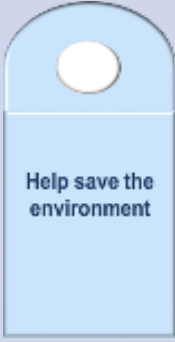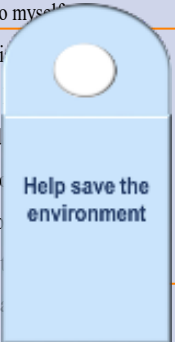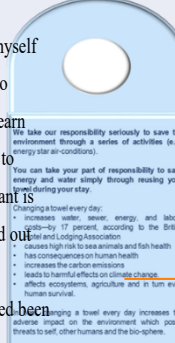


Testing the above hypotheses is based on the *hypothetico-deductive* method (p.134). It assumes that if the relationship between the specific expressions of A (e.g., personal normative information) and the specific expression of B (e.g., hotel towel reuse behaviour) is supported, then their corresponding theory (i.e., the relationship between the theoretical concepts-personal norms and greener choices) is also supported. Therefore, testing the hypotheses H1 and H2 requires that these concepts be applied in specific applications and translated into measurable variables (i.e., specific expressions of the theoretical concepts). Section 6.3 will explain how these concepts were measured and manipulated in Study 1, which uses scenarios related to hotel towel reuse to test the causal effect of personal normative information on greener choices.

## Overview of the study

To test the impact of personal normative information and the moderating effect of private self-consciousness on greener choice, with a 2 (personal norms - PN: absent vs. present) * 2 (private self-consciousness- Pri-SC: absent vs. present) between-subjects design, four experimental groups were created and randomly assigned to only one of the four conditions (as shown in Table 6.1). An overview of all conditions and their details are presented in Section 6.3. Personal norms and private self-consciousness (as a moderator) were manipulated as independent variables, while green preference (as a mediator) and greener choice were measured as dependent variables. Personal norms were activated by the designed personal normative information in the hotel towel reuse context. Private self-consciousness was primed by a scrambled sentence test. Greener choice was measured based on a 7-point scale on participants' likelihood to reuse the hotel towel for all three days (see Appendix 5: the questionnaire from Study 1 for the details). Individual differences or traits were perceived to be balanced between groups by using the

randomisation technique. Alternative explanations were held constant through holding conditions constant and balancing (groups are equivalent prior to IV manipulations). Holding conditions constant means to ensure the IV manipulation is the only difference between the different groups.

**Table 6.1 The conditions/treatments in Study 1**

| | Pri-SC (absent) | Pri-SC (present) | |
|---|---|---|---|
| PN absent (control) | Help save the environment | 1. like understand I to myself<br>2. am playing I the pi<br>3. my from mistakes<br>4. important me food<br>5. to reading me imp<br>6. figure I myself sho<br>7. sky the turns grey<br>8. shoes the have rep<br><br>Help save the environment | See details in Figure 6.4<br><br>See details in Figure 6.3 |
| PN present | We take our responsibility seriously to save the environment through a series of activities (e.g., energy star air-conditions).<br><br>You can take your part of responsibility to save energy and water simply through reusing your towel during your stay.<br><br>Changing a towel every day:<br>• increases water, sewer, energy, and labour costs—by 17 percent, according to the British Hotel and Lodging Association<br>• causes high risk to sea animals and fish health<br>• has consequences on human health<br>• increases the carbon emissions<br>• leads to harmful effects on climate change.<br>• affects ecosystems, agriculture and in turn even human survival.<br><br>In brief, changing a towel every day increases the adverse impact on the environment which poses threats to self, other humans and the bio-sphere. | 1. like understand I to myself<br>2. am playing I the piano<br>3. my from mistakes I learn<br>4. important me food is to<br>5. to reading me important is<br>6. figure I myself should out<br>7. sky the turns grey to<br>8. shoes the have repaired been<br><br>We take our responsibility seriously to save the environment through a series of activities (e.g., energy star air-conditions).<br><br>You can take your part of responsibility to save energy and water simply through reusing your towel during your stay.<br><br>Changing a towel every day:<br>• increases water, sewer, energy, and labour costs—by 17 percent, according to the British Hotel and Lodging Association<br>• causes high risk to sea animals and fish health<br>• has consequences on human health<br>• increases the carbon emissions<br>• leads to harmful effects on climate change.<br>• affects ecosystems, agriculture and in turn even human survival.<br><br>In brief, changing a towel every day increases the adverse impact on the environment which poses threats to self, other humans and the bio-sphere. | See details in Figure 6.2 |

The same experimental environment (maintaining 'ceteris paribus' conditions across conditions) was endeavoured to be created for every participant throughout the data collection procedure, including receiving the same instructions, the same questionnaires, and completing it at a similar time. The confounding effects, therefore, could be minimised (Perdue and Summers, 1986), and then causal inference was expected to be established. However, the ability to hold conditions constant was limited, and the limitation of controllability was recognised. For example, technical difficulties may arise, resulting in the increase of the drop-off rate, and distractions from participants' online and offline 'noisy' environments may reduce participants' attentiveness. Although there are

limitations, they can be addressed to some extent, such as by including the attention check questions to address the issues caused by such inattentiveness. The manipulation of four conditions and the measurement of each variable will be discussed in more detail in the next section.

# 6.3 Operationalisation Development

This section describes how the variables used in Study 1 were manipulated and measured. In order to improve the design of the scenario, instruments, format, question wordings, and instructions (Collins, 2003; Rothgeb, 2008), a pilot test was conducted to refine the initial design. Ten participants participated in the test and completed part or all of the preliminary questionnaire by convenience sampling and answering follow-up questions. How the results of the pilot study affected the experimental survey's development will be discussed throughout Section 6.3.

## *6.3.1 Manipulating Personal Norms and Private Self-Consciousness*

### PN (Personal Norms) message

Personal norms were seen as independent variables (IV) in this study that needed to be varied (manipulated) between the experiment and control group. At the time when this research was conducted, no pretested manipulation procedure for personal norms established based on the theory of the Norm Activation Model (NAM) had been found in existing literature. According to the theory of NAM, personal norms could be manipulated through activating its two premises: Awareness of Consequence (AC) and Ascription of Responsibility (AR), which have been discussed in p.75 and p.63. Hence, personal norms were manipulated in this study by presenting a PN message card, as shown in Figure 6.2. The purposes of using the PN message were to let the participants: (1) become aware of the negative environmental consequences of not choosing the greener choice (i.e., reusing the hotel towel for three days) by reading the text in the orange box to activate AC; and (2) recognise their ability to reduce environmental threats by reading the text in the green box to activate AR, which was done to generate a feeling of responsibility for the negative consequences of not making the greener choice. It was noted that manipulating personal norms can also activate one's environmental awareness, as the concept of environmental awareness is similar to the concept of AC, which serves as the premise for activating personal norms. However, the concept of personal norms

differs from that of environmental awareness, in that activating personal norms is not just activating one's environmental awareness but also activating a sense of obligation to make greener choices. Therefore, the manipulation of personal norms cannot employ the manipulation of environmental awareness.

**Figure 6.2 PN message card**
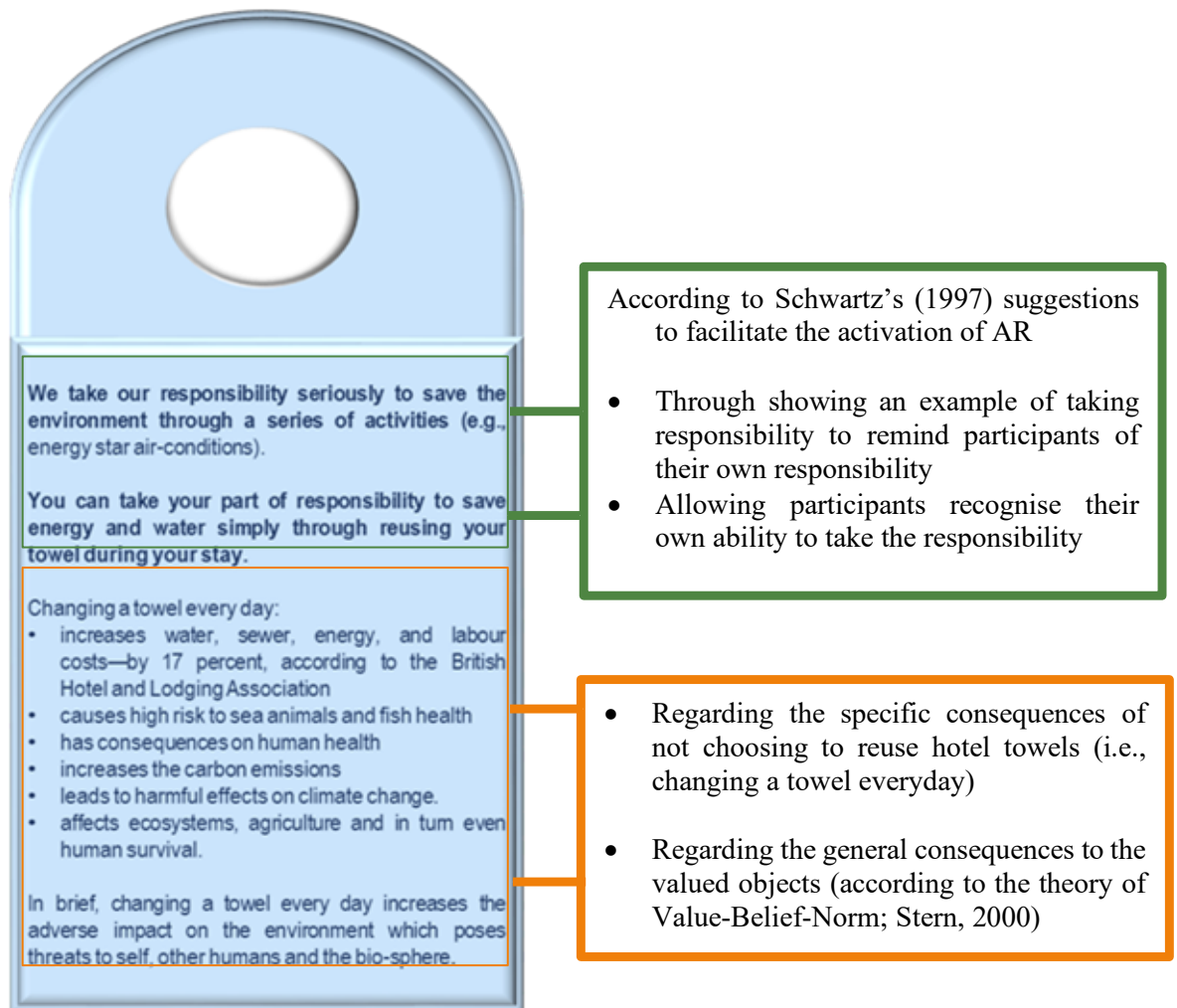


**Control message**

A control group was used as a reference group for examining the effect of independent variables. Participants in the control group received the control message card. The design of the control message card (see Figure 6.3) was adapted from Goldstein et al.'s (2008) standard environmental message. The card contained only an environmental protection message with a simple sentence: '*Help save the environment*', without any normative information. Regarding this design, researchers may argue that the unequal number of words presented in the PN message and the control message could produce an unexpected effect. Meanwhile, by adding more words only on the control message card but not in the

PN message, the additional information is more likely to produce additional unexpected effects. This design was considered a limitation of the research, although the design (without taking into account the effect of unequal word counts) commonly appeared in some of the previous literature [e.g., Gössling et al. (2019); Groot et al. (2013)]. Whether reading more or fewer words affect green preference and greener choice is not within the scope of this research. Nevertheless, a manipulation check of the PN message (which will be discussed in the next section) was conducted to validate the operationalisation of personal norms. Alternative explanations (including the effect of reading more or less) of the impact on the dependent variable(s) could be ruled out.

**Figure 6.3 Control message card**



Help save the
environment
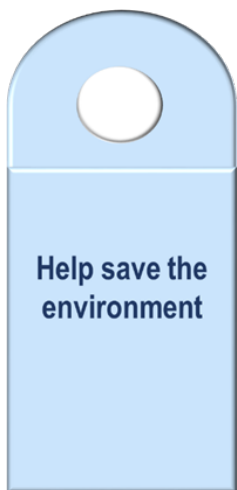
**Scrambled sentence test for priming private self-consciousness**

Private self-consciousness can be activated by any stimulus that directs attention back to oneself (Chang and Hung, 2018). A 'scrambled sentence test' (see Figure 6.4), adapted from Bargh and Chartrand (2000, p. 284), with first-person singular pronouns such as 'me', 'my', 'I' and 'mine', was used to prime private self-consciousness. Instead of the more frequently used 'mirror placing' (Carver and Scheier, 1978), writing a '10-minute self-related story' (Chang and Hung, 2018), or writing a story about what makes one (oneself) different from others (e.g., family, friends, people in general) (Silvia and Eichstaedt, 2004); see Appendix 4 about various manipulations of private self-consciousness even within the same paper), a test with scrambled sentences was used to increase the feasibility of the manipulation.

On the one hand, these are subliminally priming self-related words that activate the implicit self (i.e., implicit self-focus) (Koole and Coenen, 2007). Directing attention to oneself, implicitly or explicitly, had a similar effect on behavioural regulation (Silvia and Phillips, 2013). In other words, the effect produced by exposure to first-person pronouns, which activates private self-consciousness, is similar to the effect produced by exposing oneself to a mirror or writing a self-related story. On the other hand, this is supraliminal priming in which participants are aware of the priming stimuli themselves (scrambled sentence test) but are expected to be unaware of the relationship between the priming stimuli and the subsequent experimental task (Bargh and Chartrand, 2000). Hence, describing the scrambled sentence test as a warm-up exercise before the upcoming scenario task in the question description was to reduce participants' curiosity about the purpose of this task. The results of the pilot study confirmed that participants did not suspect the introduction of the scrambled sentence test and its association with the experiment treatment.

**Figure 6.4 Scrambled sentence test-priming Pri-SC**



The below test is a warm up section to make sure you can fully focused for the upcoming scenario task. This section is a sentence construction task.

Instructions: for each set of words below, make a grammatical sentence and type it down:

For example:
flew eagle the around    The eagle flew around.

understand like to I myself
playing am I the piano
learn my mistakes from I
food to me important is
reading important is me to
I figure out should myself
sky to the turns grey
repaired have been the shoes

The hotel towel reuse scenario (see here: http://bit.ly/2uJJspw) was introduced through a video. In the *PN present + Pri-SC absent condition* (i.e., personal norm activation

condition), participants watched the scenario video while reading the PN message card, and responded immediately to the questions measuring greener choice and indicating responses on a 6-item overall green preference scale. In the *PN absent + Pri-Sc absent condition* (i.e., control condition), participants followed the same procedure, except they read the control message card instead of the PN message card. In the *PN absent + Pri-Sc present condition*, the process was identical to the previous condition, but the participants were asked to conduct a sentence-construction task to prime their private self-consciousness before watching the scenario video. In the *PN present + Pri-Sc present condition*, participants conducted a sentence-construction task and then completed the scenario task with reading the PN message card.

## 6.3.2 Developing Manipulation Check Questions

### Personal norms

To check whether the manipulation is valid, researchers often include measures of the manipulation (Fayant et al., 2017). To verify whether reading the personal normative message card could increase one's personal norms, the control and treatment groups were examined using a seven-point personal norms scale (see Table 6.2), which was adapted from Han (2014); Han and Hyun (2018); and Onwezen et al. (2013). The choice was determined by its representativeness and measurement of the concept of personal norms in NAM and VBN theories, which is the theoretical basis for this research to activate personal norms. The evaluation criterion for the successful activation of personal norms is that participants in the PN present group should rate the personal norms scale (by means of the four items given below) statistically significantly higher than those rated in the PN absent group.

**Table 6.2 The personal norms scale**

| *Manipulation check* | *Anchors* | *Items* |
|---|---|---|
| Personal norms **(Han, 2014; Han and Hyun, 2018; Onwezen et al., 2013)** | Strongly disagree (1) to Strongly agree (7) | • I feel an obligation to make greener choice to save energy and water by choosing to reuse the towel in the hotel<br>• I feel that I should protect the environment for saving energy and water by choosing to reuse the towel in the hotel<br>• I feel it is important that people in general protect the environment by making greener choice to save energy and water |

| | | |
|---|---|---|
| | | • Regardless of what other people do, because of my own values /principles, I feel that I should make greener choice to save energy and water by choosing to reuse the towel in the hotel |

**Private self-consciousness**

Regarding the manipulation check of private self-consciousness, its unnecessity has been pointed out in the previous discussion. First, its nature (attention to self could easily be redirected to other objects by surrounding or by answering other questions) determines the temporality of the priming effect. Hence, by the time the priming effect is measured, it may no longer be detectable. Second, there is no requirement to conduct a manipulation check on the established operationalisation of a concept (Sawyer et al., 1995). The report of the manipulation check of self-consciousness could not be found in a number of previous studies. Some of them acknowledged that they did not perform the manipulation checks (Fransen et al., 2011). Pyszczynski et al. (1987) justified the omission of the manipulation check of self-consciousness with the established construct validation of the manipulation of self-consciousness in previous research such as Fenigstein and Levine (1984). Therefore, when the confidence in the strong path between the manipulation and the intended latent construct has been established in a body of published works, even if the empirical results of the manipulation check are not satisfying, this would not lead researchers to change the estimate of the relationship between the operational and theoretical independent variables.

In this research, the manipulation check of self-consciousness was still conducted because it is an unwritten rule that a manipulation check must be specified in experimental studies to survive the review process (Fayant et al., 2017). Fayant et al. (2017) assessed the views of the 101 social psychologists who attended the 2016 Geneva meeting of the Association for the Diffusion of International Research in Social Psychology, and the results showed that more researchers agreed with the statement that adding a manipulation check would increase the reliability of the research findings.

In this study (Study 1), two items that indicated the extent to which the participants were thinking about themselves or others on a scale of 1 (not at all) to 7 (very much) were used to check the priming effect of the scrambled sentence test on manipulating private self-consciousness. These measures, adopted from Chang and Hung (2018), were used to examine the manipulation of self-focused attention, which varied by writing a story about oneself with given first- person pronouns (e.g., 'I', or 'me') or about a public figure with

given third-person pronouns (e.g., 'she', or 'herself'). It was expected that participants in private self-consciousness present conditions would think more about themselves and less about others than those in private self-consciousness absent conditions.

**The perception of the cleanliness of the hotel towels**

According to findings from previous literature (Dimara et al., 2017), the hygiene and cleanliness of hotel towels are concerns of hotel guests because they can strongly and negatively affect the choice of reusing the hotel towels. This concern was revealed in the feedback from the pilot study. A participant pointed out that he always brings his own towel when he stays in a hotel because of the perceived uncleanliness of hotel towels. In order to reduce the potential negative effect of the uncleanliness of the hotel towels, a description of how the hotel towels were cleaned was included in the scenario design to manipulate the perception of cleanliness. To check whether this manipulation was successful and to further rule out those who didn't think the hotel towels were clean in the scenario, a binary categorical scale (i.e., a 'yes' or 'no' question) assessing the perception of the cleanness of hotel towels has been added to the questionnaire.

### 6.3.3 Measurement (dependent variable, mediator, control variables)

**Dependent variable-greener choice**

How the construct of the greener choice (the DV) could be transformed into a measurable variable in the scenario context of hotel towel reuse has been discussed in Section 5.6.2. A 7-point Likert-type scale was employed to measure the likelihood of reusing the hotel towel for three days (the DV). The scale is listed in Table 6.3. The appropriateness of using this scale for measuring the dependent variable (greener choice) has been justified in Section 5.6.4.

**Mediator-green preference**

The GREEN scale developed by Haws et al. (2014) was used to measure the overall green preference. The reasons have been discussed on p.158. In brief, adopting an existing 'GREEN' scale to measure the defined overall green preference is suitable. This scale is displayed in Table 6.3.

**Table 6.3 The scales of dependent variable and mediator**

| *Dependent variable* | *Anchors* | *Items* |
|---|---|---|
| Greener choice | Extremely unlikely (1) to Extremely likely (7) | • How likely or unlikely is it that you will reuse the hotel towel for all 3 days? |
| *Mediator* | *Anchors* | *Items* |
| Green preference (Haws et al., 2014) | Strongly disagree (1) to Strongly agree (7) | • It is important to me that the products I use do not harm the environment<br>• I consider the potential environmental impact of my actions when making many of my decisions<br>• My purchase habits are affected by my concern for our environment<br>• I am concerned about wasting the resources of our planet<br>• I would describe myself as environmentally responsible<br>• I am willing to be inconvenienced in order to take actions that are more environmentally friendly |

## Pre-identification of potential control variables

Establishing mediation models does not only claim X (which stands for IV) affects M (the mediator) and Y (DV), but also claims M causes Y. However, "M may be correlated with some other variables that X is actually affecting, and if that other variable causes Y rather than M" (Hayes, 2017, p. 121). That other variable C could be a confounder (i.e., a confounding variable) or another antecedent of Y and outcome of X (manipulation), which could threaten internal validity. Hence, to rule out the alternative explanations of M, it is important to pre-identify and measure the potential confounding variables as control variables. Hence, this section will discuss what the potential confounding variables are in this study and identify which of them need to be measured.

Theoretically, no other potential variables other than green preference have been found in the existing literature that could result from personal norms' impact and then affect greener choices. In contrast, if the goal is only to identify other antecedents of the greener choice without considering these antecedents' relationship with personal norms, there could be many antecedents. Whereas, based on the premise of being a potential confounder (Jager et al., 2008), the potential variables could be narrowed down. A potential confounder should meet all three conditions in p.161. From a normative perspective, social norms have been identified as antecedents of the greener choice (meet the first criterion: be a potential factor affecting the dependent variable). There is no causal effect suggested between personal norms and social norms (i.e., personal norms

don't cause social norms); although they are correlated, it is social norms that influence personal norms. Previous studies suggest that social norms may be internalised into personal norms (Schwartz, 1977), which consider personal norms as a mediator between social norms (injunctive social norms) and pro-environmental behaviour (Thøgersen, 2014). Social norms seem to meet the third criterion of being a potential confounder (social norms should not be the mediator). It is unlikely that reading the PN message activates and increases one's perception of others' approval (and/or others' behaviours) regarding hotel towel reuse behaviour. Hence, social norms (both injunctive and descriptive norms) should be measured as two conditions of potential confounding have been met, and it is to check the last condition. They can be measured after reading message cards, as the level of social norms should not be influenced by reading message cards as expected. This measure provides an opportunity to test the distribution of social norms between the treatment and the control group (check the second criterion). In the case when one's social norms are found to be significantly higher in the PN present group than in the PN absent group, social norms can be added to the statistical model as control variables to test the hypothesised model, increasing the internal validity. Whether to include these as control variables will be determined based on the results of the tests, and this will be shown in Section 6.7.1.

Controlling a potential confounder C in a statistical model means testing a hypothesised relationship under the condition of a constant C. *"If two variables M and Y are confounded due to their association with some variables C, then the association between M and Y should not exist among people who are equal on C"* (Hayes, 2017, p122). In other words, if social norms are the confounder of DV, the hypothesised mediation model won't be supported when controlling for social norms. Hence, enabling the claim that green preference, rather than other factors (e.g., social norms: injunctive and descriptive norms), is the cause of greener choice by reading the PN message, injunctive norms and descriptive norms were measured by the existing scales (see scales in Table 6.4) for the further tests to rule out alternative explanations. These additional measures were taken after all other essential measures such as DV, mediator and manipulation checks and before the measurement of demographic questions to avoid the potential ordering effect on essential measures.

In addition, the study also should identify extraneous variables, which can be another IV affecting M (the mediator) and Y (the DV). According to the Model of Goal-Directed

Behaviour (MGDB) (Perugini and Bagozzi, 2001), individuals' past experience with the intended behaviour (i.e., hotel towel reuse experience) could be the direct predictor of intention, and according to existing literature (Ajzen, 2002b; Kidwell and Jewell, 2008), past behaviour of general green consumption can also be a cause or influencer for future green consumption (greener choice). Past behaviour (including both past hotel towel reuse experiences and general green consumption behaviour) is suggested to have a cognitive impact on beliefs, attitudes and behaviour (Albarracin and Wyer, 2000). People may be more likely to make the greener choice as they have done in the past. Therefore, although it is unknown whether past behaviour could increase one's overall green preference, it should be checked whether there is an unequal distribution of past behaviour between groups. It is to check whether participants are more likely to make the greener choice in the treatment group (i.e., those who read the PN message) than those in the control group (i.e., those who read the control message), is due to those participants' past behaviour are significantly different in the treatment group than those in the control group. In other words, to be able to claim that the hypothesised causation is not due to past behaviour, first, past towel reuse experiences and general green consumption behaviour should be measured. Then, it should be tested whether there is a significant difference in past behaviour between the treatment and control groups. Suppose it is the case that most participants in the treatment group have had experience reusing hotel towels, and most participants in the control group have not had that experience. In that case, past behaviours regarding hotel towel reuse should be controlled. The same procedure applies to general green consumption behaviour. General green consumption behaviour was measured by the existing scale from Englis and Phillips (2013) (see the scale in Appendix 5: Study 1 Questionnaire - Question No.13) for checking the potential role of confounders. Past hotel towel reuse behaviour (created as a dummy variable) was measured by a binary choice, or either yes or no. It was measured at the beginning of the questionnaire to distinguish it from general green consumption behaviour.

**Table 6.4 The scales of control variables**

| Control variables | Anchors | Items |
|---|---|---|
| Injunctive norms **(Han and Hyun, 2018)** | from 1: Not at all to 7: Very much, would you say that | • …typical hotel guests approve of those who take the responsibility to protect the environment by reusing towels while staying at a hotel?<br>• … people who are important to you (e.g., family and friends) approve of those who take the responsibility to |

| | | |
|---|---|---|
| | | protect the environment by reusing towels while staying at a hotel?<br>• … people whose opinions you value approve of those who take the responsibility to protect the environment by reusing towels while staying at a hotel? |
| Descriptive norms **(Han and Hyun, 2018)** | from 1: Not at all to 7: Very much, would you say that | • …most guests take their responsibility to protect the environment by reusing towels while staying at a hotel?<br><br>• …people who are important to you (e.g., family and friends) take their responsibility to protect the environment by reusing towels while staying at a hotel?<br><br>• … people whose opinions you value take their responsibility to protect the environment by reusing towels while staying at a hotel |
| Past hotel towel reuse experience | Single choice: yes or no | • Do you ever choose to reuse the hotel-towel for more than one day while staying in a hotel for several days? |
| General green consumption | Frequency of the behaviour: never (1), sometimes (2), often (3), always (4) | See the scale in Appendix 5 |

# 6.4 Pretest

After completing the development of the experimental questionnaire for Study 1, a pretest was conducted. The pretest revealed an issue: there was a quite high ratio of participants who could not pass an attention check question. According to their feedback, the underlying problem was that the format of the attention-check question was not compatible with tablets and mobiles. Therefore, in the following main test, only participants using desktop devices were allowed to complete the questionnaire in order to rule out participants who indeed did not pay attention to the study.

The pretest recruited 16 participants after data cleaning (52.4% female, $M_{age}$=35 years old, UK citizens) through Prolific.co, and they were randomly assigned to four conditions, with each condition having four participants. The questionnaire took the participants 7 minutes to complete on average. No wording or understanding issues with questions had been reported. With the small size of the pretest sample, the difference of the results between the control and treatment groups was not expected to be statistically significant. As a result, it was expected to see the treatment effect in the mean difference. As expected, the pretest result showed that participants in the PN present group, on average, rated a higher likelihood of reusing hotel towels for three days (6.13 vs. 5.50), higher personal

norms (6.38 vs. 5.50), and a higher green preference (5.98 vs. 5.17) than those in the control group.

During the pretest, a potential issue was identified regarding the size of the control message card displayed on the screen, as the extra-large font size of the control message may affect the outcome. Initially, to increase the readability of the PN message on the screen (the smaller font size on PN messages with more words), the presented message cards were magnified, as it was considered that a bigger font leads to better reading and comprehension (Rello et al., 2016). However, all message cards were enlarged instead of just the PN messages. As a result, the text in the control message card became much larger and more prominent than the text in the PN message card. The extra-large font size of the control message, hence, may produce some unexpected effects because previous literature has pointed out that words in the larger font are perceived as more important (Luna et al., 2019). Therefore, in the main test, the control message card was not enlarged to the same size as the PN message card when presenting on screen. However, the font size of the text in the control message card was kept similar to that in the PN message card.

In addition, the pretest's results provide the confidence to use the adopted scales and items in the main test by assessing the Cronbach's alpha coefficient of each scale (see results in Table 6.5). Generally, when the figure of Cronbach's alpha is higher than 0.6–0.7, it indicates that the scale has an acceptable level of internal reliability (Cortina, 1993 ; Taber, 2018), and if it is higher than 0.8. it is described as robust (Bryman, 2012).

**Table 6.5 Study 1-Pretest-Scale reliability result**

|  | Cronbach's Alpha | Cronbach's Alpha Based on Standardised Items | N of Items |
|---|---|---|---|
| 1. Green preference scale | .932 | .935 | 6 |
| 2. Personal norms scale | .883 | .913 | 4 |
| 3. Green consumption behaviour scale | .816 | .812 | 18 |
| 4. Descriptive norms scale | .854 | .870 | 3 |
| 5. Injunctive norms scale | .787 | .818 | 3 |

# 6.5 Questionnaire Overview, Participants and Procedures

This section provides an overview of the questionnaire used in the main test of Study 1, the sequence of the experiment, and the description of participants. The questionnaire

consists of twelve blocks for collecting different types of data, and each block contains one or multiple questions. Table 6.6 lists the category of each block, its corresponding questions, and the justification for the inclusion of each question. The sequence of the blocks also reveals the order of measuring variables. The questionnaire starts with an introduction of the research and follows questions for screening out. Before watching the scenario video, participants should pass an attention check and answer whether they had experience in reusing hotel towels. Four parallel blocks contained four experimental conditions and their corresponding scenario videos. Each block/condition was randomly presented to the participants, which is the only difference between the questionnaires for all participants. After completing the scenario task, greener choice (DV) and green preference (mediator) were measured before checking manipulations. Before the participants complete the demographic questions, including age, gender and education, they should pass the second attention check, and then the control variables and general consumption behaviour were measured.

**Table 6.6 Questionnaire overview of Study 1**

| Blocks | Questions-(details see Appendix 5: Study 1-questionnaire) | Purpose of questions |
|---|---|---|
| **Introductory information** | 1.1 Let the participants know that the survey contains a video watching section that requires equipment to hear the sound | To prepare the equipment or let them drop from here if they don't have the equipment |
| | 1.2 Introduce the purpose of the survey, provide *Participant Information* about the research, and obtain consent for the survey from participants | To provide survey background and let them drop from here if they are not interested in the survey |
| **Screener validation** | 2.1 Have you ever stayed in a hotel? | To filter out those who have never stayed in a hotel and always use their own towels while staying at a hotel, because the hotel towel reuse scenario would be unrealistic for them and their response would be perceived as invalid for this research. |
| | 2.2 When travelling, how frequently do you use your own towels (i.e., towels that you have brought) while staying at a hotel? | |
| **Past behaviour (specific)** | Do you ever choose to reuse the hotel towel more than one day while staying in a hotel for several days? | To check whether it should be included in the test model as a control variable |

| | | |
|---|---|---|
| **1ˢᵗ Attention check** | Please indicate the extent to which you agree or disagree with the following statement<br><br>This is an attention check<br><br>                            1    2    3    4    5    6    7<br>Click on the second option from the right    ○  ○  ○  ○  ○  ○  ○ | To filter out those who failed in attention check |
| **Scenario video (Conditions)** | PN absent + Pri-Sc absent (Control condition)<br>(https://bit.ly/3aWf0K0 ---control message)<br><br>PN present + Pri-Sc absent (PN condition)<br>(https://bit.ly/3G3ckss --- PN message)<br>PN absent + Pri-Sc present condition<br>PN present + Pri-Sc present condition | To assess its effect on DV and mediator |
| **DV** | How likely or unlikely is it that you will reuse the hotel towel for all 3 days? Table 6.3 The scales of dependent variable and mediator | To measure the DV |
| **Manipulation check** | Private self-consciousness | To check the priming effect of scramble sentence task on manipulating private self-consciousness |
| **Green preference** | • It is important to me that the products I use do not harm the environment<br>• I consider the potential environmental impact of my actions when making many of my decisions<br>• My purchase habits are affected by my concern for our environment<br>• I am concerned about wasting the resources of our planet<br>• I would describe myself as environmentally responsible<br>• I am willing to be inconvenienced in order to take actions that are more environmentally friendly | To measure the mediator |
| **Manipulation checks** | The perception of cleanliness | To check participants' perception of the cleanliness of hotel towels |
| | Personal norms scale | To check whether PN message successfully increase participants' personal norms |
| **2ⁿᵈ Attention check** | Please indicate the extent to which you agree or disagree with the following statement<br><br>This is an attention check<br><br>                            1    2    3    4    5    6    7<br>Click on the third option from the left    ○  ○  ○  ○  ○  ○  ○ | To filter out those who failed in attention check |
| **Control variables** | Injunctive norms Scale<br>Descriptive norms Scale | To check whether those should be included in the test model in the analysis as control variables |
| **Past behaviour (general)** | See the scale in Appendix 5 | To obtain general green consumption behaviour |
| **Demographics** | Age | To get a better understanding of sample characteristics and allows for the determination of |
| | Gender | |

| | Education | whether a sample is representative |
|---|---|---|

Participants were randomly selected from the users on Prolific.co (i.e., probability sampling: selection based on the principle of randomisation). Some functions of Prolific.co in the design of the questionnaire and data collection have been discussed on p.141 and used to increase the control power. Additionally, setting each page only to contain one question and recording how long participants are watching the scenario video could assess whether participants watched the full video (which could be seen as another way of checking attention), and if not, their questionnaire could be ruled out of the analysis.

A total of 200 UK citizens (49.2% female; $M_{age}$=36 years old) were recruited in 2019 to complete the four conditions (2*2 design), with each condition having 50 participants. This number excludes participants who failed an attention check (n=31), never stayed in a hotel (n=10), always used their own towels (n=12) and did not spend enough time watching the scenario video (n=17). On average, participants took about 7 minutes and a half to finish the questionnaire, and each participant was paid £0.84 for completing it.

## 6.6 Data analysis methods

Statistical tests will be used to examine the hypotheses. Based on the available statistical methods for analysing experimental data, which were summarised in Table 5.9 in Chapter 5, ANOVA was selected for group comparison to check the manipulation effect and other potential effects. Mediation, Moderation and Conditional Process Analysis (i.e., PROCESS) were employed to test the Conceptual model of Study 1. The model of Study 1 is a moderated mediation model, and thus, the conditional process analysis should be conducted. In general, a mediation analysis addresses the mechanism of a treatment effect, and a moderation analysis investigates the factors (identifying individual differences or contextual variables) that strengthen and/or change the direction of the relationship between IV and DV (Muller et al., 2005). According to Hayes and Rockwood (2019, p. 20) 'a conditional process analysis is an analytical strategy with the integration of mediation and moderation analysis. It is used to examine and test hypotheses about how mechanisms vary as a function of context, stimulus, or individual differences'. Conditional process analysis makes the moderated mediation analysis much simpler than in the past (Hayes, 2017). In the past, it required testing the mediation effect (confirming

the indirect effect) and testing the moderation effect (confirming the moderated effect) before testing the moderated mediation (confirming the indirect effect, whether it is moderated or is conditional on another factor), and only a mediation test required three regressions to be run (Baron and Kenny, 1986; Muller et al., 2005; Zhao et al., 2010).

Model 7 (see the conceptual and statistical diagram in Figure 6.5) in PROCESS 3.4 macro for SPSS was run to test the hypotheses. Model 7 is an integrated model of a simple mediation model (Model 4 in PROCESS) and a simple moderation model (Model 1 in PROCESS) (Hayes, 2017). It could test whether there is a mediation effect (i.e., testing H1 that could be run by model 4) and under what conditions this indirect effect exists or not (i.e., testing H2 by running model 7). As the support of H2 is based on the support of H1 (there is an indirect effect), when the hypothesised model (i.e., H2) is supported, it means that H1 is also supported. This study will directly run model 7 to test H2 instead of running a simple mediation model (model 4) first before testing H2.

**Figure 6.5 Conceptual and statistical diagram for data analysis (Study 1)**

(Hayes, 2017)



Equation 6-1      $M = i_M + a1X + a2W + a3XW + e_M$

**Equation 6-2**      $Y = i_Y + c'1X + bM + e_Y$
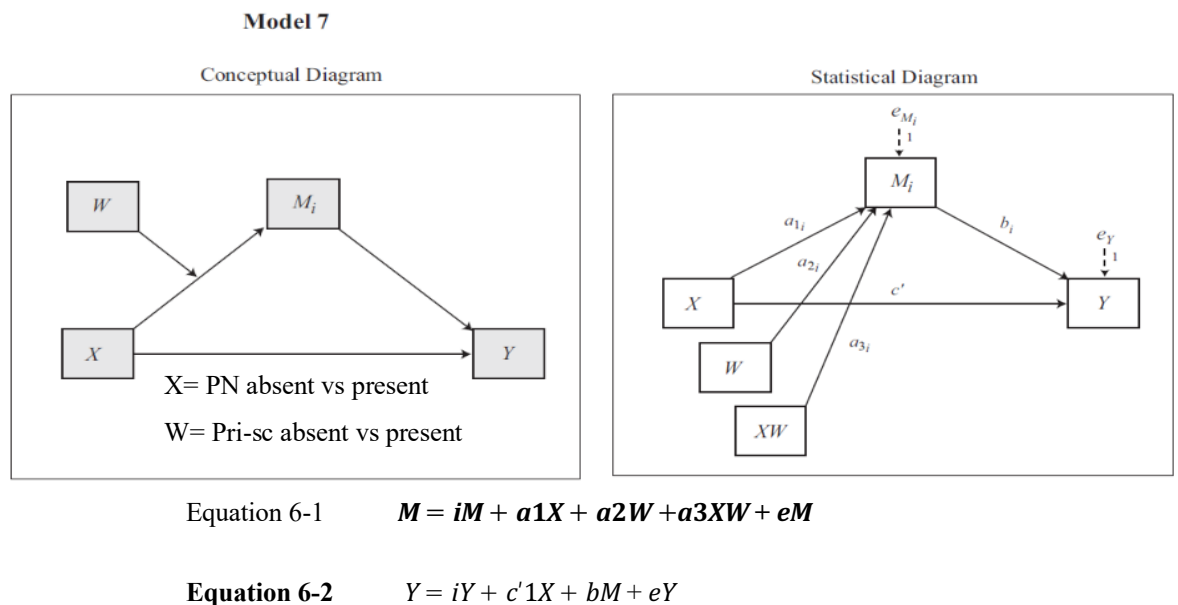
(where $i_M$, $i_Y$ =regression constant; $e_M$, $e_Y$ =standard errors, $a$, $b$, $c'$ =unstandardized coefficient)

Figure 6.5 also shows the Model 7's corresponding equations (      Equation 6-1 and Equation 6-2). Those equations are estimated by using Ordinal Least Squares regression, which is a common method for estimating the coefficients of linear regression models

(Hayes, 2018). X was a created dummy variable representing groups of participants in the PN absent group (X=0) and the PN present group (X=1). W also was a created dummy variable representing groups of participants in Pri-Sc absent (W=0) and Pri-Sc present group (W=1). In these equations, M represents green preference and Y represents a greener choice and both variables were seen as continuous variables. Equation 6.1 estimates $a_1, a_2$ and $a_3$ coefficients, in which model, M was seen as the dependent variable. Equation 6.2 estimates the $c'_1$ coefficient and the $b$ coefficient, in which model, M along with X as were seen as independent variables. Unlike a simple regression in which its estimated coefficient tells the extent of change in a dependent variable as a result of a change in an independent variable (in this case, the change from X=0 to X=1) (Eisend and Kuss, 2019), none of the above coefficients could directly indicate the indirect effect and moderated indirect effect. To test the impact of personal normative information (X) on greener choice (Y), whether it is through green preference (M) (i.e., whether H1 is supported), it assesses the estimated product of $a_1$ and $b$ (i.e., $a_1b$) as the coefficient of indirect effect. To test whether the indirect effect is moderated by the activation of private self-consciousness (W) (i.e., whether H2 is supported), it is necessary to assess the estimated product of $a_3$ and $b$ (i.e., $a_3b$) as the index of moderated mediation. In other words, these two indicators are most important in this study, as they are used to assess whether the hypothesised model is supported. This does not mean the other coefficients are not useful or meaningless. For example, the effect of X (reading personal normative information) on M (green preference) could be expressed by the coefficient a1+a3W. In other words, the effect of personal norms on green preference and greener choice is dependent on the condition of private self-consciousness (factor W). The $a_1$ coefficient could tell that there is $a_1$ unit difference in the mean of green preference between the participants who read the control message and those who read the PN message when Pri-sc is not activated (when W=0). PROCESS analysis will automatically compute these coefficients, which makes the moderated mediation analysis much easier. But the results of the hypotheses relate to the significance of testing.

## 6.7 Results

This section provides the results of Study 1, including the results of the manipulation check, the analysis of determining control variables, and the results of the main test. Prior

to any testing, scale reliability tests were conducted to confirm the scales' reliability, with all constructs Cronbach's alpha a ranging from 0.80 to 0.94 (see result in Appendix 6).

## *6.7.1 Manipulation Check*

Regarding the manipulation of the perception of cleanliness, 95.5% of the participants agreed that the hotel offered clean hotel towels, which means that the manipulation was successful. No significant difference has been found in greener choice between those participants who thought that the hotel towels were clean (M=5.44, n=191) and those who thought that the hotel towels were not clean (M=5.33, n =9 ; p=.856). It means that there is no need to exclude those who thought that the hotel towels were not clean from the following analysis.

The scale of personal norms was measured to test the manipulation of personal normative information. The ANOVA results confirmed the success of this manipulation. It revealed a significant difference between the means of personal norms in the PN absent and that in the present group. Participants in the PN present group rated personal norms (M=5.9700, n=100) higher than those in the PN absent group (M=5.4925, n=100; p=.009).

Regarding the adopted measures to check the manipulation of private self-consciousness, the temporarily priming effect of the scrambled sentence test on manipulating private self-consciousness was not detected. There was no significant difference between the private self-consciousness absent and present group about the extent to which they were thinking about themselves (5.68 vs. 5.74; p=.765) or about others (3.73 vs. 4.17; p=.1). However, as discussed previously, this could be attributed to the nature of this variable, which only allows the effect to last for a short time (taken after the measures of DV and mediator). Thus, the established operationalisation would lead researchers not to change the estimate of the relationship between the operational and theoretical independent variables even though the empirical results of the manipulation check were not satisfying. Hence, this result did not reduce the faith in successfully manipulating private self-consciousness through the scrambled sentence. Rather, it suggested using an alternative way to check this manipulation in Study 3a.

## 6.7.2 Analysis of Determining Control Variables

As discussed in Section 6.3.3, a series of analyses should be conducted to decide whether pre-measured variables need to be included in the hypothesised model for analysis to establish variance equality between groups.

First, to determine whether to include social norms (i.e., descriptive norms and/or injunctive norms) as control variables, an ANOVA was run to test whether descriptive norms and/or injunctive norms are different between the PN present and PN absent groups. It has been confirmed that there was no significant difference between the means of descriptive norms (4.57 vs. 4.77, p=.37) and injunctive norms (4.95 vs. 5.13, p=.24) in the PN absent and present groups. In addition, in the PN present group, the means of personal norms (5.97) is much higher than the means of injunctive norms (5.13) and descriptive norms (4.77). This result also revealed that reading a PN message was not likely to activate social norms. To conclude, neither descriptive norms nor injunctive norms need to be controlled.

Second, in order to determine whether to include past hotel towel reuse experience and general green consumption behaviour as control variables, a series of analyses was conducted to identify whether these were potential explanations for the higher green preference and/or a higher likelihood of making greener choices in the PN present group. Therefore, whether past hotel towel reuse experience is significantly different between the PN absent and PN present group needs to be checked. The frequency analysis revealed that 90.5% of all participants had chosen to reuse the hotel towel more than one day while staying in a hotel for several days (i.e., the majority has past hotel towel reuse behaviour). Moreover, the ANOVA results confirmed no significant difference in past hotel towel reuse behaviour between the PN absent group (M=.91, which means 91 out of 100 who had past hotel towel reuse behaviour) and the PN present group (M=.90, p=.811; 90 out of 100 who had past hotel towel reuse behaviour). The same analysis was conducted for general green consumption. The results also confirmed that there was no significant difference in frequency of general green consumption behaviour between the PN absent and present groups (frequency 2.6967 vs. 2.7394, p=.478). Hence, it can be concluded that past hotel towel reuse experiences and general green consumption behaviour should not be considered alternative explanations of the treatment effect in this study. There is no need to include them in the main model as control variables for analysis. Based on the

above analysis, none of the discussed and measured potential variables should be controlled in the hypothesised model analysis.

### 6.7.3 The Analysis of the Hypothesised Model: Indirect Effect and Moderated Mediation

Model 7 (the moderated mediation model) in PROCESS 3.4 macro for SPSS was run to test H1-H2 (for the full output of Model 7, see Appendix 7). As aforementioned, model 7 was run with two equations using ordinal least squares regression. In the first equation, green preference was the dependent variable, and in the second equation, green preference was the independent variable, and greener choice was the dependent variable. The simplified output of model 7 in Table 6.7 shows the results of these two equations. To test whether the effect of personal normative information (X: independent variable) on greener choice (Y: dependent variable) is through green preference (M: mediator), this was assessed by the generated coefficient of indirect effect (i.e., $a_1b$) in the test. To test whether the above indirect effect is moderated by the activation of private self-consciousness (W: moderator), this was assessed by the generated index of moderated mediation (i.e., $a_3b$). The coefficient of $a_1b$ in model 7 was estimated twice under different conditions of W. It could be used to assess the different strengths of the indirect effect under different conditions. The average coefficient of indirect effect under two conditions could be used to estimate the general indirect effect of X on Y. Understanding the statistical significance of the general indirect effect is also important. It allows one to understand the effect of personal norms on green preference regardless of whether private self-consciousness is activated or not. In brief, the indicators of indirect effect and moderated mediation are the main concerns of this study for testing the significance of the model.

**Table 6.7 The output of the hypothesised model**

| | Green preference (M) | | | | Greener choice (Y) | | | |
|---|---|---|---|---|---|---|---|---|
| | Coeffi. | SE | 90% CI | *p* | Coeffi. | SE | 90% CI | *p* |
| **Constant** | 4.7633 | .1592 | 4.5002, 5.0265 | .0000 | 2.3550 | .5117 | 1.5093, 3.2007 | .0000 |
| **Personal Norms (X)** | .7233 | .2252 | .3511,1.0955 | .0015 | .0220 | .2272 | -.3534,3974 | .9229 |
| **Green preference (M)** | | | | | .5978 | .0992 | .4339,.7616 | .0000 |
| **Private self-consciousness (W)** | .2933 | .2252 | -.0789, .6655 | .1943 | | | | |
| **interaction XW** | -.5500 | .3185 | -1.0764, -.0236 | .0858 | | | | |
| | | | | | effect (index) | SE | LLCI | ULCI |
| **Direct effects of X on Y:** | | | | | .0220 | .2272 | -.3534 | .3974 |
| | | | | | effect (index) | BootSE | BootLLCI | BootULCI |
| **Conditional indirect effects of X on Y:** | | | | W=0 (not activated) | .4324 | .1534 | .2003 | .7006 |
| | | | | W=1 (activated) | .1036 | .1392 | -.1298 | .3225 |
| **Index of moderated mediation** | | | | W | -.3288 | .2082 | -.6936 | -.0178 |
| | R2=.0528 F (3, 196)=3.6405, p=.0137 | | | | | R2=.1618 F(2, 197)=19.0156, P=.0000 | | |

The analysis (10000 bootstrap samples; 90% bias-corrected confidence intervals) revealed that the moderated mediation index was significant, index = -.3288, BootSE = .2082, 90% BootLLCI = -.6936, 90% BootULCI = -.0178, providing support for H2 (i.e., the overall moderated mediation model). Based on the result, it is inferred that the indirect effect of personal norms on greener choice through green preference differs significantly when private self-consciousness is activated or not. This is revealed through the significant difference between the blue line and the red line in Figure 6.6. The negative coefficient indicates a reduction of the effect of the personal normative message on the greener choice through green preference when the private self-consciousness was activated compared to when it was not activated. The effect of this reduction can be seen in the interaction plot shown in Figure 6.6. The effect produced by reading the PN message and control message is much bigger (a>b) when private self-consciousness is not activated (i.e., the distance of a: from A1 to A2) than when it is activated (i.e., the distance of b). In other words, the size of the effect of the PN message on greener choices is significantly different when private self-consciousness is activated or not. In sum, personal norms' effect on greener choices depends on the consumer's private self-consciousness.

The conditional indirect effect of X on Y showed that when private self-consciousness was absent, there was a positive significant indirect effect of personal norms on greener choice through green preference, effect=.4324, BootSE=.1534, 90% BootLLCI=.2003, 90% BootULCI=.7006. On the contrary, when private self-consciousness was present, the indirect effect was not significant (effect=.1036, BootSE=.1392, 90% BootLLCI=-.1298, 90% BootULCI=.3225) as only when zero is not within the estimated confidence interval then it concludes the significance of the effect (Eisend and Kuss, 2019). As illustrated in Figure 6.6, the blue line is significant (value A2 significantly differs from value A1), whereas the red line is not.

**Figure 6.6 The interaction effect on green preference**
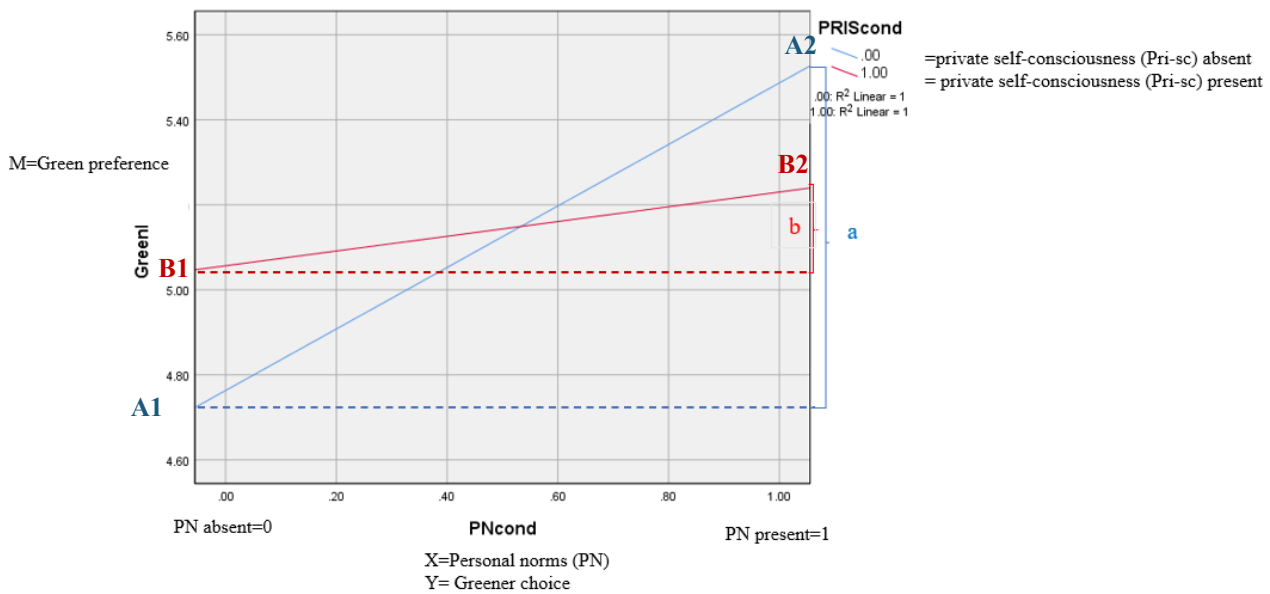


A *post-hoc multiple comparisons* test was conducted, and the results are displayed in Table 6.8. For green preference dependent, there was a significant difference between the PN absent and PN present groups under the private self-consciousness absent condition but not under the private self-consciousness present condition, which is consistent with the above results. According to the interaction plot, this result indicates that value A2 significantly differs from value A1. For greener choice dependent, there was no significant difference between the PN absent and PN present groups. This result is in line with the result of Model 7 that the direct effect of X on Y was not significant, which may be attributable to the size of the sample, as 'a smaller sample size provides enough power to be able to claim a completed mediation but not enough to detect the direct effect' (Hayes, 2018, p. 121).

**Table 6.8 The Post-Hoc Multiple Comparisons for dependent variables (Study 1)**

| | Private self-consciousness absent | | Private self-consciousness present | |
|---|---|---|---|---|
| | PN absent | PN present | PN absent | PN present |
| **Green preference** | 4.7633[a] | 5.4876[b] | 5.0567[c] | 5.2300[d] |
| **Greener choice** | 5.0400[a] | 5.6000[b] | 5.5400[c] | 5.5600[d] |
| **Mean comparison** | | | | | | |
| **Green preference** | a-b:p=.002 | a-c:p=.194 | a-d:p=.040 | b-c:p=.058 | b-d:p=.256 | c-d:p=.442 |
| **Greener choice** | a-b:p=.103 | a-c:p=.145 | a-d:p=.130 | b-c:p=.861 | b-d:p=.907 | c-d:p=.953 |

The conditional indirect effect of X on Y and the *post-hoc multiple comparisons* test did not provide sufficient understanding of the general indirect effect. The general indirect effect size of PN on greener choice (without considering the moderator) can be estimated by the average of the coefficients between the two conditions (i.e., (.4324+.1036)/2=.2680). However, it is still unclear whether the general indirect effect is significant. Hence, a simple mediation model 4 was run to test the significance of the general indirect effect (the only difference between model 4 and model 7 is that there is no moderator W in model 4). The analysis (10000 bootstrap samples; 90% bias-corrected confidence intervals) of model 4 (see output in Appendix 8) revealed that the indirect effect of X on Y is significant (effect=.2680, BootSE=.1036, 90% BootLLCI=.0623, 90% BootULCI=.2608). This provides support for H1.

To conclude, H2 and H1 were both supported through the analysis of Study 1 results. H2 was supported by the result of the moderated mediation index, which implies support for H1 (as H1 is the premise of H2). The analysis of Model 4 also provided support for H1.

# 6.8 Discussion

## *6.8.1 Personal Norms, Green Preference and Greener Choice*

This study investigated the route of activating personal norms for promoting greener choices. This is to investigate how, and under what conditions, personal normative information prompts consumers to make greener choices. The experimental results showed how personal normative information interplayed with private self-consciousness, impacting greener choices via green preference.

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The data produced from Equation 6-1 (with green preference as the outcome) shows that the PN message had a significant positive impact on green preference. The data produced from Equation 6-2 (with greener choice as the outcome) shows that green preference had a significant positive impact on greener choice. The results of the indirect effect of X on Y from model 4 reveal that the PN message had a significant impact on greener choice through green preference. This result supports H1's causal process and suggests that reading the PN message, regardless of the activating status of private self-consciousness in general, can increase the likelihood of making a greener choice through green preference. In other words, people who read the PN message card exhibited a higher overall green preference than those who read the control message card, making them more likely to make the greener choice. However, this indirect effect of PN on greener choice through green preference is smaller when one's private self-consciousness is activated than when it is not activated when comparing the result of the conditional indirect effect of X on Y.

According to the norm activation model and the value-belief-norm theory, activating one's sense of obligation to make a greener choice by activating awareness of consequence and ascription of responsibility would elicit one's underlying values or goals or change the priority of the value. Values are the underlying reasons for shaping one's beliefs and norms (Stern, 2000). Hence, this result supports the interpretation that activating personal norms by reading the PN message (motivational stimuli) prioritises the green value. Therefore, the prioritised green value resulted in a prioritised overall green preference, which leads to a greener choice. According to the attribute of preference discussed in Section 2.3.4 (p.33), green preference might be activated (retrieved from memory by reading the PN message), reconstructed (based on the PN motivational information), or increased (because reading the PN message changes the value priority) by reading PN information. It then increased the likelihood of making a greener choice. The research outcome implies the above-mentioned underlying accounts for increasing green preference and greener choice by reading the PN message.

These results reveal that activating one's sense of obligation to make greener choices by reading the PN message is a viable interventional strategy for promoting greener choices. This research's outcome supports authors such as Stern (2000) and Schwartz (1977), who observed the critical role of personal norms in understanding green consumption, and Groot et al. (2013), who promoted applying the mechanisms of personal norms for

encouraging green consumption, although they did not follow the principles for activating personal norms as set out in the norm activation model, as the current study has done.

The mediating role of green preference bridges the existing relationships between value and preference (Riza Casidy and Tsarenko, 2009; Warren et al., 2011); values, beliefs and norms (Stern, 2000); and preference and choice (Bicchieri, 2010; Olson, 2013). The result supports authors who advocate the importance of understanding consumers' environmental preferences (Zhao et al., 2018), eco-preferences (Dagiliūtė and Paulauskaitė, 2016), and the preference for green products (Brennan, 2006). Based on the stable attributes of underlying (green) preference (Dietrich and List, 2012; Warren et al., 2011), understanding that consumers' green preference positively mediates the impact of the PN message on greener choice implies that there would be a more prolonged effect on greener choice under the influence of personal norms because of the characteristic of preference. In other words, the type of intervention to promote greener choices by providing 'motivationally salient' information that activates green preference could allow market practitioners to design marketing communication strategies that potentially have a more sustained impact on promoting greener choices.

## 6.8.2 Personal Norms and Private Self-Consciousness

The index of moderated mediation further reveals that private self-consciousness influences the impact of personal normative information on greener choice through green preference. The negative value of the index can be interpreted as meaning that the influence of personal normative information on making greener choices via green preference was weaker (stronger) when one's private self-consciousness was (was not) activated. The results showed support for H2 that the impact of personal normative information on making greener choices via overall green preference was negatively moderated by private self-consciousness.

Private self-consciousness was identified as a new moderator that influences the effectiveness of promoting greener choices. However, the results of the conditional indirect effect of personal norms on greener choice showed that the impact of personal normative information on greener choice via green preference is more likely to be exhibited for consumers whose private self-consciousness is not activated. These results are important because they offer researchers a new understanding of when the impact of

personal norms is more influential and when normative information is more likely to increase the overall green preference.

The negative index of moderated mediation reveals the reduction in the PN influence when private self-consciousness is activated. This result would support detecting an explanation for this reduction of the underlying mechanisms triggered by the interaction effect between private self-consciousness and personal norms. Specific self- and identity-related literature richens the understanding of the underlying process when the private self-consciousness is activated, i.e., the automatically initiated self-evaluation process (Carver and Scheier, 1981; Silvia, 2012; Silvia and Phillips, 2013). The proposed underlying mechanisms can shed light on the phenomenon of inconsistent effects of interventional strategies relating to their effect on the clearness, confidence, consistency, and stability of the individual's self-concept, based on the perspective of self-concept clarity. For example, the result may imply that there are inconsistent values or self-concepts being aware due to the activated self-consciousness. This awareness of inconsistency may reduce the effect of personal normative information to elicit a clear green preference and then a greener choice resulting from the self-concept confusion (the reduced self-concept clarity). The above explanation is based on Furchheim et al.'s (2020) finding that people who hold strong values both in terms of being materialistic and being green experience a higher level of value conflict, which is negatively associated with self-concept clarity. A detailed discussion of those underlying mechanisms that might affect self-concept clarity has been shown in Section 3.6.3.

The results of *post-hoc multiple comparisons* for green preference and greener choice show no significant difference between the private self-consciousness absent and the private self-consciousness present group under the PN absent condition. This result suggests that those participants are less likely to be green-oriented. If they are green-oriented, according to the previous understanding of private self-consciousness in social psychology (Stangor et al., 2014) and marketing literature (Goukens et al., 2009), when consumers' private self-consciousness is activated, they would be likely to let their green values activate their green preference and guide their choices as the activated self-consciousness reflects their intrinsic values or self-concepts. This research provided evidence that the above effect would occur only if their personal norms were not simultaneously activated. The result does not suggest that activating private self-consciousness alone is not useful for promoting greener choices. However, it suggests

that applying the mechanism of private self-consciousness to encourage greener choices is feasible only if the target societies are very environmentally considered.

In sum, the first research objective has been achieved by this study, and its results support the hypotheses H1–H2 and the suggested model. The results i) confirm the effectiveness of personal normative information on promoting greener choices; ii) reveal the underlying causal process of the effect of personal norms on greener choices, which is through the increase of green preference; and iii) explore the condition when the impact of PN message is more effective.

### *6.8.3 Limitations and Further Study*

This chapter has identified a causal effect on promoting greener choices resulting from the interaction between personal norms and private self-consciousness. The operationalisation used in this chapter to manipulate personal norms is new and would benefit from replicated studies to further validate the findings regarding the effect of personal norms. A new immediate measure of private self-consciousness after the manipulation in the later replicated Study 3a (conducting a pretest only to check the manipulation of private self-consciousness) would help to detect the short effect and thus further validate the manipulation and the findings.

The chosen type of experimental design in this chapter was influenced by the need to ensure internal validity due to the nature of the concept of private self-consciousness and the untested way of manipulating personal norms, resulting in relatively lower external validity. Future research may test the findings in different contexts and fields to increase external validity, which would be appropriate in a post-PhD study.

## 6.9 Summary of the Chapter

This chapter has addressed research objective 1. Through experimental Study 1, this chapter investigated how personal normative mechanisms as informational intervention facilitate greener choices and when this type of intervention is more effective for promoting greener choices. It was found that applying the mechanism of personal norms to promote greener choices is effective. The study suggested that the positive effect of personal norms on greener choices is through an increase in green preference, and this indirect effect is more influential on promoting greener choices when private self-

consciousness is not activated. Having invested in how personal normative information impacts greener choices, the following chapter will explore how social normative information encourages greener choices.

# 7 STUDY 2: THE INTERVENTIONAL ROLE OF SOCIAL NORMS

## 7.1 Introduction

This chapter describes and presents experimental Study 2, which addresses research objective 2: to investigate how and under what conditions social normative information prompts consumers to make greener choice. This chapter begins with the purpose of the experiment and the study overview, then shows the operationalisation of each concept including the manipulation of social norms and public self-consciousness. Following this, it provides the results of the pretest, an overview of the questionnaire, participants, the data collection procedure, and presents the data analysis methods and criteria. Finally, the experimental results are presented and discussed.

## 7.2 The Purpose of the Experiment and the Study Overview

The purpose of Study 2 is to test hypotheses H5-H8 that are listed below.

> H5: The **descriptive** normative information positively impacts on greener choice.
>
> H6: The **injunctive** normative information positively impacts on greener choice.
>
> H7: The impact of **descriptive** normative information on greener choice is negatively moderated by public self-consciousness.
>
> H8: The impact of **injunctive** normative information on greener choice is negatively moderated by public self-consciousness.

This study also conducted tests for confirming that green preference is not the mediator of the impact of social norms on greener choice to distinguish the underlying mechanism between the impact of social norms and personal norms. H6 and H8 are testing the conceptual model as shown in Figure 7.1. In brief, Study 2 is going to test whether this simple moderation model is supported. The rationale for making these hypotheses has been justified in Section 4.2.2.

**Figure 7.1 Conceptual model of Study 2**
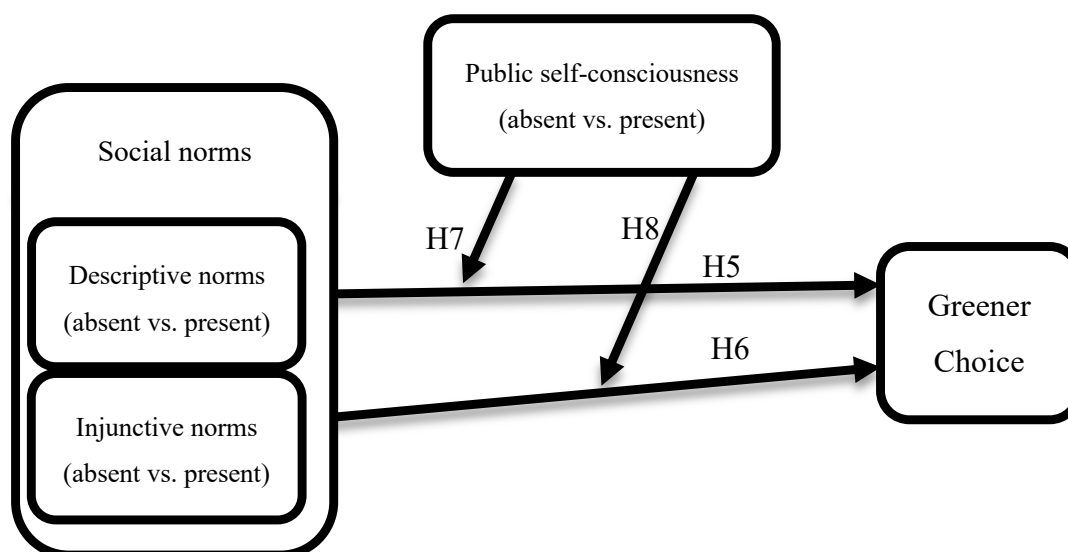


*Hypothetico-deductive* method was used to test the above hypotheses, which is the same method used in Study 1. It requires operating the theoretical concepts in particular applications and converting them to measurable variables. Section 7.3 will explain how these concepts were measured and manipulated in Study 2, which used hotel towel reuse scenarios to examine the causal effect of social normative information on greener choice.

## Overview of the study

To test the impact of social (i.e., descriptive and injunctive) normative information and the moderating effect of public self-consciousness on greener choice, with a 3 (Social norms: descriptive norms (DN) vs. injunctive norms (IN) vs. control) * 2 (Public self-consciousness: present vs. absent) between-subjects design, six experimental groups were created and randomly assigned to only one of the six conditions (as shown in Table 7.1).

Social norms (i.e., descriptive norms and injunctive norms) and public self-consciousness (as a moderator) were manipulated as independent variables, while green preference (as a mediator) and greener choice were measured as dependent variables. Descriptive norms and injunctive norms were activated by the descriptive and injunctive normative information respectively. These normative messages were designed based on the same hotel towel reuse context as in Study 1. Public self-consciousness was primed by answering specific questions. The same scales as used in Study 1 were used to measure greener choice and green preference. Randomisation technique was applied to ensure that

groups are equivalent prior to IV manipulations. The confounding effects, therefore, could be minimised (Perdue and Summers, 1986) and then causal inference was expected to be established. The manipulation of the six conditions and measurement of each variable will be discussed in more detail in the next section.

**Table 7.1 The conditions/treatments in Study 2**



|  | Pub-SC (absent) | Pub-SC (present) |
|---|---|---|
| DN/IN absent (control) | | |
| DN present | | |
| IN present | | |

# 7.3 Operationalisation Development

This section describes how the variables used in Study 2 were manipulated and measured. A pilot test was conducted to refine the initial design. Ten participants participated in the pilot test and completed part or all of the preliminary questionnaire by convenience sampling and answering follow-up questions. How the results of the pilot study affected the experimental survey development will be discussed throughout Section 7.3.

## *7.3.1 Manipulating Social Norms and Public Self-Consciousness*

### DN (Descriptive Norms) message

Descriptive norms i.e., the perception of what is commonly done were seen as an IV in this study that needed to be varied (manipulated) between the experiment and control group. According to existing literature, manipulating descriptive norms was done through providing information about the descriptive norms in a given context. Excluding gaining through directly observing other people's acts, it can be obtained from *normative messages/information* or *normative feedback* (Schultz et al., 2008a). For instance, in the energy consumption context, normative feedback provides information about the average energy consumption level of one's neighbours, which was used as a standard for comparing one's own behaviour (Schultz et al., 2008a). It is worth noting that normative feedback may activate social comparison tendencies, and thus, the effect produced may not be purely from descriptive norms. In contrast, a descriptive normative message provides direct information about what most people do, rather than driving by social comparison, which aligns with the definition of descriptive norms. The message aims to motivate participants to conduct the given behaviour by making them believe that it is an appropriate behaviour in the given situation (Kavvouris et al., 2019; Lindenberg and Steg, 2007a).

Hence, descriptive norms were manipulated by presenting the DN message in this study. Based on previous literature about how to manipulate descriptive norms [e.g., (Goldstein et al., 2008); (Melnyk et al., 2011)](also has been discussed in p.78), the following three decisions should be made when designing a DN message for a given context: i) choose to use the word 'most' or 'majority' or give a specific percentage to represent the majority who conduct the given behaviour; ii) if choose to give a number, what proportion of other people can be regarded as the majority, iii) and who these most other people are (scope

of the group). Regarding the first decision, this research chose to use a specific figure to represent the majority because the word majority is vague in that it could be any percentage higher than 50%. According to Bohner and Schlüter's (2014) analysis, even if the figure of 75% represents the majority, the size of this majority may be too small in the context of green consumption in Europe as some surveys showed that the overall towel reuse rate was as high as 90%. Regarding the third decision, some results showed that an out-group reference may decrease the effect of normative information on behaviour, whereas the degree of similarity in the in-group reference does not increase the influence of normative message (Schultz et al., 2008a). Thus, it is reasonable to use a generic reference group rather than an out-group reference group or a perceived more similar in-group reference group. This research chose to use a figure (88%), which is above 75%, to represent the majority who reuse hotel towels and a generic reference group (i.e., other hotel guests) as the descriptive normative reference group. These decisions were also made after taking into account suggestions from pilot study participants and colleagues in the field. For instance, the initial design used the figure 90%, but a participant expressed the concerns of unrealistic of such a large percentage of people. After used the figure 88% to represent the majority, no one has expressed such concern.

Additionally, to establish the rationale for behavioural conformity and eliminates the possibility of the produced effect of descriptive norms due to unconscious imitation (Bicchieri, 1990), the reasons why most others are reusing hotel towels (i.e., for environmental protection) were added to the DN message card. However, excluding Nolan et al.'s (2008) Study 2, most existing standard manipulations of descriptive norms neglected the importance of presenting reasons for behaviour (Goldstein et al., 2008; Smith and Louis, 2008; White and Simpson, 2013). The designed DN message card is shown in Figure 7.2 .

**Figure 7.2 DN message card**

In a study conducted in Autumn 2018, about **88%** of guests participated in the towel reuse programme by reusing hotel towels during their stay to take responsibility for protecting the environment by saving energy and water.

## IN (Injunctive Norms) message

Injunctive norms were seen as an IV in this study that needed to be varied (manipulated). According to existing literature, manipulating injunctive norms is typically done by providing information that lead people to believe that the given behaviour is what most others expect them to do. For instance, such information comprises an explicit request [e.g., 'everybody should buy environmentally friendly processed potatoes' (Melnyk et al., 2010)].

Hence, injunctive norms were manipulated by presenting the IN (injunctive normative) message. The IN message design also involves making similar choices as to when designing the DN message. The rationale for the decisions is the same as when determining the DN message. To adhere to the standard operation for manipulating injunctive normative message (a review can be seen in p.80) and to be consistent with the DN message, the IN message used the same proportion to represent the majority who approve of the behaviour, and also added information on why most others approve of reusing hotel towels (i.e., environmental protection). Figure 7.3 shows the designed IN message card.

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**Figure 7.3 IN message card**



It should be noted that the existing design and wording of both the IN message and the DN message cards were revised in responding to the feedback from the pilot study and colleagues' suggestions. The participants' feedback on the general feeling after reading these message cards was contradictory. Some participants said they felt pressured, annoyed, and angry after reading the IN message, and this feeling spilt over into their impression of the hotel because they did not like being told what they should do. They also said it is childish to be taught what they should do, but they did not have negative feelings following reading the DN message card. Interestingly, some participants had completely opposite feelings by reading the IN message. They said the IN message is encouraging, and it is good to let others know the choice. Both positive and negative feelings have been theorised by existing literature (Melnyk et al., 2011). The psychological reactance on the impact of pro-environmental normative appeals has been evidenced and its antecedents are *freedom threat* and *counterarguing* (Kavvouris et al., 2019). The DN message has been reported to produce lower psychological reactance (Kavvouris et al., 2019). Furthermore, such negative feedback on the impact of IN message seems normal because normative pressures and fear of social sanctions for not complying with the norm have been considered to be characteristic of social norms (Rimal and Lapinski, 2015). In short, the design of the DN and IN message cards has been carefully developed and will also be pretested before the main test.

**Control message**

Control group servers as a reference group for examining the effect of IVs, which was adopted from Study 1. By using the same design of the control message card that was used to assess personal norms, it would be possible to compare the effect size between personal norms and social norms.

**Priming public self-consciousness**

Public self-consciousness refers to 'the general awareness of the self as a social object' (Fenigstein et al., 1975, p. 523). The level of public self-consciousness can be measured by the items such as the degree to which one is concerned about what other people think of him/her and how much one cares about how he/she presents himself/herself to other (Scheier and Carver, 1985). There are various ways to prime public self-consciousness, including presenting an observer or audience (Goukens et al., 2009), and a webcam or a camera (Van Bommel et al., 2012). These ways share an underlying mechanism, which is to make the participants either aware that their current decision/choice or subsequent behaviour is under observation or have the feeling of being evaluated by others (feeling like being on a stage with the audience) (Van Bommel et al., 2012).

This research adopted Bearden and Rose's (1990) approach to prime public self-consciousness to increase feasibility by asking participants how they would think about what others think about them: whether or not they make greener choice. Participants were required to respond to semantic differential items regarding what other people would think of them if they participated or not in the hotel towel reuse programme. These items included adjective pairs such as helpful/unhelpful, adapted from measures used by Calder and Burnkrant (1977). Some items were inferred from the impressions that might arise in such a hotel towel reuse scenario, combined with previous literature regarding the impression of green and non-green consumers. This approach would let individuals be aware that others are forming impressions of them based on their choices and behaviour. The two specific questions in Table 7.2 are designed to prime public self-consciousness based on the same context of hotel towel reuse as in Study 1.

**Table 7.2 Priming Public Self-consciousness**

| Questions | Measures |
|---|---|
| Please select, from 1 to 7, which of the following options best reflects your view: "if I **choose not to participate** during my stay in the hotel towel reuse programme (to which most hotel guests have participated in), the hotel staff and other guests will think about me as..." |  |
| Please select, from 1 to 7, which of the following options best reflects your view: "if I **choose to participate** during my stay in the hotel towel reuse programme (to which most hotel guests have participated in), the hotel staff and other guests will think about me as..." |  |

In brief, the process of presenting each condition is as follows. In the *DN present +Pub-SC absent condition* (i.e., descriptive norm activation condition) or in the *IN present +Pub-SC absent condition* (i.e., injunctive norm activation condition), participants watched the scenario video (the same as in Study 1) with reading the DN or IN message card. They then responded immediately to the questions measuring greener choice and indicated responses according to the green preference scale.

In the *DN absent+ Pub-SC absent condition* or *IN absent+ Pub-SC absent condition* (i.e., control condition), participants followed the same procedure, but read the control message card instead of the DN or IN message card.

In the *DN absent + Pub-SC present condition* or in the *IN absent + Pub-SC present condition*, the process was identical, but participants were first asked to answer questions to prime their public self-consciousness before conducting the scenario task with reading the control message.

In the *DN present + Pub-SC present condition* or in the *IN present + Pub-SC present condition*, participants answered questions to prime their public self-consciousness and then completed the scenario task with reading the DN or IN message card.

## 7.3.2 Developing Manipulation Check Questions

### Descriptive norms and Injunctive norms

Measuring the manipulated variables is a way to assess the success of the manipulation. Checking whether reading the descriptive or injunctive norms message card could increase one's descriptive or injunctive norms, the scales (see Table 7.3) adapted from Han and Hyun (2018) were used to examine the difference between the control and treatment groups.

**Table 7.3 The manipulation check of injunctive and descriptive norms**

| Manipulation check | Anchors | Items |
|---|---|---|
| **Descriptive norms (Han and Hyun, 2018, p. 92)** | To what extent, from 1: Not at all to 7: Very much, would you say that… | • …most guests take their responsibility to protect the environment by reusing hotel towels while staying at a hotel?<br><br>• …people who are important to you (e.g., family and friends) take their responsibility to protect the environment by reusing hotel towels while staying at a hotel?<br><br>• … people whose opinions you value take their responsibility to protect the environment by reusing hotel towels while staying at a hotel? |
| **Injunctive norms (Han and Hyun, 2018, p. 92)** | To what extent, from 1: Not at all to 7: Very much, would you say that… | • …typical hotel guests approve of those who take the responsibility to protect environment by reusing hotel towels while staying at a hotel?<br>• … people who are important to you (e.g., family and friends) approve of those who take the responsibility to protect environment by reusing hotel towels while staying at a hotel?<br>• … people whose opinions you value approve of those who take the responsibility to protect environment by reusing hotel towels while staying at a hotel? |

### Public self-consciousness

To check whether public self-consciousness is activated, a seven-point scale with three items was used in this study to examine the priming effect (see Table 7.4). These measures

were adopted from Van Bommel et al.'s (2012) and Bearden and Rose's (1990) manipulation check of public self-consciousness. It was expected that participants in the public self-consciousness present condition would concern more about how others would think about them and would feel that their decision to participate or not in the hotel towel reuse programme would have consequences for their image. Additionally, they might believe that others would judge them based on their decision to participate or not in the programme, compared to participants in the public self-consciousness absent condition.

**Table 7.4 The manipulation check of public self-consciousness**

| Manipulation check | Anchors | Items |
|---|---|---|
| **Public self-consciousness** | Strongly disagree (1) to Strongly agree (7) | • I am concerned about how others would think about me regarding my participation or non-participation to the hotel towel reuse programme<br><br>• I feel that my choice of participation or non-participation to the hotel towel reuse programme would have consequences for my image<br><br>• I feel that others would judge me regarding my participation or non-participation to the hotel towel reuse |

### The perception of the cleanliness of the hotel towels

The binary categorical question used in Study 1 to check whether participants believed the hotel offered 'clean' hotel towels has not been added in this study and subsequent studies. This is because the results of Study 1 showed that 95.5% of participants agreed that the hotel offered clean hotel towels, which demonstrated the success of manipulating their perception of the towel cleanliness.

## *7.3.3 Measurement (dependent variable, mediator, control variables)*

### Dependent variable-greener choice and Mediator-green preference

This study will use the same measures of greener choice and green preference as Study 1 to ensure consistency and enable comparison of the effect size between personal norms and social norms.

### Pre-identification of potential control variables

General green behaviour and past hotel towel reuse experience, both as past behaviour, meet the first and third criteria of identifying control variables (p.161). As discussed in

Study 1, past green behaviour can cause or influence future green consumption (greener choice), hence fulfilling the first criterion. Both variables are measures of behavioural history, thus past behaviour could not be changed by the experiment, hence fulfilling the third criterion. Therefore, to determine whether general green behaviour and past hotel towel reuse experience are control variables (fulfil the second criterion), both variables need to be measured and checked for unequal distribution between groups. This study used the same measures of general green behaviour and past hotel towel reuse experience as in Study 1 (see the measures in Appendix 9).

Personal norms are not considered as a potential confounder in this study as they may have a mediation effect. In other words, personal norms may not meet the third criteria as the confounder (Jager et al., 2008). According to Schwartz (1977), raising the salience of social norms would increase altruistic behaviour, and may activate personal norms. Thøgersen's (2014) study further supports that the effect of social norms can be through personal norms, and he considered personal norms as a mediator between injunctive social norms and pro-environmental behaviour. In other words, reading social normative messages affects the likelihood of making greener choice through increased social norms, which may activate one's personal norms. Personal norms would be more likely to be activated or increased by the manipulation of social norms. Hence, based on the above analysis, and the third criteria (the potential confounder should not be influenced by the treatment), personal norms do not need to be controlled. However, in Thøgersen's (2014) study, social norms was only represented by injunctive norms due to the lack of available data on descriptive norms. Therefore, to test whether manipulation of descriptive norms would activate one's personal norms and whether Thøgersen's (2014) mediation model (personal norms as the mediator) can be supported, personal norms were measured in this study by using the same personal norms scale as in Study 1.

## 7.4 Pretest

After completing the draft experimental questionnaire for this study, a pretest was conducted on the same data distribution platform (Prolific.co) as the main test. The purpose of this pretest was to ensure that the questionnaire worked fine before running the main test.

The pretest recruited 31 participants (61% female, $M_{age}$=36.7 years old, UK citizens) through Prolific.co, and they were randomly assigned to six conditions. On average, the questionnaire took the participants 6 minutes to complete, no issues with the wording and understanding of the questions were reported. As the pretest was conducted in a small sample, only a mean difference between the treatment and control groups was expected rather than a statistically significant difference. The ANOVA analysis shows that, as expected, participants in the DN present group, on average, rated a higher likelihood of reusing hotel towels for three days (5.55 vs 4.40, p=.181) and higher descriptive norms (4.60 vs 3.40, p=.026) than those in the DN absent group. Similarly, participants in the IN present group, on average, rated a higher likelihood of reusing hotel towels for three days (5.60 vs 4.40, p=.181) and higher injunctive norms (5.06 vs 4.16, p=.153) than those in the IN absent group. Moreover, participants who were in the Pub-Sc present group rated statistically significantly higher in public self-consciousness (4.00 vs 2.66, p=.017) than those in Pub-Sc absent group. The results above support the ways in which the social normative message and public self-consciousness were manipulated in the pre-test, and therefore, this approach was adopted for the main test.

In addition, the results of Cronbach's alpha of each scale (see Table 7.5) in the pretest shows that the alpha coefficient ranged from 0.70 to 0.95 which is an acceptable value according to Tavakol and Dennick (2011). This analysis provides confidence to use the adopted scales in the main test by assessing internal consistency of the scale.

**Table 7.5 Study 2-Pretest-Scale reliability result**

|  | Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|---|
| Green preference scale | .909 | .910 | 6 |
| Personal norms scale | .946 | .948 | 4 |
| Injunctive norms scale | .910 | .910 | 3 |
| Descriptive norms scale | .896 | .898 | 3 |
| Green consumption behaviour scale | .698 | .701 | 18 |
| Public self-consciousness check questions | .852 | .853 | 3 |

## 7.5 Questionnaire Overview, Procedures and Participants

This section provides an overview of the questionnaire used in the main test of Study 2, the sequence of the experiment, and the description of participants. The questionnaire consists of twelve blocks for collecting different types of data. Table 7.6 lists the category of each block, its corresponding questions, and the justification for the inclusion of each question. Except for some differences in the variables to measure and experimental conditions to present, the sequence of the blocks and the order of measurement are the same as in Study 1. There were six parallel blocks that contained six experimental conditions, each with its corresponding scenario video. The only difference between the questionnaires for all participants is that they may have completed different experimental conditions. The questionnaire starts with an introduction of the research and follows questions for screening out. Before watching the scenario video, participants should pass an attention check (the same attention check question as in Study 1) and answer whether they had experience in reusing hotel towels. After completing the scenario task, greener choice (DV) and green preference (mediator) were measured prior to manipulation checks. Before the participants complete the demographics questions, including age, gender and education, they should pass a second attention check, and then the control variables and general consumption behaviour are measured.

**Table 7.6 Questionnaire overview of Study 2**

| Blocks | Questions (details see Appendix 9: Study 2-questionnaire) | purpose of questions |
|---|---|---|
| **Introductory information** | 1.1 Let the participants know that the survey contains a video watching section that requires equipment to hear the sound | To prepare the equipment or let them drop from here if they don't have the equipment |
| | 1.2 Introduce the purpose of the survey, provide *Participant Information* about the research and obtain consent for the survey from participants | To provide survey background and let them drop from here if they are not interested in the survey |
| **Screener validation** | 2.1 Have you ever stayed in a hotel | To filter out those who have never stayed in a hotel and always use their own towels while staying at a hotel, because the hotel towel reuse scenario would be unrealistic for them and their response would be perceived as invalid for this research. |
| | 2.2 When travelling, how frequently do you use your own towels (i.e., towels that you have brought) while staying at a hotel? | |

| Past behaviour (specific) | Do you ever choose to reuse the hotel towel more than one day while staying in a hotel for several days? | To check whether it should be included in the test model as a control variable |
|---|---|---|
| 1st Attention check | Please indicate the extent to which you agree or disagree with the following statement<br><br>This is an attention check<br><br>Click on the second option from the right    1 2 3 4 5 6 7 ○ ○ ○ ○ ○ ○ ○ | To filter out those who failed in attention check |
| Scenario video (Conditions) | DN/IN absent + Pub-Sc absent (Control condition) (https://bit.ly/3aWf0K0 ---control message)<br>DN/IN absent + Pub-Sc present condition (https://bit.ly/3aWf0K0 ---control message)<br>DN present + Pub-Sc absent (DN condition) (https://bit.ly/2XpDkAY--- DN message)<br>DN present + Pub-Sc present condition (https://bit.ly/2XpDkAY--- DN message)<br>IN present + Pub-Sc absent (IN condition) (https://bit.ly/3vp364S --- IN message)<br>IN present + Pub-Sc present condition (https://bit.ly/3vp364S --- IN message) | To assess its effect on DV and mediator |
| DV | See Appendix 9 | To measure the DV |
| Green preference | Green preference Scale | To measure the mediator |
| Manipulation check | Public self-consciousness Scale | To check the level of public consciousness between groups |
| | Descriptive norms Scale | To check whether DN message successfully increase participants' descriptive norms |
| | Injunctive norms Scale | To check whether IN message successfully increase participants' injunctive norms |
| 2nd Attention check | Please indicate the extent to which you agree or disagree with the following statement<br><br>This is an attention check<br><br>Click on the third option from the left    1 2 3 4 5 6 7 ○ ○ ○ ○ ○ ○ ○ | To filter out those who failed in attention check |
| Potential control variables and additional measure | Personal norms Scale | To test the effect of the social normative message on personal norms. |
| | General green consumption behaviour | To check whether general green consumption behaviour should be included in the test model in the analysis as control variables. |
| Demographics | Age | To get a better understanding of sample characteristics and allows for the determination of whether a sample is representative |
| | Gender | |
| | Education | |

Participants were randomly selected from the users on Prolific.co (i.e., probability sampling. As in Study 1, this study used some functions of Prolific.co to increase the controllability of unintended effects in data collection. They include force response requirements for each question to avoid having the uncompleted questionnaire, timers to record the spent on each page and the entire questionnaire avoid hasty or unattended questionnaires, and the use of functions to exclude those who have previously participated in any studies to avoid the learning effect (i.e., Study 1 pretest and main test and Study 2 pretest).

A total of 306 UK citizens (50.7% female; $M_{age}$=38 years old) were recruited in 2019 to complete the six conditions (3*2 design), with each condition having 51 participants. This number excludes participants who failed an attention check (n=17), never stayed in a hotel (n=4), always used their own towels (n=2) and did not spend enough time watching the scenario video (n=19). On average, participants took about 6 minutes to finish the questionnaire, and each participant was paid £0.68 for completing it.

## 7.6 Data Analysis Methods

ANOVA was selected for group comparison to examine the manipulation effect and other potential effects. Mediation, Moderation and Conditional Process Analysis (i.e., PROCESS) was employed to test the conceptual model of Study 2 (Figure 7.1). The conceptual model is a simple moderation model (model 1 in PROCESS) to test H5-H8. This model is based on the assumption that the impact of descriptive/injunctive norms on greener choice is not mediated by consumers' overall green preference. To justify this, this study firstly conducted the ANOVA analysis to test the difference in green preference between the treatment and the control groups. . If there was no significant difference in green preference between the two groups, then model 1 was run to test H7 and H8 (see conceptual and statistical diagram in Figure 7.4). However, if there was significant difference, then model 8 could be run to test the mediation effect (whether the change of green preference causes the effect on greener choice). It has been noted that all the procedures mentioned above were run twice due to the substitution of a different X (DN message or IN message).

hypotheses H7 and H8 are regarded as supported. This could reveal that $b_1$ is dependent on the value of W (according to Equations 7.1). In other words, the effect size of X on Y is conditional on the value of W (W=0 or W=1). The critical indicator for understanding the results of the hypotheses is the coefficient $b_3$ and the results relate to the significance of testing.

# 7.7 Results

This section provides the results of Study 2, including the results of manipulation check, the analysis of determining control variables, and the results of the main test. Analysing data from Study 2, the data regarding injunctive norms were excluded when seeking to test the effects of descriptive norms (and vice versa). Prior to any testing, scale reliability tests were conducted to confirm the scales' reliability, with all constructs Cronbach's alpha a ranging from 0.79 to 0.95 (see result in Appendix 10).

## *7.7.1 Manipulation Check*

### Descriptive norms

The scale of descriptive norms was measured for testing the manipulation of descriptive normative information. The ANOVA results confirmed the success of this manipulation. It revealed a significant difference between the means of descriptive norms in the DN absent and present groups. The participants in the DN present group rated descriptive norms (M=4.9412, n=102) significantly higher than those in the DN absent group (M=4.4804, n=102; *p*=.006). This indicates that participants in the DN present group, were more likely to believe that reusing hotel towels was a common behaviour for protecting the environment among most other guests, people who are important to them and whose opinions they value.

### Injunctive norms

The injunctive norms' scale was measured to test the manipulation of injunctive normative information. The ANOVA results confirmed the success of this manipulation. It revealed a significant difference between the means of injunctive norms in the IN absent and present groups. The participants in the IN present group rated injunctive norms (M=5.2353, n=102) significantly higher than those in the IN absent condition (M=4.9935, n=102; *p*=.086). This indicates that the participants in the IN present group, were more

likely to believe that reusing hotel towels was a commonly approved behaviour for protecting the environment among typical hotel guests, people who are important to them and whose opinions they value.

**Public self-consciousness**

Three measures were adopted to check the manipulation of public self-consciousness. The ANOVA results confirmed the success of this manipulation. It revealed a significant difference between the means of three measures of public self-consciousness in the Pub-Sc absent and that in the present group. The participants in the public self-consciousness present group rated public self-consciousness (M=3.6035, n=153) significantly higher than those in public self-consciousness absent group (M=2.5817, n=153; *p*=.000). This indicates that participants in the Pub-Sc present group were more concerned with how others would think about their choice; felt more that their choice would have consequences on their image; and felt more about others would judge them regarding their choice on the hotel towel reuse programme.

## *7.7.2 Analysis of Determining Control Variables*

As discussed in section 7.3.3, a series of analyses should be conducted to decide whether pre-measured variables need to be included in the hypothesised model for analysis.

First, to determine whether past hotel towel reuse behaviour should be controlled, the analyses below were conducted to check whether past hotel towel reuse behaviour is significantly different between the DN absent and the DN present group and between the IN absent and the IN present group. The frequency analysis reveals that 87.6% of all participants had chosen to reuse the hotel towel more than one day while staying in a hotel for several days (i.e., the majority has past hotel towel reuse behaviour). Moreover, the ANOVA results revealed no significant difference (*p*=.686) in past hotel towel reuse behaviour between the DN absent (87 out of 102) and the DN present group (89 out of 102). The ANOVA results also confirm that there was no significant difference (*p* =.288) in past hotel towel reuse behaviour between the IN absent (87 out of 102) and the IN present group (92 out of 102). Hence, it can be concluded that past hotel towel reuse behaviour should not be considered as an alternative explanation of the treatment effect in this study.

Second, to determine whether general green consumption behaviour should be controlled, the ANOVA was run to test whether general green consumption behaviour is different between groups. The results revealed no significant difference in general green consumption behaviour between the DN absent (M=2.7206, n=102) and the DN present group (M=2.7565, n=102; $p$=.549), and between the IN absent (M=2.7206, n=102) and the IN present group (M=2.7631, n=102; $p$=.431). The above mean value of green consumption behaviour indicates that participants sometimes or often conduct the general green consumption behaviour. To conclude, general green consumption behaviour should not be considered as an alternative explanation for the expected treatment effect in this study.

Third, as aforementioned (p.221), personal norms should not be considered a potential confounder in this study. Measuring personal norms allowed for testing Schwartz's (1977) theory and Thøgersen's (2014) mediation model, which suggests that social norms affect behaviour through personal norms. By conducting the Post Hoc Tests, the results of multiple comparisons confirm that reading the descriptive normative message and injunctive normative message could increase participants' personal norms (control M=5.6716 vs DN message M=6.0931, $p$=.046; and control vs IN message M=6.0784, $p$=.054). This result supports Schwartz's (1977) view that the effect of social norms could be internalised into personal norms. To further test whether this internalised effect of spill over to greener choice, model 4 was run, and when X is the continuous variable (the measured descriptive norms or injunctive norms), Thøgersen's (2014) mediation model was supported. These results may imply that social norms may be partly internalised into personal norms or seen as superficially internalised personal norms to attain or avoid something (e.g., to attain ego enhancement or to avoid guilt). According to Thøgersen's (2006) norm taxonomy, personal norms activated by social norms are more likely to be superficial, unlike those directly affected by personal normative information which are deeply internalised that could activate the overall green preference. As personal norms may involve the mediation process (theoretical support and data evidence), even superficially or partial, they are not considered as the confounder and should not be controlled in the main model analysis.

Based on the above analysis, none of the potential variables discussed and measured should be controlled in the hypothesised model analysis. This decision is similar to

current literature investigating the effect of social normative information, where few studies controlled any other variables in the main model analysis.

## 7.7.3 The Analysis of the Hypothesised Model

As discussed in Section 7.6.1, the decision of which model to run should be based on the results of the ANOVA result of the effect of social normative information on green preference. The ANOVA results show that there was no significant difference in the means of green preference between the DN absent and DN present group (5.3448 vs. 5.3448, p=1.000); and between IN absent and present group (5.3448 vs. 5.3497, p=.973). Therefore, Model 1 in PROCESS 3.4 macro for SPSS, was run to test H5-H8. The full output of model 1 can be found in Appendix 11 &12.

**Regarding descriptive norms**, the simplified output in Table 7.7 shows the results of Equation 7-1. The analysis of model 1 (10000 bootstrap samples; 90% bias-corrected confidence intervals) showed that the coefficient $b_1$ was positive and significant ($b_1$=.8431, BootSE==.3618, 90% BootLLCI:=.2392, 90% BootULCI=1.4268, p=.0291). Combining the ANOVA results of no effect found on green preference, it provides support for H5. In other words, the DN message has a positive impact on greener choice and this effect is not caused by green preference (reading the DN message has no effect on green preference). Moreover, the interaction coefficient $b_3$ was negative and significant (Inter=-1.1765, BootSE==.5422, 90% BootLLCI:=-2.0532, 90% BootULCI=-.2635, p=.0313), providing support for H7. These results revealed that people who read the DN message card rated the higher likelihood of reusing hotel towels for all three days, than those who read the control message card, but this effect size was conditional on the value of public self-consciousness (W=0 or W=1), as the estimated coefficient of X is dependent on the value of W (according to Equation 7-1).

**Table 7.7 The output of the hypothesised model-DN**

| (level of confidence for all confidence interval in output: 90%, Number of boostrap samples: 10000) | | | | |
|---|---|---|---|---|
| | | Greener choice (Y) | | |
| **Bootstrap Result** | **Coeffi.** | **BootSE** | **90% BootCI** | ***p*** |
| Constant | 4.9608 | .2798 | 4.5000, 5.4138 | 0.0000 |
| Descriptive Norms (X) | $b_1$ =.8431 | .3618 | .2392,1.4268 | .0291 |
| Public self-consciousness (W) | .3333 | .3874 | -.3069,.9591 | .3859 |
| interaction XW | $b_3$=-1.1765 | .5422 | -2.0532,-.2635 | .0313 |
| **Conditional direct effects of X on Y:** | Effect | SE | LLCI | ULCI |
| W=0 (not activated) | .8431 | .3836 | .2092 | 1.4770 |
| W=1 (activated) | -.3333 | .3836 | -.9672 | .3006 |
| | | R2=.0313  F (3, 200)=2.1564, p=.0911 | | |

A visualising interaction has been drawn (see Figure 7.5) based on the results of conditional direct effects of X on Y. The plot shows that the effect produced by reading the DN message (compared to reading the control message) is much larger (a>b) when public self-consciousness is not activated (i.e., the distance of a: from A1 to A2) than when it is activated (i.e., the distance of b). This reflects the negative value of interaction coefficient $b_3$, which indicates a reduction in the effect of descriptive norms on greener choice when public self-consciousness is activated compared to when it is not. The conditional direct effect of X on Y also shows that when W=0 (the blue line), the effect of DN message on greener choice is positive and significant (M=8431, 90% BootLLCI:=.2092, 90% BootULCI=1.4770). In other words, A1 significantly differs from A2 because the blue line is significant (according to Table 7.10, a-b; p=.019). On the contrary, when W=1 (the red line), the direct effect is not significant and the mean value indicates that the effect is reduced to the same level as the control message (though not negative). Since the red line is not significant, B1 and B2 are not significantly different (according to Table 7.10, c-d; p=.352). However, since the interaction coefficient $b_3$ is significant, the blue line and the red line differ significantly. In other words, the effect size of the DN message on greener choice is significantly different when public self-consciousness is activated or not. In sum, the effect of descriptive norms on greener choice depends on the public self-consciousness.

**Figure 7.5 The interaction effect between DN message and public self-consciousness on greener choice**
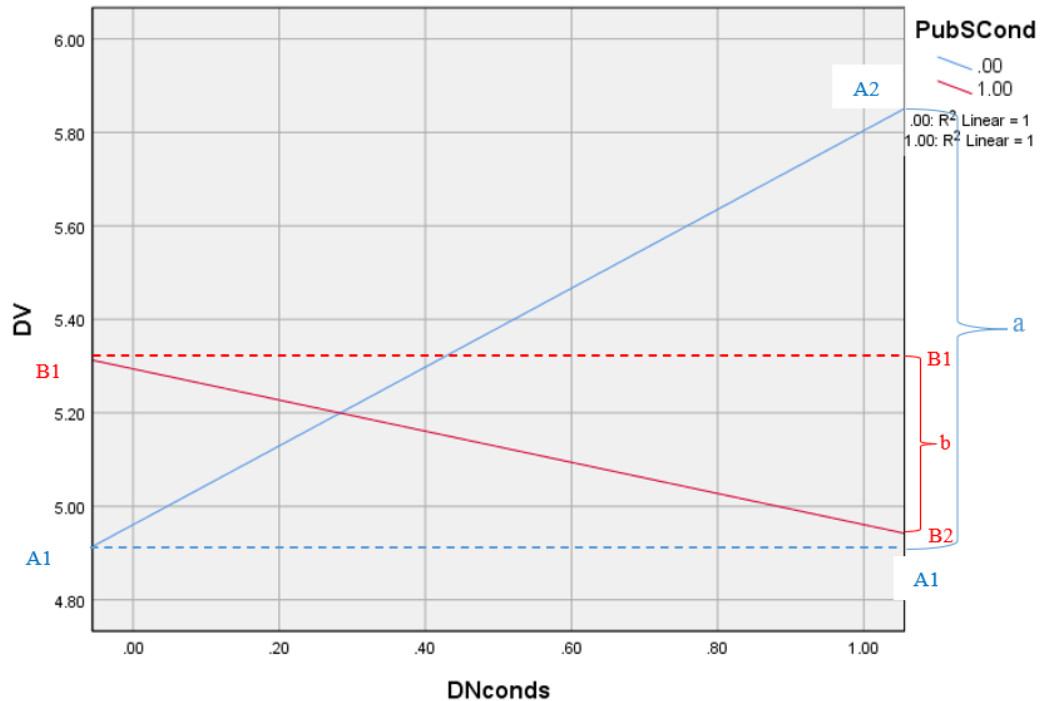


*A post-hoc multiple comparisons* test for dependent variables regarding descriptive norms was conducted and the results are displayed in Table 7.8. In terms of green preference dependent, there is no significant difference between any two in the six conditions, indicating that the DN message did not have an impact on green preference. However, in terms of the dependent variable of greener choice, there is a significant difference between the DN absent and present groups under the public self-consciousness absent condition. In addition, post-hoc multiple comparison results for greener choice also show a significant difference between the public self-consciousness absent and present group under the DN present condition. Specifically, when participants read the DN message, the activation of public self-consciousness had a negative impact on the greener choice. According to the above interaction plot, the result suggests that point B2 is significantly lower than point A2. This result is in line with the result of model 1 that public self-consciousness negatively moderates the effect of the DN message. Moreover, there is no significant difference between the public self-consciousness absent and present group under the DN absent condition, although the mean of greener choice is higher in the public self-consciousness present than that in the public self-consciousness absent group.

**Table 7.8 The Post-Hoc Multiple Comparisons for dependent variables (Study 2-DN)**

| | Public self-consciousness absent | | Public self-consciousness present | |
|---|---|---|---|---|
| | DN/IN absent | DN present | DN/IN absent | DN present |
| **Green preference** | 5.3922[a] | 5.4183[b] | 5.2974[c] | 5.2712[d] |
| **Greener choice** | 4.9600[a] | 5.8000[b] | 5.2900[c] | 4.9600[d] |
| **Mean comparison** | | | | |
| **Green preference** | a-b:p=.906 a-c:p=.668 a-d:p=.585 | | b-c:p=.585 b-d:p=.506 | c-d:p=.906 |
| **Greener choice** | a-b:p=.019 a-c:p=.352 a-d:p=1.000 | | b-c:p=.155 b-d:p=.019 | c-d:p=.352 |

**Regarding injunctive norms**, the simplified output in Table 7.9 shows the results of Equation 7-1. The analysis (10000 bootstrap samples; 90% bias-corrected confidence intervals) shows that the coefficient $b_1$ is positive and significant ($b_1$=1.0784, BootSE==.3400, 90% BootLLCI:=.5250, 90% BootULCI=1.6413, p=.0022), Combining the ANOVA results of no effect found on green preference, it provides support for H6. In other words, the IN message has a positive impact on greener choice and this effect is not caused by green preference (reading the IN message has no effect on green preference). Moreover, the interaction coefficient $b_3$ is negative and significant (Inter=-1.0196, BootSE==.4934, 90% BootLLCI:=-1.8314, 90% BootULCI=-.2143, p=.0396), providing support for H8. These results reveal that people who read the injunctive norms message card rated a higher likelihood of reusing hotel towels for all three days, than those who read the control message card. However, this effect size is conditional on the value of public self-consciousness (W=0 or W=1), as the estimated coefficient of X is dependent on the value of W (according to Equations 7.1).

**Table 7.9 The output of the hypothesised model-IN**

| (level of confidence for all confidence interval in output: 90%, Number of boostrap samples: 10000) | | | | |
|---|---|---|---|---|
| | | Greener choice (Y) | | |
| **Bootstrap Result** | **Coeffi.** | **BootSE** | **90% BootCI** | *p* |
| Constant | 4.9608 | .2807 | 4.4878,5.4043 | 0.0000 |
| Injunctive Norms (X) | b1=1.0784 | .3400 | .5250,1.6413 | .0022 |
| Public self-consciousness (W) | .3333 | .3885 | -.3053,.9615 | .3395 |
| interaction XW | b3=-1.0196 | .4934 | -1.8314,-.2143 | .0396 |
| Conditional direct effects of X on Y: | Effect | SE | LLCI | ULCI |
| W=0 (not activated) | 1.0784 | .3481 | .5032 | 1.6537 |
| W=1 (activated) | .0588 | .3481 | -.5165 | .6341 |
| | | R2=..0482 F(3, 200)=3.3797, P=.0193 | | |

A visualising interaction has been drawn (see Figure 7.6) based on the results of conditional direct effects of injunctive norms on greener choice. The plot shows that the effect produced by reading the IN message is much larger (a>b) when public self-consciousness is not activated (i.e., the distance of a: from A1 to A2) than when it is activated (i.e., the distance of b). This reflects the negative value of interaction coefficient $b_3$, indicating a reduction in the effect of descriptive norms on greener choice when public self-consciousness is activated, compared to when it is not.

The conditional direct effect of X on Y also shows that when W=0 (the blue line), the effect of the IN message on greener choice is positive and significant (M=1.0784, 90% BootLLCI:=.5032, 90% BootULCI=1.6537). In other words, A1 significantly differs from A2, as the blue line is significant (according to Table 7.10, a-b; p=.003). On the contrary, when W=1 (the red line), the direct effect is not significant, and the mean value indicates that the effect was smaller though still positive (M=.0588, 90% BootLLCI:=-.5165, 90% BootULCI=.6341). Since the red line is not significant, B1 and B2 are not significantly different (according to Table 7.10, c-d; p=.870). However, since the interaction coefficient is significant, the blue line and the red line differ significantly. In other words, the effect size of the IN message on greener choice is significantly different when public self-consciousness is activated or not. In sum, the effect of injunctive norms on greener choice depends on the public self-consciousness.

**Figure 7.6 The interaction effect between IN message and public self-consciousness on greener choice**
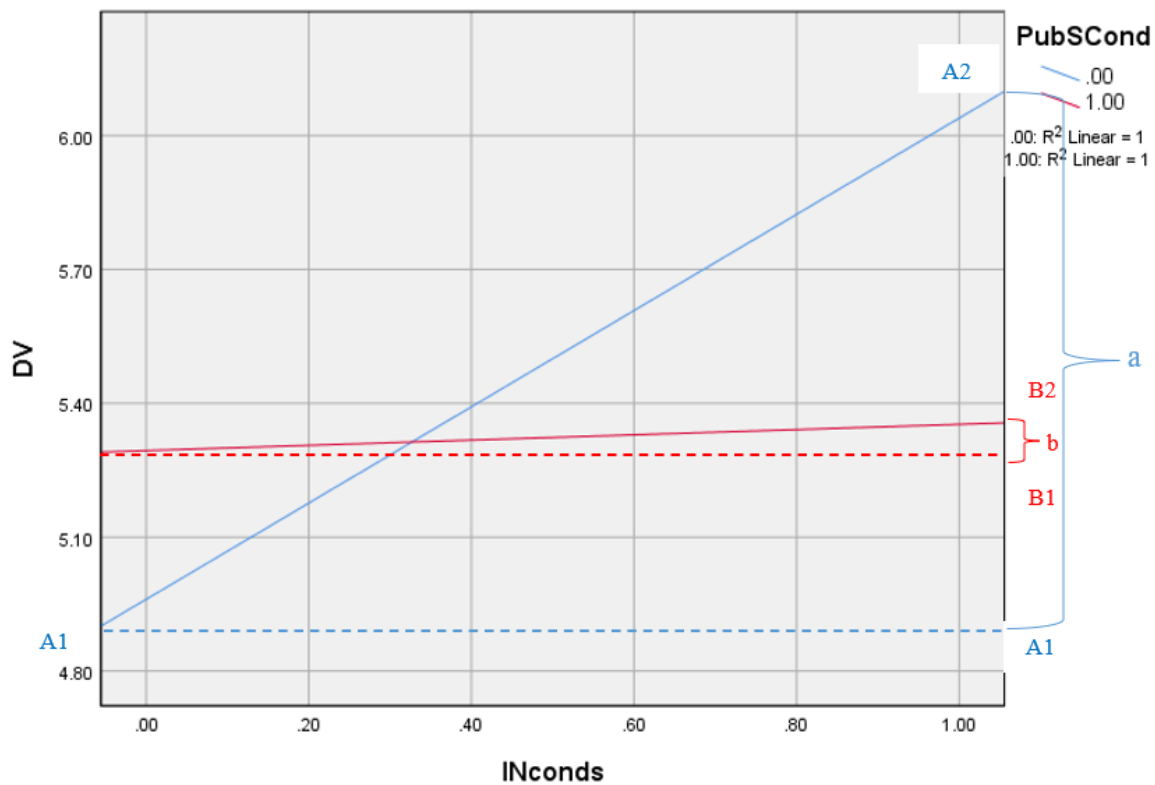


*A post-hoc multiple comparisons* test was conducted for the dependent variables related to injunctive norms, and the results are displayed in Table 7.10. The test generated similar results to the test conducted for descriptive norms. For green preference, there was no significant difference found between any two of the six conditions, indicating that the IN message did not have an impact on green preference. For greener choice, a significant difference was found between the IN absent and the IN present group under the public self-consciousness absent condition. In addition, the post-hoc multiple comparison results for greener choice show a significant difference between the public self-consciousness absent and present groups under the IN present condition. Specifically, when participants read the IN message, the activation of public self-consciousness had a negative impact on greener choice. According to the above interaction plot, the result shows that point B2 is significantly lower than point A2. This result is in line with the result of model 1 that public self-consciousness negatively moderates the effect of the IN message. Moreover, there was no significant difference between the public self-consciousness absent and the present groups under the IN absent condition, although the mean of greener choice was higher in the public self-consciousness present group than that in the public self-consciousness absent group.

**Table 7.10 The Post-Hoc Multiple Comparisons for dependent variables (Study 2-IN)**

| | Public self-consciousness absent | | Public self-consciousness present | |
|---|---|---|---|---|
| | DN/IN absent | IN present | DN/IN absent | IN present |
| **Green preference** | $5.3922^a$ | $5.3235^b$ | $5.2974^c$ | $5.3758^d$ |
| **Greener choice** | $4.9600^a$ | $6.0400^b$ | $5.2900^c$ | $5.3500^d$ |
| **Mean comparison** | | | | |
| **Green preference** | a-b:p=.756  a-c:p=.668  a-d:p=.941 | | b-c:p=.906  b-d:p=.813 | c-d:p=.723 |
| **Greener choice** | a-b:p=.003  a-c:p=.352  a-d:p=.274 | | b-c:p=.038  b-d:p=.056 | c-d:p=.870 |

In conclusion, both descriptive and injunctive norms have a positive impact on making greener choice, and neither induced the participants' overall green preference. Furthermore, the effect size of both norms was influenced by the activation of public self-consciousness. These findings are consistent with the results of running model 8, which confirm that green preference has no mediating effect on the effect of descriptive and injunctive norms and public self-consciousness has a moderating effect. The post hoc multiple comparisons results show that public self-consciousness alone (i.e., reading control message) has no effect on making greener choice. Regarding the difference between their effect, the results of *Descriptives* indicate that, either when participants' public self-consciousness is not activated (M=6.04 vs M=5.80), or when it is activated (M=5.35 vs M=4.96), the IN message has a larger influence on greener choice than the DN message.

## 7.8 Discussion

This study investigated the route of activating social norms in terms of descriptive norms and injunctive norms respectively, to promote greener choice. The experimental results showed how descriptive and injunctive normative information interplay with public self-consciousness, impacting greener choice.

### 7.8.1 Descriptive Norms, Public Self-Consciousness and Greener Choice

The data, *for descriptive norms*, from model 1 analysis and the ANOVA tests on the mean value difference of green preference between groups, indicates that the DN message had a significant positive impact on greener choice but not on green preference (i.e., the effect was not mediated by green preference). The strength of this impact is influenced by the activation of public self-consciousness.

Descriptive norms, in this research, imply how pervasive green consumption is in one's social networks. Exploring individuals' perception of the prevalence of green consumption, along with their knowledge of others' underlying rationale for conducting green consumption, can increase one's green preference or not, has implications for marketing practitioners to develop strategies of promoting green consumption. Understanding the relationship between descriptive norms and green preference would provide insight into whether descriptive norms can change one's value priority, thus potentially leading to long term and spill over effect.

Letting individuals know about others' underlying environmental protection reasoning for conforming greener choice eliminates the possibility of the produced effect of descriptive norms arising from unconscious imitation. This makes it possible to attribute the effect produced by reading the DN message to the given rationale to conform to the activated descriptive norms (establish the rationale for behavioural conformity).

The results of the current study suggest that the perception of the high prevalence of green consumption (i.e., believing that most others are making greener choice) with one's cognitive engagement has no effect on increasing one's green preference. Based on the relationship between value and preference, it can be inferred that high descriptive norms with cognitive processing have no influence on changing one's green value prioritisation (i.e., the DN message cannot make green values a priority). The inability to shift value prioritisation implies that the pervasive green consumption in society cannot result in a consumer's more stable and persistent behavioural change that differs from the effect origins from personal norms (the PN message effect).

This result supports Göckeritz et al.'s (2010) advocation that processing of the DN message may occur on *a peripheral route,* rather than *a central route.* These two routes are differentiated based on Petty and Cacioppo's (1986) elaboration likelihood model for explaining ways of processing information. According to Göckeritz et al. (2010), using

the central route of processing information is more likely with high personal involvement (deeper conscious processing), which can result in the changes in underlying value prioritisation thus the preference. Whereas using a peripheral route is less likely to have deeper conscious processing and thus unable to affect value prioritisation and personal preference.

Moreover, Göckeritz et al. (2010) found that the effect of descriptive normative beliefs was weakened among individuals with high levels of personal involvement, which motivates central route processing. This result is in line with the present study's findings on the moderating effect of public self-consciousness, which suggests that DN messages' influence on greener choice is weakened when consumers' public self-consciousness is activated. The effectiveness of the DN message is therefore conditional on the non-activation of public self-consciousness. Following Göckeritz et al.'s (2010) thinking, it seems to suggest that the influence of DN message is reduced due to the increase of personal involvement by activating public self-consciousness (the control route processing occurs). This outcome of activating public self-consciousness when reading the DN message seems opposite with Melnyk et al.'s (2011) finding that thinking more (cognitive deliberation) increased the effect of descriptive norms. According to Melnyk et al. (2011), it seems to suggest that activating public self-consciousness that lead to deliberate the presented normative information towards self and increase personal involvement, hence increase rather than decrease the effect of the DN message. This inconsistent result may be caused by lack of consideration in Melnyk et al.'s (2011) research, of the direction and content of the cognitive deliberation. The aspects of personal involvement can originate from either private or public self (e.g., behavioural consequence to the private or public self), and this can influence the effectiveness of normative information.

In general, personal factors play a role in explaining the reduced effect of the DN message. However, the detailed underlying mechanism of this effect has not been explored. This study's interpretation of the reduced effect was related to the role of self-evaluation that is initiated by public self-consciousness. Following the characteristic of self-consciousness, the activation of public self-consciousness would trigger self-evaluation, and its underlying mechanism of evaluation, which in turn affects the extent of the impact of normative message. According to the previous discussion of the potential mechanism and outcome of self-evaluation presented in Section 3.6.2, the results of the current study

imply that self-evaluation may result in the awareness of conflicting or inconsistent self-images, which may affect self-concept clarity. The explanation regarding self-concept clarity will be examined in Study 3. Overall, the result suggests that the accessibility of activated associated beliefs related to one's public image moderates the effectiveness of normative messages.

The results of Study 2 confirm the normative focus approach to activate descriptive normative influence by salient descriptive norms (Cialdini et al., 1991) and the power of descriptive norms in changing green consumption behaviour that were often (but not always) found in earlier research (Demarque et al., 2015; Goldstein et al., 2008; Mingolla et al., 2020; Schultz et al., 2007; Schultz et al., 2008b). The moderating effect of public self-consciousness, hence, also responds to researchers' call for more understanding about the conditions/moderators that ensure the effectiveness of social norms i.e., the need to identify new moderators (Bergquist et al., 2019; Göckeritz et al., 2010; Melnyk et al., 2021; Rimal and Lapinski, 2015). Alternatively, understanding when the influence of the DN message is not effective (or disappear) responds to the need of understanding why some previous studies failed to produce or effectively produce the descriptive normative effect [e.g., Schultz et al. (2007); Russell et al. (2005); Burchell et al. (2013)]. The results suggest that not activating, rather than activating, consumers' public self-consciousness could increase the DN messages' influence on greener choice.

## 7.8.2 Injunctive Norms, Public Self-Consciousness and Greener Choice

The data, *for injunctive norms*, from model 1 analysis and the ANOVA tests on the mean value difference of green preference between groups, indicates that the IN message had a significant positive impact on greener choice but not on green preference (i.e., the effect was not mediated by green preference). The strength of this impact is influenced by the activation of public self-consciousness.

Injunctive norms, in this research, imply the degree of social acceptance of green consumption. Exploring whether individuals' perception of the prevalence of approval of green consumption (with knowing others' underlying rationale for approval of green consumption) increases their green preference, has implications on marketing practitioners' choice of promoting green consumption. Similar to descriptive norms, understanding the relationship between injunctive norms and green preference would provide information on whether injunctive norms have the power to change one's value

priority, and thus green preference. letting individuals know others' underlying environmental protection reasoning for conforming to greener choice makes it possible to attribute the effect produced by reading the IN message to the given rationale for conforming to the activated injunctive norms.

The results of this study suggest that the perception of the high prevalence of others' approval of green consumption (i.e., perception of most others' approval of making greener choice) has no effect on increasing one's green preference. Hence, it is inferred that the IN message cannot prioritise green values. This inability implies a different underlying mechanism between injunctive norms and personal norms. This does not mean that the IN message's underlying mechanism on changing behaviour is the same as that of the DN message, although both cannot affect the deepest level of the value proposition.

As suggested by Jacobson et al. (2011), injunctive norms are likely to require a greater amount of cognitive effort than descriptive norms. They seem to suggest that the processing of the IN message may occur via a central route, in contrast to the processing of the DN message, which may occur via *a peripheral route* (Göckeritz et al., 2010). The processing route of the IN message seems the same as the PN message, but activating injunctive norms itself, as pointed out by Jacobson et al. (2011), leads to activating the associated beliefs and thoughts relating to the social aspects rather than the personal aspects of the self. Taking the results relating to green preference together, the above discussion suggests that cognitive processing of the social expectation (both injunctive and descriptive norms) was unable to have a high impact on the deepest level (i.e., value proposition) of personal involvement. Although the effect degree of injunctive norms on greener choice is higher than that of descriptive norms, its effect is still not like personal norms that could be deeply internalised into an individual's self (Thøgersen, 2006).

As aforementioned, activating public self-consciousness may lead to deliberate the presented normative information towards public self and increase personal involvement. The outcome of activating public self-consciousness when reading the IN message in this study seems to support Melnyk et al.'s (2011) finding that cognitive deliberation decreases the effect of injunctive norms. As this study found that when activating one's public self-consciousness, the effect of injunctive norms on greener choice was weakened. This result is also consistent with Lo et al.'s (2019) findings that, injunctive norms had a stronger effect on consumers' willingness to recommend second-hand for

ethical benefit when public self-consciousness is lower (their effect was found from measured public self-consciousness not manipulated public self-consciousness). Their interpretation for the reduced effect when their public self-consciousness was higher was to avoid possible negative reactions and maintain their social reputation from others by recommending others to purchase clothes from second-hand shops. These interpretations are one of the explanations resulting from the self-evaluations. This research focused on the underlying mechanism when public self-consciousness is activated rather than the specific contents of explanations for consumers' behaviour. Following the characteristic of self-consciousness, the triggered self-evaluation and its underlying mechanism of evaluation, the outcome of self-evaluation would affect the extent of a normative message's impact. Current results imply that self-evaluation initiated by public self-consciousness may result in self-inconsistency (by recognising inconsistent self-images) that affect self-concept clarity. The explanation regarding self-concept clarity will be examined in Study 3. Overall, the result suggests that the accessibility of activated associated beliefs relating to one's public image moderates the effectiveness of the injunctive normative information.

Study 2's results confirm the normative focus approach to activate injunctive normative influence by salient injunctive norms (Cialdini et al., 1991). Additionally, it confirms the power of injunctive norms in changing green consumption behaviour (Demarque et al., 2015; Goldstein et al., 2008; Mingolla et al., 2020; Schultz et al., 2007; Schultz et al., 2008b), but not always (Bergquist et al., 2019; Göckeritz et al., 2010; Melnyk et al., 2021). Similar to White and Simpson's (2013) research, which focused on when social normative appeals do and do not influence sustainable consumer behaviour by highlighting the moderator self-construal, this study adds to the understanding of the moderator effect of public self-consciousness. The result of the moderating effect of the public self-consciousness, responds to the call for more understanding about the conditions/moderators that ensures the effectiveness of the IN message (Bergquist et al., 2019; Göckeritz et al., 2010; Melnyk et al., 2021). As discussed, this study suggests that, rather than activating, not activating consumers' public self-consciousness could increase the IN messages' influence on promoting greener choices.

In summary, both activating descriptive and injunctive norms are effective for encouraging greener choices, but neither has the ability to change consumers' green preference (value priority) to affect their green consumption behaviour. Although

descriptive and injunctive norms are conceptually different (underlying mechanisms) and empirically distinctive (injunctive norms, as found in previous research, have a stronger effect on green consumption), both effectiveness are conditional on the non-activation of public self-consciousness. These results enrich the understanding of the effect of social norms on personal preference and highlight an important moderator of public self-consciousness. In addition, the results regarding the effect of only activating public self-consciousness do not provide evidence to support Froming and Carver's (1981) finding that individuals high in public self-consciousness attempt to present themselves in a way that conform to social standards, resulting in others' approval. However, the result of the negative moderation effect of public self-consciousness on social norms effect seems to provide an explanation for Burnkrant and Page's (1982, p454) finding that 'people in high public self-consciousness are not inclined to act in accord with the reward contingencies inherent in social situations' (in this case is descriptive and injunctive norms).

There are many possible approaches to help ease environmental problems, including government and corporate policy, educational programs, technological innovations, and infrastructure facilities. However,  this approach focuses on encouraging consumers to make greener choices through small cost of prompts that could leverage the effect on the entire societies. The acquired knowledge could provide insights for designing marketing strategy and communication plans.

### 7.8.3 Limitations and Further Study

This chapter has identified a causal effect on promoting greener choice resulting from the interaction between social norms and public self-consciousness. The operationalisation used in this chapter to manipulate social norms involves establishing the rationale of conforming to the norms, which is less used and would benefit from replicated studies to explore the difference in social norms' effect size between establishing and non-establishing rationale. Although descriptive and injunctive norms are operationally and conceptually different, the bidirectional associations between them (activating descriptive norms may activate injunctive norms and vice versa) mean that the associated effect produced by the manipulation cannot be completely separated. This chapter does not account for the potential associated effects of the manipulation, which is infeasible both theoretically and practically, and hence, as normally practised, attributes them all to the type of social norms being manipulated. Moreover, since a similar effect of these two

norms is produced on greener choice, a test to distinguish participants' perception between the DN and IN message should be conducted in a later study to justify the difference in their underlying mechanism. A new immediate measure of public self-consciousness after the manipulation in the pretest of Study 3b would help to detect the short-term effect and further validate the manipulation and the findings.

The chosen type of experimental design in this chapter was influenced by the need for ensuring internal validity due to the nature of public self-consciousness. Future research may benefit by testing the findings in different contexts and in a field to increase external validity, which would be appropriate in a post-PhD study.

## 7.9 Summary of the Chapter

This chapter has addressed research objective 2. Through experimental Study 2, this chapter investigated how social (descriptive and injunctive) normative mechanisms as informational intervention facilitate greener choice and when this type of intervention is more effective for promoting greener choice. It was found that applying the mechanism of descriptive or injunctive norms on promoting greener choice is effective. The study suggested that the positive effect of descriptive/injunctive norms on greener choice is not through the increase of green preference and this direct effect is more influential on promoting greener choice when public self-consciousness is not activated. The following chapter will explore the underlying mechanism of these normative effect when self-consciousness is activated and its interactional effect on self-concept clarity.

# 8 STUDY 3: EXPLORING THE IMPACT OF NORMATIVE INFORMATION AND SELF-CONSCIOUSNESS ON THE SELF-CONCEPT CLARITY

## 8.1 Introduction

This chapter describes and presents the results of Studies 3a and 3b, which address objectives 3 and 4, respectively: to investigate what may inhibit the impact of personal normative information (social normative information) on prompting consumers to make greener choices, when the private self-consciousness (public self-consciousness) is activated. Experimental Studies 3a and 3b were conducted in the same context as previous studies: hotel towel reuse. This chapter first introduces Study 3a, followed by Study 3b. Each study begins with an overview of the results of the corresponding previous study, then the purpose of the experiment and overview are explained, and the operationalisation of each concept is presented. Next, it provides the results of the pretest, an overview of the questionnaire, participants, and data collection procedure, and presents the data analysis methods. Finally, the experimental results are presented and discussed.

## 8.2 Study 3a: the Impact of Personal Normative Information and Private Self-Consciousness on Self-Concept Clarity

### 8.2.1 Reviewing the Findings of Study 1

According to the results of Study 1 (Section 6.7), the research found that: i) the personal normative information has a positive impact on green preference; ii) green preference mediates the effect of the personal normative message on greener choice; iii) private self-consciousness negatively moderates the strength of the indirect effect of the personal normative message on greener choice through green preference. Specifically, when the private self-consciousness is activated, the effect of the personal normative message on

greener choice via green preference is reduced compared to when it is not activated; and iv) when the private self-consciousness is not activated, the indirect effect of the personal normative message on greener choice via green preference is significant. When private self-consciousness is activated, the above effect is not significant.

## 8.2.2 The Purpose of Study 3a and the Study Overview

The result of Study 1 confirms that the indirect effect of personal normative information on greener choice through green preference is reduced when private self-consciousness is activated. Study 3a aims to explore the underlying processes of the interaction effect between personal norms and private self-consciousness. Based on the understanding of a series of self-related concepts such as self-concept, self-concept clarity, private self-consciousness, self-consistency and self-evaluation and objective self-awareness theory, it has been inferred that when private self-consciousness is activated, the reduced indirect effect of the personal normative message on greener choice through green preference may be caused by the increase in self-concept clarity.

Therefore, the purpose of Study 3a is to test hypotheses H3 and H4 by conducting an experiment and a pretest. The rationale for making these hypotheses has been justified in Section 4.2.1.

> **H3:** The level of self-concept clarity increases when both private self-consciousness and personal norms are activated.
>
> **H4:** This change in self-concept clarity reduces the impact of personal normative information on greener choice through green preference, when private self-consciousness is activated.

H4 can be tested by a moderated serial-mediation model (see Figure 8.1). This model is designed to test whether the moderated indirect effect of personal norms on greener choice by the private self-consciousness is first mediated by the self-concept clarity and then by the green preference.
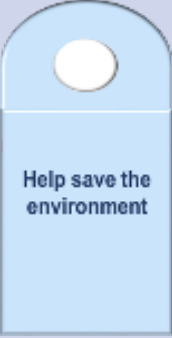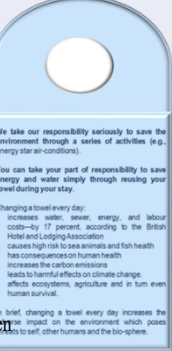
**Figure 8.1 Conceptual model of Study 3a**
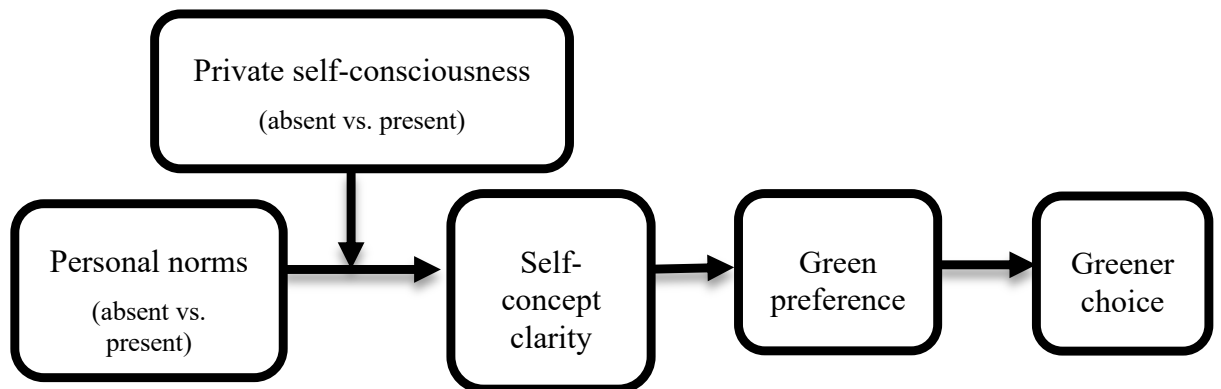


## Overview of Study 3a

To test the impact of the interaction between personal norms and private self-consciousness on self-concept clarity and to determine whether this effect on self-concept clarity leads to a change in green preference and greener choice, Study 3a mainly replicated the experimental design of Study 1. It is a 2 (personal norms - PN: absent vs. present) * 2 (private self-consciousness- Pri-SC: absent vs. present) between-subjects design, in which four groups were created and randomly assigned to only one of the four conditions (see Table 8.1). Personal norms and private self-consciousness were manipulated, while self-concept clarity, green preference and greener choice were measured as dependent variables. With the exception of using a scale for measuring self-concept clarity, Study 3a used the same methods of manipulating personal norms and private self-consciousness and measuring green preference and greener choice. In the Pri-SC absent condition, Study 3a used the same format of the scrambled sentence test as it was used in the Pri-SC present condition for directing participants' attention away from themselves. Moreover, according to the previous suggestions of the timing of taking manipulation check in Chapters 5 and 6, the manipulation check of private self-consciousness has been taken in the pretest rather than in the main test. The detailed explanations of ways of operating will be presented in the later section.

**Table 8.1 The conditions/treatments in Study 3a**

| | Pri-SC (absent) | Pri-SC (present) |
|---|---|---|
| PN absent (control) | 1. The eagle flew around here<br>2. Sky the turns grey to<br>3. The shoes have been repaired<br>4. The washing machine is workin<br>5. This drink seems not bitter<br>6. a building stands on ground<br>7. the man crosses the street<br>8. The traffic lights turned green | 1. like understand I to myself<br>2. am playing I the piano<br>3. my from mistakes I learn<br>4. important me food is to<br>5. to reading me important is<br>6. figure I myself should out<br>7. sky the turns grey to<br>8. shoes the have repaired be |
| PN present | 1. The eagle flew around here<br>2. Sky the turns grey to<br>3. The shoes have been repaired<br>4. The washing machine is workin<br>5. This drink seems not bitter<br>6. a building stands on ground<br>7. the man crosses the street<br>8. The traffic lights turned green | 1. like understand I to myself<br>2. am playing I the piano<br>3. my from mistakes I learn<br>4. important me food is to<br>5. to reading me important is<br>6. figure I myself should out<br>7. sky the turns grey to<br>8. shoes the have repaired been |

## 8.2.3 Operationalisation

This section justifies and describes how the variables in Study 3a were manipulated and measured. In particular, it discusses what changed from Study 1, why, and how the changes were made.

**Manipulation**

Study 3a adopted the same way of manipulating personal norms as Study 1 by presenting a personal normative message card (see Figure 6.2 PN message card on p.183). Apparently, testing an explanation of the underlying reduced effect produced in Study 1 should adopt the same scenario as Study 1, including reading the same PN message and the control message, for rigorous research to generate the same effect and enable the exploration of the underlying mechanism. Moreover, it also enables to test the reliability

of how the personal norms were manipulated and to further validate Study1's findings (can the designed PN message produce the same effect again).

This study also employed the same method of priming private self-consciousness by using the 'scrambled sentence test' with first-person singular pronouns such as me, I, and myself. In contrast to Study 1, Study 3a used the same format as the 'scrambled sentence test' in the 'private self-consciousness absent' condition, but included other irrelevant objects such as an eagle, the sky, shoes, buildings, and traffic lights (see Table 8.2 Scrambled sentence test-in Pri-SC absent condition), instead of no additional test as in Study 1. The design of this scrambled sentence test prevents participants from paying attention to themselves by priming their attention to irrelevant objects in private self-consciousness absent conditions. The design is based on the theory of objective self-awareness' assumption that 'conscious attention is bidirectional in nature: attention may focus either towards the self or towards the external environment, but not in both directions at once' (Davis and Brock, 1975, p381). A similar example can be found in Fenigstein's (1979) studies, which prevented participants from focusing their attention on irrelevant objects by requiring all participants to leave their belongings outside the room before entering the experimental room.

Adopting the same format of 'scrambled sentence test' in private self-consciousness absent condition may rule out alternative explanations of the intended causal effects that the 'scrambled sentence test' itself (which varies in time consumption) may have on increasing private self-consciousness. Silvia and Eichstaedt (2004) showed a similar concern regarding the design of their first experiment (self-novelty writing task in the treatment group vs. no-writing control group) and thus included a neutral-writing task in their control group in their subsequent experiments. Hence, this operation in the private self-consciousness absent condition should increase the construct validity and decrease the risk of producing confounding variables by maintaining 'ceteris paribus' conditions across conditions (Perdue and Summers, 1986). However, this design of the private self-consciousness absent condition does not mean that the initial 'absence' design in Study 1 (no scramble sentence task included in the Pri-Sc absent condition) was weaker. Based on previous literature, different ways are commonly used to manipulate self-consciousness across different experiments of the same research (Chang and Hung, 2018;

Goukens et al., 2009). With this change in Study 3a producing similar results as in Study 1, this would indicate the robustness and reliability of the hypothesised effect.

**Table 8.2 Scrambled sentence test-in Pri-SC absent condition**

The below test is a warm up section to make sure you can fully focused for the upcoming scenario task. This section is a sentence construction task.

Instructions: for each set of words below, make a grammatical sentence and type it down:

For example:
flew eagle the around        The eagle flew around.

sky the turns grey to

shoes the have repaired been

the working washing is machine

turns the lights green cross

on sit ducks the pond

seems this bitter drink not

ground a stands on building

crosses old street man the

## Manipulation check

Study 3a adopted the same seven-point scale as Study 1 to check the manipulation of personal norms in the main test. Conducting the manipulation check of personal norms is to ensure construct validity as the operation of personal norms is new. Although this has been validated in Study 1, the purpose of using the same scale to measure the personal norms again in Study 3a is to further assure the construct validity of the current study and ensure the feasibility of testing the reliability of manipulating personal norms (whether it can generate the same effect on behaviour as it has in Study 1). This measure will remain in the main test rather than be changed to the pretest, as no issue was found when it was conducted in the main test of Study 1.

In contrast to this, the manipulation check of private self-consciousness in Study 3a was changed to be taken in the pretest, which is due to the temporary nature of the effect of

private self-consciousness (attention can be redirected by other objects easily). The pretest allows the immediate measure of the manipulation just after the manipulation and scenario, which help detect the short effect.

The private subscale of the Self-Consciousness Scale (the SCS) was used to check of private self-consciousness (see the scale in Table 8.3) in Study 3a, which originated from Fenigstein et al. (1975) to measure the individual difference in self-consciousness. Govern and Marsch (2001) summarised that the reliability (Fenigstein et al., 1975), discriminant and convergent validity (Carver and Glass, 1976), and the applicability of the SCS to different cultures have been established (Nystedt and Smari, 1989; Shek, 1994). The SCS is a recognised measure; the paper of Fenigstein et al. (1975) that proposed it has been cited in 5907 papers as of November 28, 2022. 'The subscales of the SCS may be sensitive to situational factors as well as dispositional ones' (Govern and Marsch, 2001, p. 376). A few researchers have successfully detected the transient variation of the activated private self-consciousness (or the state of private self-awareness) by the SCS (Fejfar and Hoyle, 2000; Ingram et al., 1988; Silvia and Eichstaedt, 2004; Wood et al., 1990). For example, it has been used to establish the validity of the self-novelty manipulation (Silvia and Eichstaedt, 2004) and the standard private self-consciousness manipulation (i.e., facing a mirror) (Fejfar and Hoyle, 2000; Ingram et al., 1988). In summary, this scale (in its updated version by Scheier and Carver (2013)) is a frequently used scale to measure private self-consciousness and to detect the variation of the manipulation (Fejfar and Hoyle, 2000; Goukens et al., 2009; Silvia and Eichstaedt, 2004), which should be a more suitable choice to assess the manipulation of private self-consciousness than the two measures that were used in Study 1.

**Table 8.3 The Private Self-Consciousness scale**

| *Manipulation check* | *Anchors* | *Items* |
|---|---|---|
| **Private self-consciousness (Fenigstein et al., 1975; Scheier and Carver, 2013)** | Strongly disagree (1) to Strongly agree (7) | • I'm always trying to figure myself out<br>• I think about myself a lot<br>• I often daydream about myself<br>• I never take a hard look at myself (reserve code)<br>• I generally pay attention to my inner feelings<br>• I'm constantly thinking about my reasons for doing things<br>• I sometimes step back (in my mind) in order to examine myself from a distance<br>• I'm quick to notice changes in my mood |

| | | • I know the way my mind works when I work through a problem |
|---|---|---|

Using two measures from Chang and Hung's (2018) research (i.e., the extent to which they were thinking about themselves or others) to check the manipulation of private self-consciousness in Study 1 has failed to detect the variation of the manipulation. This is maybe due to three aspects of the differences between Chang and Hung's (2018) study and Study 1 (i.e., ways of manipulating, research contexts, and when to take the manipulation check). For example, these two measures were adopted because they matched Chang and Hung (2018) way of manipulating. Chang and Hung (2018) manipulated high self-focused attention through 10 minutes of story writing about themselves with given first-person pronouns (e.g., 'I' or 'myself'), and in their low self-focused group, their participants were primed to think about others or about a public figure with given third-person pronouns (e.g., 'she' or 'herself'). Therefore, it is more likely that participants in the high-self-focused group will think less about others than those in the low-self-focused group, who have been manipulated to think about a public figure. However, Study 1 did not manipulate participants in the Pri-Sc absent condition, and Study 3a also did not manipulate participants to think others in the Pri-Sc absent condition. Therefore, adopting the SCS scale could avoid the issue caused by the different ways of manipulation. Furthermore, as aforementioned, the failure of manipulation may be related to the timing of the manipulation check. Chang and Hung (2018) took this manipulation check (the extent of thinking about others or themselves) in a posttest to avoid the order effect and the short effect issue. Chang and Hung (2018) also took three different manipulation check approaches in the posttest of experiment 1 (manipulated by story writing), in both the main-test and posttest of experiment 3 (manipulated by looking at the mirror), and in the pretest of experiment 5 (manipulated by self-referential text: I), correspondingly. It could mean that it is important to choose the 'right' manipulation check for 'right' manipulation at the 'right' timing. Hence, the above discussion justifies Study 3a not adopting the same measures that were used in Study 1 to check the manipulation of private self-consciousness, and in the meantime, it re-emphasises the importance of taking the manipulation check of private self-consciousness in a separate study.

## Measurement

Except for an additional measurement of the self-concept clarity, the rest variables measured in Study 3a were all the same as those measured in Study 1, including greener choice, green preference, and potential control variables.

The level of one's self-concept clarity has been assumed to have changed as a result of the reading of personal normative information and the activation of private self-consciousness. It was measured by the original 12-item Self-Concept Clarity (SCC) scale (see Table 8.4) developed by Campbell et al. (1996). The SCC scale was adopted (Cronbach's $\alpha$=0.76 according to the following pretest result) because it is a commonly used scale in the existing behavioural literature to measure individuals' self-concept clarity (Mittal, 2015; Nezlek and Plesko, 2001). Although some other measures have been employed to measure self-concept clarity in earlier studies, those measures might capture one or two aspects (certainty, consistency, or stableness) of the SCC's definition rather than the whole (Demarree and Bobrowski, 2018). Hence, the SCC scale below measures the clarity, confidence, internal consistence and stability of one's self-concept.

**Table 8.4 The Self-Concept Clarity scale**

| *SCC* | *Anchors* | *Items* |
|---|---|---|
| **Self-concept clarity (Campbell et al., 1996; Mittal, 2015)** | Strongly disagree (1) to Strongly agree (7) | • My beliefs about myself often conflict with one another.<br>• On one day I might have one opinion of myself and on another day I might have a different opinion.<br>• I spend a lot of time wondering about what kind of person I really am.<br>• Sometimes I feel that I am not really the person that I appear to be.<br>• When I think about the kind of person I have been in the past, I'm not sure what I was really like.<br>• I seldom experience conflict between the different aspects of my personality.<br>• Sometimes I think I know other people better than I know myself.<br>• My beliefs about myself seem to change very frequently.<br>• If I were asked to describe my personality, my description might end up being different from one day to another day.<br>• Even if I wanted to, I don't think I could tell someone what I'm really like.<br>• In general, I have a clear sense of who I am and what I am.<br>• It is often hard for me to make up my mind about things because I don't really know what I want. |

## 8.2.4 Pretest

A pretest was conducted on the same data distribution platform (Prolific.co) as the main test using the same population and pre-screening criteria. Its purpose was to confirm the manipulation of private self-consciousness, using the same between-subjects design (2 (personal norms - PN: present vs absent) × 2 (private self-consciousness: present vs absent) as the main test. According to the purpose of the pretest, the main body of the pretest only included a scenario task (randomly assigned to only one of the four conditions), a manipulation check question, and demographics questions. Participants in Pri-sc absent condition completed a scrambled sentences task without first-person singular pronouns before watching a video that introduced the scenario. Then they read the message card (PN present or absent) and rated the likelihood of reusing hotel towels for all three days. In Pri-sc present condition, the process was the same, but participants completed the scrambled sentences task with first-person singular pronouns. All participants answered questions on private self-consciousness before completing the demographic questions. The pretest aimed to determine if private self-consciousness was rated higher in the Pri-sc present condition compared to the Pri-sc absent condition.

The pretest recruited 197 participants after data cleaning (50.8% female, $M_{age}$=35 years old, UK citizens) on Prolific.co, and they were randomly assigned to one of the four conditions, with each condition having around 50 participants. The questionnaire took the participants, on average, about 3 minutes to complete, and each participant got paid £0.35. As expected, the pretest result shows that participants in private self-consciousness present conditions rate higher on the scale of private self-consciousness than those in private self-consciousness absent conditions (4.82 vs. 4.62, p=.084)(p=0.042, one-sided P-value by using T-test) . In other words, the temporarily priming effect of the scrambled sentence test on manipulating private self-consciousness has been detected by the private self-consciousness scale. These results provide extra confidence in the established way of manipulating private self-consciousness.

## 8.2.5 Questionnaire Overview, Participants and Procedures

This section provides an overview of the questionnaire used in the main test of Study 3a, the sequence of the experiment, and the description of the participants. The questionnaire consists of twelve blocks for collecting different types of data. Table 8.5 lists the category

of each block, its corresponding questions, and the justification for the inclusion of each question. Except for the additional measurement of self-concept clarity that was measured just after the measure of DV and removed the manipulation check of private self-consciousness, the sequence of the blocks, the measurements, and the order of the measurements are all the same as in Study 1.

**Table 8.5 Questionnaire overview of Study 3a**

| Blocks | Questions (details see Appendix 13- Study 3a- questionnaire) | purpose of questions |
|---|---|---|
| **Introductory information** | 1.1 Let the participants know that the survey contains a video watching section that requires equipment to hear the sound | To prepare the equipment or let them drop from here if they don't have the equipment |
| | 1.2 Introduce the purpose of the survey, provide *Participant Information* about the research, and obtain the consent for the survey from participants | To provide survey background and let them drop from here if they are not interested in the survey |
| **Screener validation** | 2.1 Have you ever stayed in a hotel? 2.2 When travelling, how frequently do you use your own towels (i.e., towels that you have brought) while staying at a hotel? | To filter out those who have never stayed in a hotel and always use their own towels while staying at a hotel, because the hotel towel reuse scenario would be unrealistic for them and their response would be perceived as invalid for this research. |
| **Past behaviour (specific)** | Do you ever choose to reuse the hotel towel more than one day while staying in a hotel for several days? | To check whether it should be included in the test model as a control variable |
| **1st Attention check** | Please indicate the extent to which you agree or disagree with the following statement<br><br>This is an attention check<br><br>1 2 3 4 5 6 7<br>Click on the second option from the right ○ ○ ○ ○ ○ ○ ○ | To filter out those who failed in attention check |
| **Scenario video (Conditions)** | PN absent + Pri-Sc absent (Control condition) (https://bit.ly/3aWf0K0 ---control message)<br><br>PN present + Pri-Sc absent (PN condition) (https://bit.ly/3G3ckss --- PN message)<br>PN absent + Pri-Sc present condition<br>PN present + Pri-Sc present condition | To assess its effect on DV and mediator |
| **DV** | See Appendix 13: study 3a questionnaire | To measure the DV |
| **Mediators** | Self-concept clarity: see Table 8.4 | To measure the mediators |
| | Green preference: see Appendix 13 | |

| Manipulation checks | Personal norms scale: see Appendix 13 | To check whether the PN message successfully increases participants' personal norms |
|---|---|---|
| 2nd Attention check | Please indicate the extent to which you agree or disagree with the following statement<br><br>This is an attention check<br><br>Click on the third option from the left  1 2 3 4 5 6 7  ○ ○ ○ ○ ○ ○ ○ | To filter out those who failed in attention check |
| Control variables | Descriptive norms: see Appendix 13 | To check whether those should be included in the test model in the analysis as control variables |
|  | Injunctive norms: see Appendix 13 |  |
| Past behaviour (general) | see Appendix 13 | General green consumption behaviour |
| Demographics | Age | To get a better understanding of sample characteristics and allow for the determination of whether a sample is representative |
|  | Gender |  |
|  | Education |  |

Participants were randomly selected from the users on Prolific.co (i.e., probability sampling: selection based on the principle of randomisation). As in Study 1, this study used some Prolific.co' functions to increase the controllability of unintended effects in data collection. It includes the use of a force response requirement, the use of timers to record the time participants spend on each page and the entire questionnaire, and the use of functions to exclude those who have participated in any previous studies to avoid the learning effect (i.e., Study 1 pretest and main test, Study 2 pretest and main test, and Study 3a pretest).

A total of 249 (48.2% female; $M_{age}$=33 years old) UK citizens were recruited to complete the four conditions (2*2 design). This number excludes participants who are not qualified, including those who failed an attention check (n=12), never stayed in a hotel (n=5), always used their own towels (n=26), did not spend enough time watching the scenario video (n=22), did not recognise the reversed items, and gave inconsistent answers to similar items on the SCC scale (n=20). On average, participants took about 10 minutes to finish the questionnaire, and each participant was paid £0.76 for completing it.

## 8.2.6 Data Analysis Methods

The methods adopted for analysis in Study 3a are the same as those in Study 1. It includes i) using ANOVA to check the manipulation effect and through mean comparison to test

H3; and ii) conducting PROCESS analysis to test H4 (the conceptual model of Study 3a) through running Model 85 in PROCESS analysis. Model 85 (see Figure 8.2) is a mediated moderation model (with two serial mediators) to test the explanation of the produced effect in Study 1. Logically, conducting this test should be based on the current study's results, which support the previous findings. Hence, the analysis first tested Study 1's model before conducting an ANOVA to test H3, and then it ran Model 85 to test H4.

Before conducting the test, X was created as a dummy variable representing groups of participants in the PN absent (X=0) and the PN present groups (X=1). M1 represents self-concept clarity as a continuous variable, and M2 represents green preference as a continuous variable. W also was a created dummy variable representing groups of participants in the Pri-Sc absent (W=0) and the Pri-Sc present group (W=1). Y represents greener choice as a continuous variable. Analysing model 85 is to examine whether reading the PN message (X=1) and when one's private self-consciousness is activated (W=1), resulting in a change in self-concept clarity (M1) and green preference (M2) and thus affecting the likelihood of making a greener choice (Y). In other words, when this model is supported, it can be used to explain that the change in self-concept clarity resulted in the reduced effect of personal norms on greener choice through green preference when one's private self-consciousness is activated.

**Figure 8.2 Conceptual diagram for data analysis**



(Hayes, 2017)

X= PN absent vs. present

W= Pri-sc absent vs. present

$M_1$=Self-concept clarity

$M_2$=Green preference

Y= Greener choice
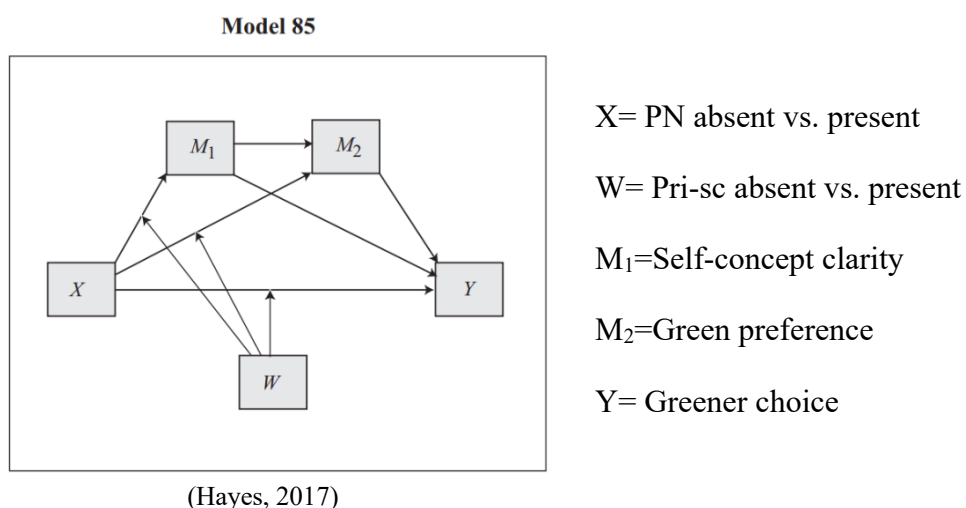
## *8.2.7 Result*

This section provides the results of Study 3a. Prior to any testing, scale reliability tests were conducted to confirm the scales' reliability, with all constructs Cronbach's alpha a ranging from 0.73 to 0.93 (see results in Appendix 14).

### Manipulation check

A manipulation check of personal norms was conducted. The ANOVA results confirmed that participants in the PN present condition rated significantly higher on the means of personal norms (M=5.5867, n=124) than those in the PN absent condition (M=5.1800, n=125; p=.009).

### Analysing and determining control variables

A series of analyses were conducted to confirm that the pre-measured variables were not significantly different between the PN present and the PN absent group, which is to rule out their potential for explaining the outcome variables (i.e., green preference and greener choice).

First, regarding past behaviour, the ANOVA results revealed no significant difference in the frequency of general green consumption behaviour (p=.497) between the PN absent and present groups (frequency 2.6804 vs. 2.7119). Moreover, the ANOVA results revealed no significant difference (p=.203) in past hotel towel reuse behaviour between the PN absent group (27 out of 125 who had past hotel towel reuse behaviour) and the PN present group (19 out of 124 who had past hotel towel reuse behaviour).

Second, regarding social norms, it has been confirmed that there was no significant difference either in the means of descriptive norms (4.3333 vs. 4.5000, p=.229) or in the means of injunctive norms (4.8933 vs. 4.8629, p=.825) between the PN absent and the PN present group. Moreover, the results of mean comparisons confirm no significant difference in descriptive norms (p=.313) and injunctive norms (p=.379) between any two of these four groups.

To conclude, none of the variables discussed above are likely to be alternative explanations for the expected outcomes in this study. Hence, there was no need to include

any of the above variables in analysing the main model, which is consistent with Study 1's model analysis.

## The analysis of the moderated mediation model

Model 7 (the moderated mediation model) in PROCESS 3.4 macro for SPSS was run to confirm Study 1's findings. The analysis (10000 bootstrap samples; 90% bias-corrected confidence intervals) revealed that the moderated mediation index was significant (index=-.2126, BootSE.1424, 90% BootLLCI:=-.4746, 90% BootULCI=-.0116), providing support for Study 1's moderated mediation model (see model 7 output in Appendix 16). This negative coefficient of this index indicates the reduction of the indirect effect on greener choice through green preference when private self-consciousness is not activated compared to when it is activated. This effect was the same as found in Study 1. The results of the conditional indirect effect of X on Y are also the same as in Study 1. Specifically, when private self-consciousness is not activated, the impact of personal norms on greener choices through green preference is statistically significant.

*A post-hoc multiple comparisons* test was conducted, and the results are displayed in Table 8.6. For green preference dependent, there is a significant difference between the PN absent and PN present groups under the private self-consciousness absent condition but not under the private self-consciousness present condition. This result is consistent with the results of Model 7 and with Study 1. Similarly, for greener choice dependent, there is a significant difference between the PN absent and PN present groups under the private self-consciousness absent condition but not under the private self-consciousness present condition. This result suggests that the PN message has a direct impact on greener choice under the private self-consciousness absent condition. The results for model 85 in the next section will illustrate this in detail. In addition, mean comparison results for the greener choice also show a significant difference between the private self-consciousness absent and private self-consciousness present groups under the PN absent condition. These results will be discussed in a later section. Study1's findings have been supported, which established the rationale for the following tests: to investigate whether self-concept clarity could explain the reduced effect of personal normative information on greener choice through green preference.

**Table 8.6 The Post-Hoc Multiple Comparisons for dependent variables (Study 3a)**

| | Private self-consciousness absent | | Private self-consciousness present | |
|---|---|---|---|---|
| | PN absent | PN present | PN absent | PN present |
| **SCC** | 4.02583[a] | 4.2540[b] | 4.2244[c] | 4.5301[d] |
| **Green preference** | 4.6583[a] | 5.0846[b] | 4.6641[c] | 4.6284[d] |
| **Greener choice** | 4.4500[a] | 5.9700[b] | 5.2600[c] | 5.6600[d] |
| **Mean comparison** | | | | |
| **SCC** | a-b:p=.361  a-c:p=.434  a-d:p=.029 | | b-c:p=.888  b-d:p=.195  c-d:p=.149 | |
| **Green preference** | a-b:p=.028  a-c:p=.976  a-d:p=.878 | | b-c:p=.027  b-d:p=.018  c-d:p=.851 | |
| **Greener choice** | a-b:p=.000  a-c:p=.009  a-d:p=.000 | | b-c:p=.000  b-d:p=.285  c-d:p=.174 | |

## Testing the hypotheses: the role of self-concept clarity

The results of the *post-hoc multiple comparisons* test for SCC dependent (see Table 8.6) were used to test whether the interaction between personal normative information and private self-consciousness changes the level of self-concept clarity (i.e., H3). This study assumed that a factor that was influenced by the two treatments caused the reduced influence of the PN message, and this factor may not be affected by any single treatment. Hence, it is to test the self-concept clarity in two treatment groups to see whether they are significantly different from the control group. If participants in the PN present+Pri-Sc present group (two treatments) rated self-concept clarity significantly differently from the control group, it supports H3. The result of mean comparisons for SCC (see Table 8.6) shows that participants in the PN present+Pri-Sc present condition indeed rated self-concept clarity (M=4.5301, n=61) significantly higher than those in the control+Pri-Sc absent condition (M=4.0583, n=64; p=.029), providing support for H3. The result also shows that the other three groups did not differ significantly in self-concept clarity. In other words, self-concept clarity was only more likely to change under the two treatments effect of personal norms and private self-consciousness.

Testing this change in self-concept clarity resulting from the interaction effect to determine whether or not it caused the reduced effect of the PN message on greener choice (H4), model 85 in PROCESS 3.4 macro for SPSS was run. The simplified output of the model 85 is shown in the result of mean comparisons for SCC (see Table 8.7), and the

full output of the model 85 is in Appendix 17. Model 85 was run to test the effect of personal normative information (X: independent variable) on greener choice (Y: dependent variable), whether it is through self-concept clarity ($M_1$: mediator) and then through green preference ($M_2$: mediator), and whether the indirect effect is moderated by the activation of private self-consciousness (W: moderator). If the above relationships are supported, the index of moderated mediation will be significant. The analysis (10000 bootstrap samples; 90% bias-corrected confidence intervals) revealed that the moderated mediation index was not significant (index=.0032, BootSE=.0125, 90% BootLLCI:=-.0160, and 90% BootULCI=.0242). Specifically, according to the results of the conditional indirect effects of X on Y through $M_1$ and $M_2$ listed in Table 8.7, there is no significant indirect effect of personal norms on greener choice through self-concept clarity and green preference whenever private self-consciousness is absent or present. This result reveals that the H4 was not supported.

**Table 8.7 The simplified output of the hypothesised model (model 85)**

(level of confidence for all confidence interval in output: 90%, Number of boostrap samples: 10000)

| | Self-concept clarity | | | | Greener choice (Y) | | | |
|---|---|---|---|---|---|---|---|---|
| | Coeffi. | SE | 90% CI | β | Coeffi. | SE | 90% CI | β |
| Constant | 4.0583 | .1528 | 3.8060, 4.3107 | .0000 | 2.9791 | .5658 | 2.0449, 3.9133 | .0000 |
| Personal Norms (X) | .1956 | .2136 | -.1570, .5482 | .3605 | 1.3008 | .2815 | .8360, 1.7655 | .0000 |
| Self-concept clarity (M1) | | | | | -.1611 | .0835 | -.2990, -.0233 | .0547 |
| Green preference (M2) | | | | | .4669 | .0925 | .3141, .6197 | .0000 |
| Private self-consciousness (W) | .1660 | .2119 | -.1839, .5160 | .4342 | .7856 | .2766 | .3289, 1.2423 | .0049 |
| interaction XW | -.1101 | .3002 | -.3857, .6058 | .7143 | -.8406 | .3939 | -1.4910, -.1903 | .0338 |

| | Green preference (M2) | | | | Conditional direct effects of X on Y | | | |
|---|---|---|---|---|---|---|---|---|
| | Coeffi. | SE | 90% CI | β | | effect (index) | SE | LLCI-ULCI |
| Constant | 4.4054 | .2714 | 3.9573, 4.8535 | .0000 | W=0 (not activated) | 1.3008 | .2815 | .8360, 1.7655 |
| Personal Norms (X) | .4141 | .1929 | .0956, .7326 | .0328 | W=1 (activated) | .4601 | .2763 | .0039, .9164 |
| Self-concept clarity (M1) | .0623 | .0576 | -.0328, .1574 | .2804 | | | | |
| Private self-consciousness (W) | -.0046 | .1914 | -.3205, .3114 | .9809 | | | | |
| interaction XW | -.4688 | .2708 | -.9159, -.0217 | .0847 | | | | |

| Conditional indirect effects of X on Y through M2 | | | | | Conditional indirect effects of X on Y through M1 and M2 | | | |
|---|---|---|---|---|---|---|---|---|
| | effect (index) | BootSE | BootLLCI | BootULCI | | effect (index) | BootSE | BootLLCI | BootULCI |
| W=0 (not activated) | .1933 | .0912 | .0582 | .3524 | | .0057 | .0108 | -.0051 | .0275 |
| W=1 (activated) | -.0256 | .1022 | -.2065 | .1286 | | .0089 | .0128 | -.0064 | .0344 |
| Index of moderated mediation | -.2189 | .1428 | -.4760 | -.0124 | | .0032 | .0125 | -.0160 | .0242 |

The results also show that the interaction coefficient of XW on the SCC is not significant: index=-.1101, BootSE=.3002, 90% BootLLCI:=-.3857, 90% BootULCI=.5160. This

result suggests that the effect size of the PN message on self-concept clarity is not conditional on private self-consciousness. However, activating both personal norms and private self-consciousness (two treatment effects) increases the level of self-concept clarity. In addition, the results show that self-concept clarity has a direct negative impact on greener choice (coeffi=-.1611, BootSE=.0835, 90% BootLLCI:=-.2990, 90% BootULCI=-.0233).

According to the output for model 85, the supported relationships have been drawn by red lines that can be seen in Figure 8.3, which reveals model 8 in PROCESS. Model 8 supports all relationships established in Model 7 (i.e., the conceptual model of Study 1), but it also supports the direct effect of personal norms on the green preference that was moderated by W (private self-consciousness).

**Figure 8.3 The supported relationships based on the output of model 85**



X= PN absent vs. present

W= Pri-sc absent vs. present

M1=Self-concept clarity

M2=Green preference
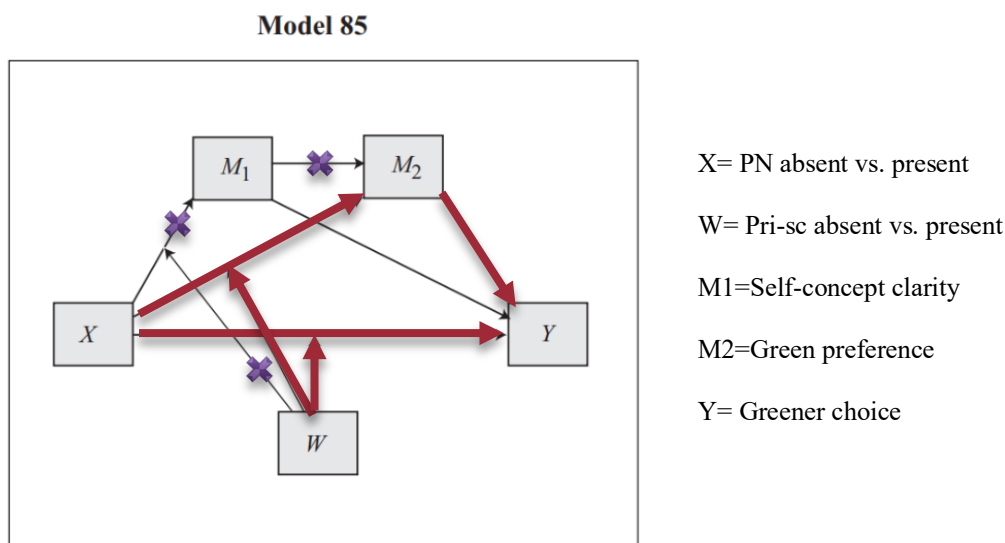
Y= Greener choice

The result of the conditional direct effect of X on Y (see Table 8.7) shows that when private self-consciousness is absent, there is a significant positive effect of personal norms on greener choice: effect=1.3008, SE=.2815, 90% LLCI=.8360, 90% ULCI=1.7655. When private self-consciousness is present, the effect is also significant (effect=.4601, SE=.2763, 90% LLCI=.0039, 90% ULCI=.9164). The negative coefficient of *Int-1* indicates the reduction of the direct effect on greener choice when private self-consciousness is not activated compared to when it is activated. The effect of this reduction has been illustrated in the interaction plot (Figure 8.4). This direct effect

produced by reading the PN message is much bigger (a>b) when private self-consciousness is not activated (i.e., the distance of a) than when it is activated (i.e., the distance of b).

The direct effect of X on Y found in this study (not in Study 1) may be due to the larger sample size in this study. A larger sample size for each condition would have allowed for the detection of a direct effect of personal norms on greener choices. According to Hayes (2018, p. 121), 'a smaller sample size provides enough power to be able to claim a completed mediation but not enough to detect the direct effect'.

**Figure 8.4 The plot of the interaction effect on greener choice**
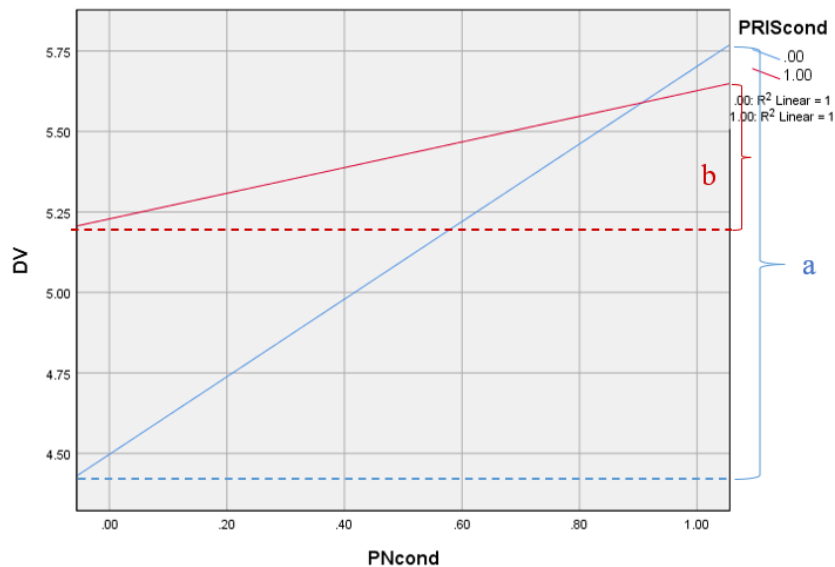


In sum, the results of the mean comparison for SCC support H3, but the results of model 85 do not support H4. In other words, including self-concept clarity as a mediator in the conceptual model was not supported. However, the result reveals a moderated direct and indirect effect of personal norms on greener choices.

## 8.2.8 Discussion

This study investigated the mediating role of self-concept clarity on the activation route in terms of activating personal norms for promoting greener choices. The experiment reproduced the findings of Study 1, which reveals how personal normative information

interplays with private self-consciousness, impacting both green preference and greener choice. The results also show that activating both personal norms and private self-consciousness has a positive impact on the level of self-concept clarity.

The results from Model 7 reconfirm Study 1's findings that the activation of private self-consciousness negatively moderated the impact of personal normative information on greener choice through green preference. This consistent result indicates the reliability of previous findings and thus the experimental design. Specifically, the results built confidence for future studies with the current method of personal norm manipulation.

The results from Model 85 show that personal normative information has a direct positive impact on the likelihood of making a greener choice. This result reveals that this direct effect of personal normative information on greener choice wasn't explained by the increased green preference but was explained by the increased sense of obligation for making a greener choice and the strength of this direct effect also depended on the condition of private self-consciousness. For example, a hotel guest reused a hotel towel after reading the PN message due to an increased sense of obligation to reuse hotel towels, but his/her overall green preference did not increase. The result supports the established relationship in the Norm Activation Model (Schwartz, 1977) and Value-Belief-Norm Theory (Stern, 2000; Stern et al., 1999) that personal norms have a direct positive effect on pro-environmental behaviour. Personal norms have both direct and indirect effects on greener choices, which is consistent with Bai and Bai's (2020) findings on the influences of personal norms on environmental protection behaviour.

Both direct and indirect effect of personal norms on greener choice were negatively moderated by the activation of private self-consciousness. This doesn't mean that private self-consciousness has a negative main effect on greener choice. The results of the mean comparison for greener choice (PN absent+pri-sc absent vs PN absent+ pri-sc present), suggests that participants' private self-consciousness increases their likelihood of making greener choice when personal norms are not simultaneously activated (read control message). This result perhaps just reveals the participants' underlying green values. According to the concept of private self-consciousness, increasing consumers' private self-consciousness could enable consumers to make choices that match their underlying personal preference/value better (Goukens et al., 2009). Therefore, the result uncovers those participants' existing underlying values, beliefs, or preferences towards greener

choice. However, the application of private self-consciousness to promote greener choices should depend on consumers' levels of underlying green values. For example, a hotel guest whether become more likely to reuse hotel towels when he/she paid attention on his/herself, which depends on his/her underlying values, beliefs, or preferences towards hotel towel reuse behaviour. Study 1's result shows no significant mean difference for greener choice between participants in group PN absent+pri-sc absent and PN absent+ pri-sc present. In other words. The finding of Study 3a participants' greenness cannot be generalised to every nation as the different degrees of green consumption movement among societies, countries (eastern countries vs western countries) and individuals that affect the influence of private self-consciousness.

In addition, the effect produced by activating private self-consciousness alone is much smaller than that produced by activating personal norms alone. As discussed in Section 6.8.2, the above result suggests that applying the mechanism of private self-consciousness to encourage greener choices maybe workable when the target societies are very environmentally friendly. Moreover, the results suggest that the positive effect of private self-consciousness on greener choice can only occur when there is no value trade-off. For example, when both personal norms and private self-consciousness are activated, leading to a value trade-off, private self-consciousness has a  negative influence on the impact of personal normative information that promotes to make a greener choice.

The reoccurring phenomenon of the reduced influence of personal normative information on greener choice when private self-consciousness is activated is used to support the decision on investigating the role of self-concept clarity. It is to explore the underlying mechanisms of processing normative information when the private self is the object of attention.

**The interactional impact on self-concept clarity and the role of self-concept clarity**

The results of post-hoc multiple comparisons for SCC reveal that the interaction between personal normative information and private self-consciousness increases the level of self-concept clarity. However, the effect size of personal normative information on self-concept clarity is not dependent on private self-consciousness. The results of model 85 also did not support the causal relationship that increased self-concept clarity directly

causes a reduced direct or indirect effect of personal normative information on greener choices when private self-consciousness is activated.

Although no evidence supports the above causal processes, this result suggest that self-concept clarity may be one of the outcomes of the complex causal process, and that the current hypothesised model does not fully capture all underlying processes. The result may lend support for the following explanation of the underlying mechanisms triggered by the evaluative outcomes when private self-consciousness is activated: The below explanation is based on the assumption that the message card with the PN information may elicit a working self-concept (i.e., accessible self-knowledge) incompatible with those elicited when turning attention to one's private self. In such a situation, recognising any discrepancy between any two of these self-concepts would trigger the self-consistency mechanism to regulate the consumer's thoughts. The self-consistency effect for maintaining the consumer's previous self-identity or favourable self-view (Markus and Wurf, 1987) may help to ensure the stability and consistency of the self-concept and thus increase the level of self-concept clarity. For example, a consumer's green value becomes salient by reading personal normative information, but at the same time, by paying attention to the private self, the consumer encounters conflicting ego-involved values such as materialism. In this situation, the consumer needs to trade-off between following the green value (the activated ought self) and the material value (the activated actual self). Hence, his recognition of the coexisting inconsistent concepts or values triggers his self-consistency mechanism to solve the problem, as 'people prefer a consistent sense of self to be able to use it to make a prediction' (Oyserman, 2004, p9). Consequently, maintaining the consumer's previous self-identity (their 'actual self') reduces the likelihood of making a greener choice. In other words, the triggered self-consistency resulting from the recognition of the inconsistent values or self-concepts increases self-concept clarity as a means of maintaining a stable and consistent self. Meanwhile, the increased self-concept clarity may only partially explain the entire causal process of the reduced effect of personal normative information, as the recognition of the inconsistent self-concepts/values is more likely to play a causal role in this process.

The above explanation supports the idea that private self-consciousness activates egocentric goals (Mor and Winquist, 2002). Therefore, the activated egocentric goals reduce the accessibility of eliciting green preference and then regulate the behaviour. The

result also supports that the idea 'processing specific self-belief relevant information that reinforces the belief boosts self-concept clarity' (Hertel, 2018, p. 49). In other words, paying attention to the private self when reading the PN message initiates consumers to process specific self-belief relevant information, which thus increases self-concept clarity.

The increased self-concept clarity may not explain any underlying causal process behind the reduced effect of personal normative information. However, it can provide an understanding of how interventional strategies could affect consumers' well-being through their impact on self-concept clarity. This responds to Steg et al.'s (2019) growing concern about the side effects on consumers' well-being when promoting green consumption.

Regarding self-concept clarity's negative impact on greener choice, this result suggests that behavioural intervention seems less effective in changing those consumers with higher self-concept clarity. This result reveals a feature of self-concept clarity, namely that people with high self-concept clarity are more decisive in their decision-making as they have a clear sense of themselves (Mittal, 2015).

**Limitations and further study**

Study 3a has examined the role of self-concept clarity in the causal process of promoting greener choices. Although Study 3a's result supports that self-concept clarity is an outcome of the interaction effect between personal norms and private self-consciousness, the finding is not sufficient to depict the entire paths of causal processes of the reduced effect on the greener choice. Therefore, future research can focus on further exploring the underlying mechanism of activating personal norms for promoting greener choices.

## 8.3 Study 3b: the Impact of Social Normative Information and Public Self-Consciousness on Self-Concept Clarity

### 8.3.1 Reviewing the Findings of Study 2

According to the results of Study 2 (see Section 7.7), the research found that: i) the social normative information (i.e., descriptive norms and injunctive norms) has a positive impact on greener choice, and this effect is not mediated by green preference; ii) public

self-consciousness negatively moderates the direct effect of the social normative message on greener choice; Specifically, when the public self-consciousness is activated, the effect of the social normative message on the greener choice is reduced compared to when public self-consciousness is not activated; and iii) when public self-consciousness is not activated, the direct effect of the social normative information on greener choice is significant. When the public self-consciousness is activated, the above effect is not significant.

## *8.3.2 The Purpose of Study 3b*

The result of Study 2 confirms that when public self-consciousness is activated, the effect of the social normative message on the greener choice is reduced compared to when public self-consciousness is not activated. Study 3b aims to explore the underlying processes of the interactional effect between social norms and public self-consciousness. Based on the understanding of a series of self-related concepts such as (self-image, self-concept clarity, public self-consciousness, self-consistency, and self-evaluation), it has been inferred that when public self-consciousness is activated, the reduced effect of the social normative message on greener choice may be caused by the increase in self-concept clarity.

The purpose of Study 3b, therefore, is to test the following hypotheses by conducting an experiment and a pretest. The rationale for making these hypotheses has been justified in Section 4.2.2.

> **H9a:** The level of self-concept clarity increases when both public self-consciousness and descriptive norms are activated.

> **H9b:** This change in self-concept clarity reduces the impact of descriptive normative information on greener choice, when public self-consciousness is activated.

> **H10a:** The level of self-concept clarity increases when both public self-consciousness and injunctive norms are activated.

> **H10b:** This change in self-concept clarity reduces the impact of injunctive normative information on greener choice, when public self-consciousness is activated.

The hypotheses H9–H10 can be tested by a moderated mediation model (see Figure 8.5). This is to test whether the moderated effect of social norms on greener choice by public self-consciousness (i.e., conditional on the activation of the public self-consciousness) is mediated by self-concept clarity.

**Figure 8.5 Conceptual model of Study 3b**
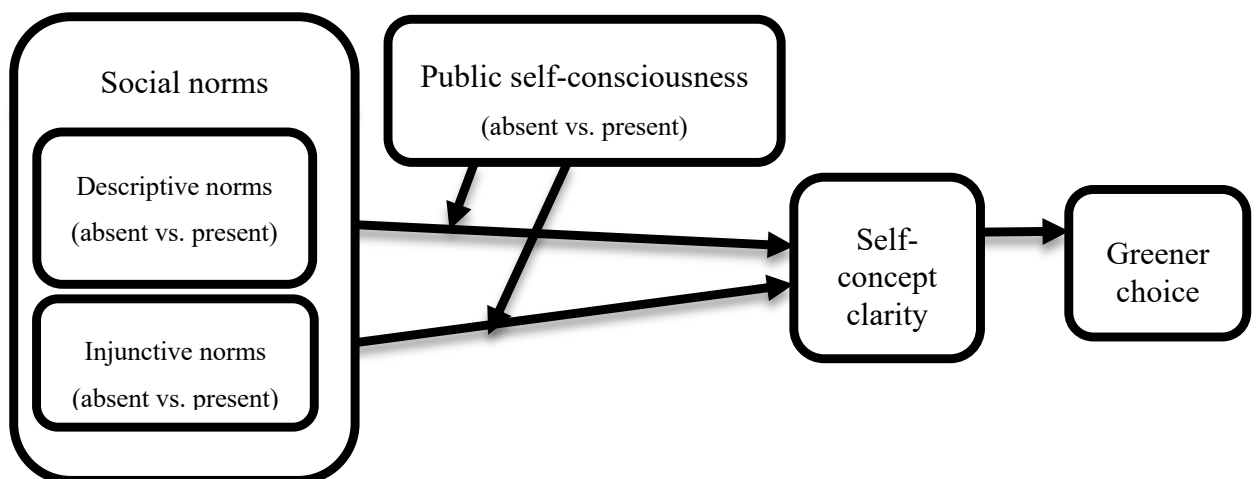


## Overview of Study 3b

Testing the impact of the interaction between social norms and public self-consciousness on self-concept clarity and whether this effect on self-concept clarity causes the change in greener choice, Study 3b mainly replicated the experimental design of Study 2. It is a 3 (Social norms: descriptive norms ((DN) vs. injunctive norms (IN) vs. control) * 2 (Public self-consciousness: present vs. absent) between-subjects design in which six groups were created and participants were randomly assigned to only one of the six conditions (see Table 8.8). Social norms (i.e., descriptive and injunctive norms) and public self-consciousness were manipulated, while self-concept clarity and greener choice were measured as dependent variables. With the exception of including a scale for measuring self-concept clarity, Study 3b used the same ways of manipulating descriptive norms, injunctive norms, public self-consciousness, and measuring greener choices. While in Pub-SC absent condition, Study 3b used the same format of questions as it did in Pub-SC present condition to direct participants' attention away from themselves. Moreover, according to the previous suggestions regarding the timing for taking the manipulation check, it has been decided to take the manipulation check of public self-

consciousness in the pretest instead of the main test. The detailed explanations of ways
of operating will be presented in the later section.

**Table 8.8 The conditions/treatments in Study 3b**

## *8.3.3 Operationalisation*

This section justifies and describes how the variables in Study 3b were manipulated and measured. It mainly discusses what changes from Study 2, why, and how to make the change.

## Manipulation

Study 3b adopted the same ways of manipulating descriptive norms and injunctive norms as Study 2 by presenting a descriptive normative message card and an injunctive norms message card. The only difference is that the survey year in those message cards was changed from 2018 to 2019 considering the effect of the recency of past behaviour (see Figure 8.6 The DN and IN message card for Study 3b). Apparently, testing an explanation of the underlying reduced effect produced in Study 2 should use the same scenario as Study 2, including reading the same DN message, the IN message, and the control message, for rigorous research to generate the same effect and enable the exploration of the underlying mechanism. Moreover, it also enables to test the reliability of the way of manipulating social norms in Study 2 and to further validate Study 2's findings (can the designed DN and IN messages produce the same effect again).

**Figure 8.6 The DN and IN message card for Study 3b**
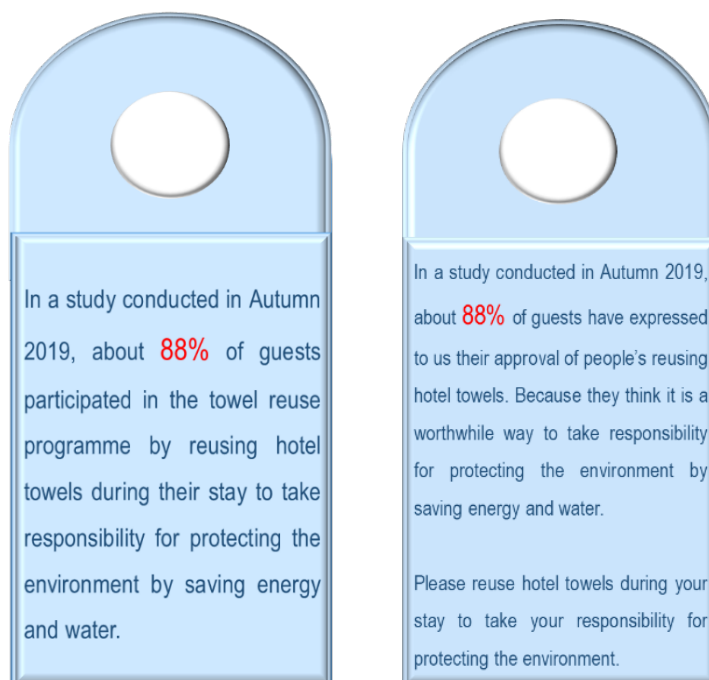
This study adopted the same method of priming public self-consciousness as Study 2 by asking participants to respond to semantic differential items regarding what other people would think of them if they participated or not in the hotel towel reuse programme. In contrast to Study 2, in the public self-consciousness absent condition, Study 3b used the same format of the question as in the public self-consciousness present condition rather than Study 2without the additional test. However, in Study 3b, participants were asked to rate their viewing experience of the scenario video using the semantic differential items such as 'easy to understand' and 'difficult to understand' after they watched the scenario video and read the message card (see Table 8.9). This design to keep the participants' attention away from themselves is based on the assumption that 'conscious attention is bidirectional in nature: attention may focus either towards the self or towards the external environment, but not in both directions at once' (Davis and Brock, 1975, p. 381). Hence, turning participants' attention to the external environment prevents them from paying attention to themselves, which increases public self-consciousness. Adopting the same format question in the public self-consciousness absent condition as in public self-consciousness present condition is to rule out alternative explanations of the intended causal effects that the question itself may have on the public self-consciousness.

**Table 8.9 Semantic differential question -in Pub-SC absent condition**

| Please select, from 1 to 7, which of the following options best reflects your view about the video you watched… | | |
|---|---|---|
| | 1 2 3 4 5 6 7 | |
| Easy understand | ○ ○ ○ ○ ○ ○ ○ | Difficult understand |
| Ran smoothly | ○ ○ ○ ○ ○ ○ ○ | Run lagging |
| Well structured | ○ ○ ○ ○ ○ ○ ○ | Poor structured |
| Too long | ○ ○ ○ ○ ○ ○ ○ | Too short |
| Good design | ○ ○ ○ ○ ○ ○ ○ | Bad design |

## Manipulation check

Study 3b adopted the same seven-point scale as Study 2 to check the manipulation of descriptive and injunctive norms in the main test. However, as there are bi-directional associations between descriptive and injunctive norms, these manipulation check questions cannot differentiate participants' perceptions of the difference between the DN and IN messages. For example, in the DN present condition, participants rated higher descriptive norms but also injunctive norms, and vice versa. Therefore, to further distinguish them, a test (see Table 8.10) was designed to examine participants' perceptions of the DN and IN messages. In the DN present condition, participants should more strongly agree that the hotel message card that they read is about what most of the others are doing and less strongly agree that the hotel message card that they read is about what other guests in the hotel approve of, and vice versa in the IN present condition. This test, along with the manipulation check of public self-consciousness, will be taken in the pretest.

The manipulation check of public self-consciousness in Study 3b was changed to be taken in the pretest instead of the main test, as aforementioned, due to the temporary nature of the effect of public self-consciousness (attention can be easily redirected by other objects). The pretest allows the immediate measure of the manipulation just after the manipulation and scenario, which help detect the short effect.

### Table 8.10 The Public Self-Consciousness scale

| *Manipulation check* | *Anchors* | *Items* |
|---|---|---|
| **Perception difference between descriptive and injunctive norms** | Strongly disagree (1) to Strongly agree (7) | • The hotel message card that you read is about what most of others are doing. <br> • The hotel message card that you read is about what other guests in the hotel approve of. |
| **Public self-consciousness (Fenigstein et al., 1975; Scheier and Carver, 1985; Scheier and Carver, 2013)** | Strongly disagree (1) to Strongly agree (7) | • I'm concerned about my style of doing things <br> • I care a lot about how I present myself to others <br> • I'm self-conscious about the way I look <br> • I usually worry about making a good impression <br> • Before I leave my house, I check how I look <br> • I'm concerned about what other people think of me <br> • I'm usually aware of my appearance |

To be consistent with Study 3a, the public subscale of the Self-Consciousness Scale (the SCS) was used to check public self-consciousness (see the scale in Table 8.10) in Study 3b. The SCS was originated by Fenigstein et al. (1975) to measure the individual difference in self-consciousness. This scale is a frequently used scale to measure public self-consciousness (Iyer and Muncy, 2009; Lalwani et al., 2009), which should be a suitable choice to assess the manipulation of public self-consciousness.

**Measurement**

Except for an additional measurement of self-concept clarity, the rest of the variables measured in Study 3b were all the same as those measured in Study 2. The same Self-Concept Clarity scale (see p.253) as adopted in Study 3a will be used in this study to measure the clarity, confidence, internal consistency, and stability of one's self-concept.

## 8.3.4 Pretest

A pretest was conducted to confirm the manipulation of public self-consciousness and participants' perceptions of the difference between the DN and IN messages, using the same between-subjects design (3 (Social norms: descriptive norms (DN) vs injunctive norms (IN) vs control) * 2 (Public self-consciousness: present vs absent) as the main test. According to the purpose of the pretest, the main body of the pretest only included a scenario task (participants were randomly assigned to only one of the six conditions), manipulation check questions, and demographics questions. Participants in Pub-Sc absent condition, watched the scenario video, answered questions about the video watching experience, and then rated the likelihood of reusing hotel towels for three days after reading the message card (DN, IN or control message), and rated the likelihood of reusing hotel towels for all three days. In Pub-Sc present condition, the process was the same; however, participants completed the questions to prime their public self-consciousness after watching the video. All participants answered questions on public self-consciousness and the perception of the DN and IN message, before completing the demographic questions. The pretest aimed to establish that participants in the Pub-Sc present conditions rated their public self-consciousness higher than those in the absent condition and differentiated the DN and IN messages.

The pretest recruited 213 participants after data cleaning (48.8% female, $M_{age}$=34 years old, UK citizens) on Prolific.co, and they were randomly assigned to one of the six

conditions. The questionnaire took the participants, on average, about 3.5 minutes to complete, and each participant got paid £0.45. As expected, the pretest result shows that participants in the public self-consciousness present conditions rate public self-consciousness significantly higher than those in the public self-consciousness absent conditions (3.35 vs. 2.44, p=.000). Regarding the manipulation check of the DN message, the result shows that participants in the DN present condition more strongly agreed that the hotel message card that they read is about what most of the others are doing than those in the DN absent condition (5.60 vs. 3.63, p=.000). Regarding the manipulation check of the IN message, the result shows that participants in the IN present condition more strongly agreed that the hotel message card that they read is about what other guests in the hotel approve of than those in the IN absent condition (4.75 vs. 3.95, p=.001). Regarding participants' perception difference between the DN and IN message, the results reveal that participants in the DN present condition more strongly agreed that the hotel message card that they read is about what most of the others are doing (5.6 vs. 5.18, p=.057) compared with those in the IN present condition. Participants in the DN present condition also less strongly agreed that the hotel message card that they read is about what other guests in the hotel approve of (3.64 < 4.75, p=.000) than those in the IN present condition. In sum, public self-consciousness, descriptive norms, and injunctive norms have been successfully manipulated, and the confidence in the difference between the descriptive norms and injunctive norms has been further established.

### 8.3.5 Questionnaire Overview

This section provides an overview of the questionnaire used in the main test of Study 3b, the sequence of the experiment, and the description of the participants. The questionnaire consists of twelve blocks for collecting different types of data. Table 8.11 lists the category of each block, its corresponding questions, and the justification for the inclusion of each question. Except for the additional measurement of self-concept clarity that was measured just after the measure of DV and removed the manipulation check of public self-consciousness, the sequence of the blocks, the measurements, and the order of the measurements are all the same as in Study 2.

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**Table 8.11 Questionnaire overview of Study 3b**

| Blocks | **Questions** (details see Appendix 18- Study 3b-questionnaire) | **purpose of questions** |
|---|---|---|
| **Introductory information** | 1.1 Let the participants know that the survey contains a video watching section that requires equipment to hear the sound | To prepare the equipment or let them drop from here if they don't have the equipment |
| | 1.2 Introduce the purpose of the survey, provide *Participant Information* about the research, and obtain the consent for the survey from participants | To provide survey background and let them drop from here if they are not interested in the survey |
| **Screener validation** | 2.1 Have you ever stayed in a hotel? 2.2 When travelling, how frequently do you use your own towels (i.e., towels that you have brought) while staying at a hotel? | To filter out those who have never stayed in a hotel and always use their own towels while staying at a hotel, because the hotel towel reuse scenario would be unrealistic for them and their response would be perceived as invalid for this research |
| **Past behaviour (specific)** | Do you ever choose to reuse the hotel towel more than one day while staying in a hotel for several days? | To check whether it should be included in the test model as a control variable |
| **1st Attention check** | Please indicate the extent to which you agree or disagree with the following statement<br><br>This is an attention check<br><br>Click on the second option from the right    1   2   3   4   5   6   7   ○ ○ ○ ○ ○ ○ ○ | To filter out those who failed in attention check |
| **Scenario video (Conditions)** | DN/IN absent + Pub-Sc absent (Control condition) (https://bit.ly/3aWf0K0 ---control message) DN/IN absent + Pub-Sc present condition (https://bit.ly/3aWf0K0 ---control message) DN present + Pub-Sc absent (DN condition) (https://bit.ly/2XpDkAY--- DN message) DN present + Pub-Sc present condition (https://bit.ly/2XpDkAY--- DN message) IN present + Pub-Sc absent (IN condition) (https://bit.ly/3vp364S --- IN message) IN present + Pub-Sc present condition (https://bit.ly/3vp364S --- IN message) | To assess its effect on DV and mediator |
| **DV** | See Appendix 18- Study 3b-questionnaire | To measure the DV |
| **Mediators** | Self-concept clarity | To measure the mediators |
| **Manipulation check** | Descriptive norms scale | To check whether DN message successfully increase participants' descriptive norms |

| | Injunctive norms scale | To check whether IN message successfully increase participants' injunctive norms |
|---|---|---|
| **2nd Attention check** | Please indicate the extent to which you agree or disagree with the following statement<br><br>This is an attention check<br><br>1 2 3 4 5 6 7<br>Click on the third option from the left ○ ○ ○ ○ ○ ○ ○ | To filter out those who failed in attention check |
| **Potential control variables and additional measure** | Personal norms scale | To test the effect of the social normative message on personal norms. |
| | General green consumption behaviour | To check whether general green consumption behaviour should be included in the test model in the analysis as control variables. |
| **Demographics** | Age | To get a better understanding of sample characteristics and allows for the determination of whether a sample is representative |
| | Gender | |
| | Education | |

Participants were randomly selected from users on Prolific.co. As in Study 2, this study excluded those who had participated in any previous studies to avoid the learning effect. A total of 481 (50.5% female; $M_{age}$=36 years old) UK citizens were recruited to complete the six conditions (3*2 design). This number excludes participants who failed an attention check (n=30), never had stayed in a hotel (n=10), always used their own towels (n=6), or did not spend enough time watching the scenario video (n=10). On average, participants took about 10 minutes to finish the questionnaire, and each participant was paid £0.70 for completing it.

## 8.3.6 Data Analysis Methods

The methods adopted for analysis in Study 3b are the same as those in Study 2. It includes i) using ANOVA to check the manipulation effect and through mean comparison to test H9a and H10a; and ii) conducting mediated moderation analysis to test H9b and H10b (the conceptual model of Study 3b) through running Model 8 in PROCESS analysis. Logically, conducting this test should be based on the current study's results, which support the previous findings. Hence, the analysis first tested Study 2's model before conducting an ANOVA to test H9a and H10a, and then it ran Model 8 to test H9b and H10b.

Before conducting the test, X was created as a dummy variable representing groups of participants in the DN/IN absent (X=0) and the DN/IN present groups (X=1). M represents self-concept clarity as a continuous variable. W also was a created dummy variable representing groups of participants in the Pub-Sc absent group (W=0) and the Pub-Sc present group (W=1). Y represents greener choice as a continuous variable. Analysing model 8 is to examine whether reading the DN or IN message (X=1) when one's public self-consciousness is activated (W=1) results in a change in the self-concept clarity (M) and thus this change affects the likelihood of making a greener choice (Y). In other words, when this model is supported, it can explain that the change in self-concept clarity resulted in a reduced effect of descriptive or injunctive norms on greener choice when one's public self-consciousness is activated.

## 8.3.7 Result

This section provides the results of Study 3b. Prior to any testing, scale reliability tests were conducted to confirm the scales' reliability, with all constructs Cronbach's alpha a ranging from 0.84 to 0.94 (see results in Appendix 19). According to the result of the reliability test and data observation, an issue regarding the SCC scale has been found. The SCC scale contains two reversed items (6 and 11), which has been recoded. The inter-item correlation matrix and the inter-item covariance matrix show that items 6 and 11 have a negative relationship with the rest of the other items (their correlations range from -.524 to -.735). These results indicate that most participants did not recognise the reversed items 6 and 11 in the SCC scale well. This result was consistent with the result of the data observation. Hence, according to the Cronbach's alpha item reduction analysis, 'alpha if item deleted' (Erhart et al., 2010), items 6 and 11 were removed from the SCC scale for this study, and the Cronbach's alpha increased to .925.

### Manipulation check

A manipulation check of social norms was conducted. The ANOVA results confirmed that participants in the DN present condition indeed rated significantly higher on the means of descriptive norms (M=4.7396, n=160) than those in the DN absent condition (M=4.3063, n=160; p=.004). Participants in the IN present condition indeed rated significantly higher on the means of injunctive norms (M=5.2257, n=161) than those in the IN absent condition (M=4.9458, n=160; p=.019).

## Analysing and determining control variables

A series of analyses were conducted to confirm that the pre-measured variables were not significantly different between the DN present and the DN absent group or between the IN present and the IN absent condition, which is to rule out their potential for explaining the outcome variables (i.e., greener choice).

First, regarding past hotel towel reuse behaviour, the ANOVA results revealed no significant difference ($p$=.123) in past hotel towel reuse behaviour between the DN absent and the DN present group. The ANOVA results also revealed that there was no significant difference ($p$ =.626) in past hotel towel reuse behaviour between the IN absent and the IN present groups.

Second, regarding general green consumption behaviour, ANOVA results revealed no significant difference in general green consumption behaviour between the DN absent (M=2.7219, n=160) and the DN present group (M=2.7684, n=160; $p$=.367), and between the IN absent (M=2.7219, n=160) and the IN present group (M=2.7419, n=161; $p$=.692).

To conclude, none of the variables discussed above are likely to be alternative explanations for the expected outcomes in this study. Hence, there was no need to include any of the above variables in analysing the main model, which is also consistent with Study 2's model analysis.

## The analysis of the simple moderation model

**Regarding descriptive norms**, the simple moderation model tested was run to confirm Study 2's findings. The analysis of model 1 (10000 bootstrap samples; 90% bias-corrected confidence intervals) shows that the interaction coefficient is negative and significant (Inter=-1.2125, BootSE==.4142, 90% BootLLCI:=-1.9057, 90% BootULCI=-.5230, p=.0041), providing support for Study2's simple moderation model. This negative coefficient of this index indicates the reduction of the direct effect on greener choices when public self-consciousness is not activated compared to when it is activated. The results of the conditional direct effect of X on Y are the same as in Study 2 (see model 1 output in Appendix 20). Specifically, when public self-consciousness is not activated, the impact of descriptive norms on greener choices is statistically significant.

*A post-hoc multiple comparisons* test for dependent variables regarding descriptive norms was conducted, and the results are displayed in Table 8.12. For the greener choice dependent, there was a significant difference between the DN absent and the DN present group under the public self-consciousness absent condition. This result is consistent with the above conditional direct effect. Moreover, there was a significant difference between the public self-consciousness absent and the public self-consciousness present group under the DN absent condition rather than in the DN present condition. This effect has not been found in Study 2. Specifically, when participants read the control message, the activation of public self-consciousness had a positive impact on the greener choice.

**Table 8.12 The post-hoc multiple comparisons for dependent variables (Study 3b-DN)**

| | Public self-consciousness absent | | Public self-consciousness present | |
|---|---|---|---|---|
| | DN/IN absent | DN present | DN/IN absent | DN present |
| **SCC** | 4.3550[a] | 4.6338[b] | 4.1350[c] | 4.2800[d] |
| **Greener choice** | 4.3500[a] | 5.4800[b] | 5.3500[c] | 5.2600[d] |
| **Mean comparison** | | | | |
| **SCC** | a-b:p=.199  a-c:p=.310  a-d:p=.729 | | b-c:p=.022  b-d:p=.103 | c-d:p=.504 |
| **Greener choice** | a-b:p=.000  a-c:p=.001  a-d:p=.002 | | b-c:p=.663  b-d:p=.459 | c-d:p=.761 |

**Regarding injunctive norms**, the analysis of model 1 (10000 bootstrap samples; 90% bias-corrected confidence intervals) shows that the interaction coefficient is negative and significant (Inter=-1.3422, BootSE==.4013, 90% BootLLCI:=-2.0040, 90% BootULCI=-.6769, p=.0011), providing support for Study 2's simple moderation model. This negative coefficient of this index indicates the reduction of indirect effects on greener choices when public self-consciousness is not activated compared to when it is activated. This effect was the same as found in Study 2. The results of the conditional direct effect of X on Y are also the same as in Study 2 (see model 1 output in Appendix 21). Specifically, when public self-consciousness is not activated, the impact of injunctive norms on greener choices is statistically significant.

*A post-hoc multiple comparisons* test for dependent variables regarding injunctive norms was conducted, and the results are displayed in Table 8.13. For the greener choice

dependent, there was a significant difference between the IN absent and the IN present group under the public self-consciousness absent condition. This result is consistent with the above conditional direct effect. Also, there was a significant difference between the public self-consciousness absent and the public self-consciousness present group under the IN absent condition. Specifically, when participants read the control message, the activation of public self-consciousness had a positive impact on the greener choice. These results are consistent with Study 2's findings.

**Table 8.13 The post-hoc multiple comparisons for dependent variables (Study 3b-IN)**

| | Public self-consciousness absent | | Public self-consciousness present | |
|---|---|---|---|---|
| | DN/IN absent | IN present | DN/IN absent | IN present |
| **SCC** | 4.3550[a] | 4.2012[b] | 4.1350[c] | 4.5325[d] |
| **Greener choice** | 4.3500[a] | 5.5400[b] | 5.3500[c] | 5.2000[d] |
| **Mean comparison** | | | | |
| **SCC** | a-b:p=.477 | a-c:p=.310 a-d:p=.413 | b-c:p=.759 b-d:p=.126 | c-d:p=.067 |
| **Greener choice** | a-b:p=.000 | a-c:p=.001 a-d:p=.003 | b-c:p=.500 b-d:p=.231 | c-d:p=.601 |

## Testing the hypotheses: the role of self-concept clarity

**Regarding descriptive norms**, the results of the *post-hoc multiple comparisons* test for SCC dependent were used to test whether the interaction effect between descriptive normative information and public self-consciousness changes the level of self-concept clarity (i.e., H9a).

If participants in the DN present+Pub-Sc present group (two treatments) rated self-concept clarity significantly differently from the control group, it supports H9a. The result of mean comparisons for SCC (see Table 8.12), shows that participants in the DN present+Pub-Sc present condition did not rate self-concept clarity (M=4.2800, n=80) differently than those in the control+Pub-Sc absent condition (M=4.3550, n=80; p=.729). This result suggests that self-concept clarity is not likely to be the cause of the reduced effect of the descriptive normative information when public self-consciousness is activated.

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Model 8 in PROCESS 3.4 macro for SPSS was run to further confirm the above result (the full output of Model 8 is in Appendix 22). Model 8 was run to test whether the impact of descriptive normative information on greener choice is through self-concept clarity, and whether this indirect effect is moderated by the activation of public self-consciousness. If the above relationships are supported, the index of moderated mediation will be significant.

The analysis (10000 bootstrap samples; 90% bias-corrected confidence intervals) revealed that the moderated mediation index was not significant, index=-.0035, BootSE=.0291, 90% BootLLCI:=-.0541, 90% BootULCI=.0382. Specifically, the conditional indirect effect of X on Y showed that whenever public self-consciousness is absent or present, there is no significant indirect effect of descriptive norms on greener choice through self-concept clarity. This result reveals that the H9 was not supported. In other words, the result did not support the hypothesised model listed in Figure 8.5, which includes self-concept clarity as a mediator. Moreover, the interaction coefficient of XW on the SCC is not significant. This result suggests that the effect size of the DN message on self-concept clarity is not conditional on the public self-consciousness.

**Regarding injunctive norms**, the results of the *post-hoc multiple comparisons* test for SCC dependent were used to test whether the interaction between injunctive normative information and public self-consciousness changes the level of self-concept clarity (i.e., H10a). If participants in the IN present+Pub-Sc present group (two treatments) rated self-concept clarity significantly differently from the control group, it supports H10a. The result of mean comparisons for SCC (see Table 8.13) shows that participants in the IN present+Pub-Sc present condition did not rate self-concept clarity (M=4.5325, n=80) differently than those in the control+Pub-Sc absent condition (M=4.3550, n=80; p=.413). This result suggests that self-concept clarity is not likely to be the cause of the reduced effect of injunctive normative information when public self-consciousness is activated. However, the mean comparison result also shows that there is a significant difference between the IN absent + Pub-Sc present and IN present + Pub-Sc present conditions. This result seems to suggest that the IN message has a positive impact on one's self-concept clarity when one's public self-consciousness is activated.

Model 8 was run to test whether the impact of injunctive normative information on greener choice is through self-concept clarity, and whether this indirect effect is

moderated by the activation of public self-consciousness. If the above relationships are supported, the index of moderated mediation will be significant. The full output of Model 8 is listed in Appendix 23.

The analysis (10000 bootstrap samples; 90% bias-corrected confidence intervals) revealed that the moderated mediation index was not significant: index=-.0141, BootSE=.0506, 90% BootLLCI:=-.0987, 90% BootULCI=.0696. Specifically, the conditional indirect effect of X on Y showed that whenever public self-consciousness is absent or present, there is no significant indirect effect of injunctive norms on greener choice through self-concept clarity. This result reveals that the H10 was not supported. In other words, the result did not support the hypothesised model listed in Figure 8.5, which includes self-concept clarity as a mediator. However, the output of model 8 shows that the interaction coefficient is significant. Combining the below interaction plot (see Figure 8.7), the result suggests that the red line is significantly different from the blue line. In other words, the effect size of the IN message on the SCC is significantly different when public self-consciousness is activated or not. Specifically, the effect on the SCC of reading the IN message (compared to reading the control message) is much larger (a>b) when public self-consciousness is activated (i.e., the distance of a: from A1 to A2) than when it is not activated (i.e., the distance of b). However, according to the mean comparison result, the value A2 (two treatment groups) is not significantly different from the value B1 (the control group). Hence, the SCC is not likely to be the cause of the reduced effect of the IN message on greener choices, when the public self-consciousness is activated.

**Figure 8.7 The interaction effect between IN message and public self-consciousness on Sefl-concept Clarity**
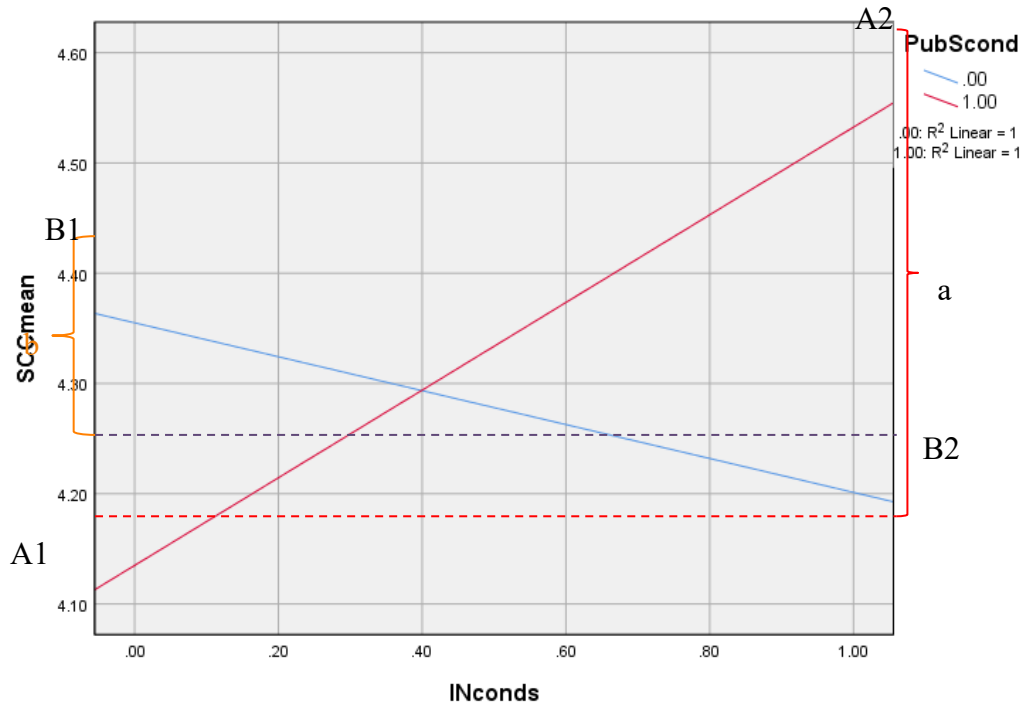


## 8.3.8 Discussion

This study examined the mediating role of self-concept clarity in activating social norms to promote greener choices. Results replicated Study 2's findings, which showed how descriptive and injunctive normative information interacted with public self-consciousness to impact green choices. The study found that self-concept clarity is not likely to be the cause of the reduced social norm effects when public self-consciousness was activated.

Results from Model 1 reconfirmed Study 2's finding that public self-consciousness negatively moderated the impact of descriptive and injunctive normative information on green choices, supporting the reliability of previous findings. The reoccurring phenomenon of the reduced influence of the social norms on greener choice when public self-consciousness is activated supported investigating the role of self-concept clarity. It is to explore the underlying mechanisms in processing normative information when the public self is the object of attention.

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## The interaction impact on self-concept clarity and the role of self-concept clarity

Regarding **descriptive** norms, the results of mean comparisons for SCC reveal that the interaction between descriptive normative information and public self-consciousness has no effect on the level of self-concept clarity. The results of Model 8 also did not support the mediator role of self-concept clarity on the effect of descriptive normative information on greener choices, when public self-consciousness is activated. The result suggests that self-concept clarity is not likely to be an outcome of the causal process of the descriptive normative effect when public self-consciousness is activated. This result may suggest that the perception of most others' behaviour activated by descriptive normative information is not likely to change one's structure of self-concept (i.e., certainty, consistency, or stability).

Regarding **injunctive** norms, the interaction between injunctive normative information and public self-consciousness does not affect self-concept clarity, as indicated by the mean comparisons for SCC. The mediator role of self-concept clarity between injunctive norms and greener choices also was not supported according to the results of Model 8. Although the effect size of injunctive norms on self-concept clarity depends on the public self-consciousness, according to the above results, self-concept clarity is unlikely to explain the reduction in the effect of injunctive normative information on greener choices. According to Fransen et al. (2011), the reduced effect of social norms on greener choice may be due to the presented message not fitting well with the activated self-knowledge when paying attention to the public self. However, this result does not mean that injunctive normative information cannot influence one's self-concept. The mean comparison result showed that under the same condition of the activated public self-consciousness, injunctive normative information increases self-concept clarity compared with the control message. The study also found that injunctive and descriptive norms have different underlying mechanisms. This has been supported by Elgaaied-Gambier et al. (2018) that activating injunctive norms can influence behaviour by changing personal attitudes, which may be partly internalised into personal norms and influence self-concept. Conversely, descriptive norms can directly influence behaviour without necessarily altering personal attitudes. For example, if someone believes that their social network approves of buying second-hand clothes, they may internalise this injunctive norm to develop a positive attitude towards shopping second-hand clothes, which may

become a personal norm and influence their self-concept. Observing that their friends and family members shop for second-hand clothes, activates their descriptive norm, which can influence them to do the same, without necessarily sharing the same personal attitudes towards second-hand clothes.

**Limitations and further study**

Study 3b has examined the role of self-concept clarity in the causal process of promoting greener choices. However, Study 3b's result did not support that self-concept clarity is an outcome of the interaction between social norms and public self-consciousness, and it is not likely to involve the causal process of the social normative information on greener choices. Therefore, future research can continue to focus on further exploring the underlying mechanism of activating social norms to promote greener choices.

# 8.4 Summary of the Chapter

This chapter has addressed research objectives 3 and 4. Through Studies 3a and 3b, this chapter investigated whether self-concept clarity plays a role in reducing the impact of personal normative information (social normative information) on prompting consumers to make greener choices, when the private self-consciousness (public self-consciousness) is activated. The chapter reconfirmed Study 1 and Study 2's findings; however, it did not support the hypothesised mediating role of self-concept clarity on both activation routes for promoting greener choices. However, this chapter found that self-concept clarity is increased by activating both personal norms and private self-consciousness but not social norms and public self-consciousness. The study suggested that promoting greener choices by focusing on personal norms mechanisms can increase consumers' self-concept clarity, which provides insight on understanding potential side effects of behavioural interventions.

# 9 CONCLUSION

## 9.1 Introduction

With the goal to promote green consumption, this thesis has identified a behavioural intervention approach through a review of dominant approaches to study green consumption. The thesis reviewed key frameworks for understanding green consumption and identified the importance of applying perceived norms, both personal and social, as interventional mechanisms. To achieve the goal by applying the impact of norms, the research developed a conceptual framework of 'activating perceived norms to promote greener choices' with a series of hypotheses. This framework is meant to help understand how personal and social normative interventions affect the promotion of greener choices and how consumer intrapersonal activities influence the impact of normative interventions. Through three experimental studies, the research has investigated whether the normative information could elicit an overall green preference and whether self-consciousness affects consumers responses to normative information differently.

This final chapter reprises the objectives of the thesis, and summarises the findings of the three experimental studies corresponding to the research objectives. Next, this chapter identifies the key contributions of the research in terms of theoretical contributions and respective managerial implications. Lastly, it outlines the limitations of the present research and proposes recommendations for future research.

## 9.2 Restatement of Research Objectives

The ultimate goal of this research is to encourage consumers to make greener choices by responding to the essential role of marketing in encouraging greener choices. Marketing practitioners and policymakers face a challenge of influencing consumers to continuously adopt green consumption behaviours, and marketing researchers face the common problem of addressing the green attitude-behaviour gap. A popular approach in green consumption research to bridge the gap is to understand and explain green consumption behaviours using psychological theories. However, this approach alone is not sufficient for changing behaviour. Applying nudging interventional theory derived from behavioural science fulfils the need to tackle how to reduce the attitude-behaviour gap

(Torma et al., 2018), and this emerges as a burgeoning approach to promote greener choices (Campbell-Arvai et al., 2014; Trujillo et al., 2021), possibly due to its effect on changing behaviour with a small change in choice context or 'choice architecture' (Thaler and Sunstein, 2008). However, the interventional approach lacks a coherent theory underlying the promotion of green consumption behaviour, and overlooks the influence of the self on decision-making and intervention effectiveness. Through the combined lens of decision-making and behavioural intervention, this research, based on existing key frameworks of green consumption behaviour, identified the key motivational factor of perceived norms as the intervention facilitators to promote a greener choice. In doing so, this research draws on literature related to preferences and self-related concepts to understand the mechanisms of personal and social norm activation in promoting green consumption.

The aim of this research, therefore, was to investigate the impact of normative mechanisms as informational interventions on encouraging consumers to make greener choice and how self-consciousness affects these interventional impacts related to promoting greener choice. To achieve this, this thesis developed a framework with two activating routes to promote greener choices. The first activating route focused on the impact of personal norms. Therefore, **the first research objective** was to *investigate how and under what conditions personal normative information prompts consumers to make greener choice*. It relates to revealing whether personal normative information could lead to a greener choice and whether this effect of personal normative information is due to the increase in the overall green preference (answers to 'how': the mediator's role of green preference). It is also important to uncover whether private self-consciousness influences the effectiveness of personal normative information on greener choices and under what condition of private self-consciousness the effect of personal normative information is stronger (answer to 'when': the moderator's role of private self-consciousness). The second activating route in this research focused on social norms. Therefore, **the second research objective** was *to investigate how and under what conditions social normative information (i.e., descriptive normative information and injunctive normative information) prompts consumers to make greener choice.* It relates to revealing whether social normative information has a direct effect on greener choice and whether public self-consciousness influences the effectiveness of social normative information on greener choices and under what condition of public self-consciousness the

effect of social normative information is stronger (answers 'when': the moderator role of public self-consciousness). The first two research objectives mentioned above were formulated to meet the general aim, and the following two research objectives were made conditional on the achievement of the first two to further explore empirically the underlying mechanism of the normative impact on greener choices. **The third research objective** was to *investigate what may inhibit the impact of personal normative information on prompting consumers to make greener choice, when private self-consciousness is activated*. **The fourth research objective** was *to investigate what may inhibit the impact of social normative information on prompting consumers to make greener choice, when public self-consciousness is activated*. Based on the existing literature relating to norms, self-concept, self-consciousness, and self-concept clarity, research objectives 3 and 4 were expected to be achieved through testing whether self-concept clarity is the reason for reducing the impact of personal (social) norms on greener choice when private (public) self-consciousness is activated. To achieve the above research objectives, this thesis used the hotel towel reuse scenario inspired through the study by Goldstein et al. (2008) to investigate the impact of the perceived normative information. This hotel towel reuse scenario is an appropriate choice for this experimental research. It is seen as a practice of green consumption and is often used as a scenario to study green consumption. By using a scenario based on real practices, the researcher could ensure good internal validity and avoid reducing the external validity of this study.

## 9.3 Main Findings of the Thesis

### 9.3.1 Personal Norms, Private Self-Consciousness, Green Preference, and Greener Choice

This section discusses the main conclusions related to research objective 1, which was to test the route of activating personal norms in promoting greener choices. This objective has been achieved by testing the experimental hypotheses of Study 1.

The hypotheses of Study 1 describe the relationships among personal norms, private self-consciousness, green preference, and greener choice as a moderated mediation model. This model has been supported by the index of moderated mediation. The index confirms that the impact of personal normative information on greener choice is positively mediated by consumers' overall green preference (H1), and this mediation effect is negatively moderated by private self-consciousness (H2). The replicated Study 3a also

confirmed the results of Study 1 and found that personal normative information has a direct impact on greener choices and that this direct effect is also negatively moderated by private self-consciousness. Specifically, the result reveals that personal normative information could lead to greener choices directly and indirectly by increasing the overall green preference. The results also reveal that private self-consciousness influences the effectiveness of personal normative information in promoting greener choices. When private self-consciousness is not activated, the effect of personal normative information is stronger, although personal normative information still has a positive impact on making greener choices when private self-consciousness is activated. Moreover, only when private self-consciousness is not activated, is the indirect effect of personal normative information on greener choice through green preference exhibited.

These results provide evidence that activating personal norms through a written personal normative message could be an effective behavioural intervention tool to promote greener choices, as has also been suggested by Groot et al. (2013). This finding, which shows that personal normative information has both a direct and indirect positive effect on greener choices, is consistent with both the Norm Activation Model and the Value-Belief-Norm theory, according to which personal norms are an important motivator for green consumption.

These results provide details on how personal normative information influences green choices, and when this information has a stronger impact by highlighting the mediating role of green preference and the moderating role of private self-consciousness. This responds to the request from Abrahamse and Matthies (2019) to explore insights into behavioural intervention research for promoting green consumption. These insights add to the understanding of how consumers process personal normative information and the mechanisms underlying the effectiveness of personal normative intervention, deepening the understanding of the circumstances in which such information is more effective. Moreover, these insights suggest that personal normative information can change consumers' value priorities, as indicated by changes in green preference. These insights are important as they can aid in the development of more targeted and effective interventions to promote green consumption.

## *9.3.2 Social Norms, Public Self-Consciousness and Greener Choice*

This section discusses the main conclusions related to Objective 2, which was to test the route of activating social norms to promote greener choices. This objective has been achieved by testing the hypotheses of experimental Study 2, and the replicated Study 3b has also confirmed the results of Study 2.

The hypotheses of Study 2 describe the relationships among social norms (descriptive: what behaviour we think others actually exhibit; injunctive: what behaviour we others would approve of)**,** public self-consciousness, and greener choice as a simple moderation model. This model has been supported by the interaction coefficient. It confirms that descriptive/injunctive normative information has a direct effect on greener choice and that its effect is not mediated by consumers' overall green preferences (H5/H6). This result, which the activation of social norms through written normative messages can have a direct effect on greener choice, provides a verification of previous research on the activation of social norms through a written social normative message (Parks et al., 2001; Schultz et al., 2007). This finding, which demonstrates that social normative information has a positive impact on greener choices, is consistent with the Theory of Planned Behaviour, the Model of Goal-Directed Behaviour, and the Focus Theory of Normative Conduct, which view social norms as a significant factor influencing green consumption behaviour.

The finding that the effect of descriptive and injunctive norms on greener choice is not mediated by consumers' overall green preferences supports the view inferred from previous researchers, such as Schwartz (1977), that the activation of social norms (the effect of social expectations) may not be able to influence one's personal green preference.

The interaction coefficient also confirms that the effect of descriptive/injunctive norms on greener choices is negatively moderated by public self-consciousness (H7/H8). This result provides evidence for the moderating role of public self-consciousness in influencing the impact of social norms on green consumption. The moderating role of public self-consciousness has been suggested by previous research (e.g., Chang, 2006; Lo et al., 2019), which suggests that public self-consciousness can moderate the impact of advertising appeals. Specifically, the findings of this research reveal that the effectiveness of descriptive/injunctive normative information on making greener choices is stronger,

when public self-consciousness is not activated. This result of the negative moderating effect provides a better understanding of when the descriptive and injunctive norms are more effective at promoting greener choices. The finding shows that descriptive norms and injunctive norms display a similar pattern in their relationships with public self-consciousness and greener choices; however, the cognitive distinction between these two types of norms, as proposed by Cialdini et al. (1991), has been confirmed in the Study 3b pretest.

Overall, these results offer new insights into the application of social norms (descriptive norms and injunctive norms) as an interventional mechanism to encourage green consumption by highlighting the moderating role of public self-consciousness in this process. These insights deepen the understanding of the circumstances in which social normative information is more effective. Moreover, these results also suggest that the effect of social normative information may not be able to change one's value priority as no effect on green preference has been found. These insights are important because they can inform the design of effective normative interventions aimed at promoting green consumption.

### 9.3.3 The Effect of Self-Concept Clarity

This section discusses the main conclusions related to Objectives 3 and 4. The research objectives 3 and 4 were to test whether there is an effect on self-concept clarity in both routes of activating personal and social norms, respectively, on promoting greener choices and whether the effect of normative information on self-concept clarity causes the reduced influence of normative information on greener choices, when self-consciousness is activated. Experimental Studies 3a and 3b were designed to test research objectives 3 and 4. Studies 3a and 3b mainly replicated the experimental design of Study 1 and Study 2, with an additional measurement of self-concept clarity.

Study 3a tested the mediating role of self-concept clarity on the established relationships between personal norms, private self-consciousness, green preference, and greener choice. The mean comparison analysis of Study 3a using ANOVA found that the mean score of self-concept clarity increased rather than decreased in the group that activated both personal norms and private self-consciousness than those in the control group. This result supports the hypothesis that the level of self-concept clarity increases, when both private self-consciousness and personal norms are activated (H3). However, the results

of the model analysis by PROCESS did not support the hypothesis (H4) that this increase in self-concept clarity reduces the impact of personal normative information on greener choice through green preference, when private self-consciousness is activated.

The result of the increased self-concept clarity reveals that the self-consistency mechanism may be triggered when evaluating activated self-concepts/values due to the activated private self-consciousness. Silvia and Duval (2001, p. 249) suggested that self-consciousness can increase the desire for consistency as individuals become aware of their different self-concepts and strive to maintain consistency among them. Therefore, the result suggests that increased self-concept clarity can result from the self-consistency mechanism. For example, imagine a hotel guest who normally considers herself to be green, as demonstrated by her recycling and reusing behaviours at home. However, she typically reuses hotel towels only once during her stay or opts for fresh towels every day. This is done to maximise her pleasure and comfort during her stay, to fulfil her hedonistic needs, and to enhance her sense of luxury, which she might see as a symbol of luxury and status that appeals to her materialistic values. When exposed to an informational prompt, her green self-concept is activated, and she intends to reuse the hotel towel for three days. However, when she pays attention to herself, she begins to experience conflicting self-concepts derived from different values: green vs. materialistic/hedonic values in relation to hotel towel reuse. As a result of this increased private self-consciousness, the mechanism of self-consistency would be triggered to regulate her thoughts and to ease decision-making. She might feel a desire to maintain consistency between materialistic/hedonistic values and her hotel towel reuse behaviour, leading to increased clarity of her self-concept during self-evaluation processes triggered by the self-consistency effect.

The study's findings also suggest that promoting greener choice through informational prompts that focus on personal norms and activate individual's private self-consciousness when designing the appeals message, can have positive consequences for well-being as self-concept clarity increases. Based on the concept of self-concept clarity and the well-established positive relationships between self-concept clarity and well-being, as well as the negative relationships between stress and well-being demonstrated by Furchheim et al. (2020); Ritchie et al. (2011), Merdin-Uygur et al. (2018), and Mittal (2015), the increased self-concept clarity resulting from such prompts strategy can contribute to an improved sense of self, increased self-confidence, better decision-making, and reduced stress and anxiety, ultimately leading to a better overall well-being.

Study 3b tested the mediating role of self-concept clarity on the established relationships between descriptive norms (injunctive norms), public self-consciousness, and greener choices. The result of Study 3b also did not support the hypotheses that the interaction effect between descriptive/injunctive normative information and public self-consciousness increases the level of self-concept clarity (H9a/H10a) and that this change in self-concept clarity reduces the impact of descriptive/injunctive normative information on greener choice when public self-consciousness is activated (H9b/H10b).

In summary, the mediating role of self-concept clarity in activating both personal and social norms to promote greener choices has not yet been supported. However, the findings related to self-concept clarity provide some useful information on the proposed behavioural intervention strategy, as they offer a preliminary understanding of how to design behavioural intervention strategies to ensure the effectiveness of the normative appeal and, in the meantime, avoid the potential negative side effects of these strategies.

# 9.4 Theoretical Contribution

Through three experimental studies, this thesis has provided substantial insights into green marketing, and research on promoting green consumption using a behavioural interventional approach in general and facilitating greener choice in terms of the impact of perceived norms in particular. The results answer the question of how consumers' self-consciousness affects their response to prompts designed to promote a greener choice by activating personal and social norms. This makes an original contribution to consumer behaviour research related to green consumption by identifying a new moderator. Additionally, it enriches the understanding in the broader literature that seeks to understand the attitude-behaviour gap, in accordance with Nguyen et al's (2019) suggestion that identifying moderators of the relationship between attitude and behaviour contributes to understanding of this gap. This implies that the activation of the self-consciousness at the time of making choices may contribute to the gap by reducing the effectiveness of interventions. Drawing on insights from Torma et al. (2018) and Wiltrud and Darya (2015), who advocate for behavioural interventions through nudges to promote green consumption and address the attitude-behaviour gap, this study recognises the value of such strategic approaches. Consequently, it can indirectly contribute to addressing the attitude-behaviour gap by adopting nudge intervention. Overall, this research, in response to previous calls for identifying effective strategies for promoting greener choices (e.g.,

Abrahamse and Matthies (2019); Trujillo et al. (2021); White et al. (2019)), draws from behavioural changing approach of nudging, as well as psychological theories such as norm activation model, value-belief-norm theory, theory of planned behaviour, the focus theory of normative conduct, and the literature on the self. Through this approach, the study enhances the understanding of how informational strategies can encourage sustainable consumer behaviour change by revealing the underlying theoretical assumptions behind these interventions. This section outlines the main theoretical contributions in promoting green consumption research related to the intervention by providing information aimed at changing perceived norms to promote change in behaviour and their specific activation routes.

## Contributions related to normative activation

Based on the understanding on the literature related to norms, preferences, choice and the self, the contribution of this thesis relates to enriching the understanding of the mechanisms behind normative interventions for promoting green consumption through the above literature – both through personal and social norm activation routes.

### *Contribution to the understanding of activating personal norms*

The following contribution is derived from uncovering the route of activating personal norms in promoting greener choice by demonstrating the relationships among personal norms, private self-consciousness, green preference, and greener choices.

First, building on the theory of value-belief-norm (Stern et al., 1999) and the norm activation model (Schwartz, 1977), this research successfully demonstrates the effectiveness of using personal norms (i.e., a sense of obligation to make greener choices) as an interventional tool to change consumer behaviour. Previous studies have found that simply increasing environmental knowledge or raising awareness of the environmental problem is not effective in changing cognitions and behaviours for promoting green consumption (Abrahamse et al., 2005; Nolan et al., 2008; Staats et al., 1996). However, this research highlights the importance of activating both antecedents of changing personal norms (i.e., awareness of consequence and ascription of responsibility) in reaching the effectiveness of promoting greener choices. For example, providing messages only about the adverse consequences of not reusing hotel towels for the purpose of increasing environmental knowledge or awareness of consequences could not necessarily lead to a change in or an increase in hotel towel reuse, as suggested by

previous studies. Instead, this research finding suggests that that in addition to raising awareness of environmental consequences, consumers' sense of responsibility for the negative consequences of not reusing hotel towels need to be generated in order to activate their sense of obligation for reusing hotel towels.

Second, extending the existing relationships between self-accountability and preference for products with ethical attributes (Peloza et al., 2013), and between preference and choice (Bicchieri, 2010; Olson, 2013), this research bridges the causal process among personal norms, green preference, and greener choice. Specifically, it sheds light on how personal normative information affects consumers to make greener choices by introducing the mediator role of green preference. This contribution is important, as the impact on overall green preference through activating personal norms implies the potential for a long-lasting spill-over effect on general green consumption. For example, when a hotel guest is exposed to an informational prompt, her overall green preference could be activated. This increase in her overall green preference will then be revealed not only in her hotel towel reuse behaviour, but also in a series of green consumption practices she adopts during her stay, such as reusing bed linens, turning off lights, TV, other electronic devices, and air conditioners/heaters when leaving the room, taking short showers, and turning off the water while brushing her teeth. This spill-over effect can continue even after she returns home.

Third, this research added significant detail on when the above causal processes behind the influence of personal norms on greener choices occur. It provides evidence that only when consumers' private self-consciousness is not activated can personal normative information lead to an increase in their overall green preference and thus the likelihood of making a greener choice. For instance, a hotel guest who is not paying attention to her private self may be more likely to reuse a hotel towel when confronted with an informational prompt due to an increased green preference. As explained on p.93, if a hotel guest's private self-consciousness is not activated, she may not introspect about her inner thoughts and feelings regarding the reuse behaviour, and thus her green preference may be more likely to be activated by exposure to personal normative information, leading to a greater likelihood of engaging in the reuse behaviour. Conversely, a guest who is attentive to her private self may experience self-evaluation, leading to a critical evaluation of the reuse behaviour and awareness of any discrepancy between different self-concepts. This introspection may inhibit the activation of green preference and thus

decrease the likelihood of engaging in the reuse behaviour. The above result could be used to extend Peloza et al's (2013) finding on promoting products with ethical attributes. Specifically, to subtly activate consumer self-accountability in promoting ethical products, such as by fostering a sense of accountability to protect the environment or a sense of obligation to make greener choices, the influence of the consumer's self-consciousness on the effectiveness of such behavioural interventions should be considered.

Fourth, the findings of this research on the moderating effect of self-consciousness address Trujillo et al.'s (2021) interest in understanding the factors that neutralise or supersede the effects of social and personal norms. The result of private self-consciousness reveals an interesting phenomenon that can contribute to the conversation about the nature of the 'true' self (egoistic or altruistic) in the context of green consumption, and thus provide valuable information for theories such as the Norm Activation Model, which is based on the assumption of an altruistic human nature. The concept of private self-consciousness suggests that choices made under an activated private self-consciousness could reflect the inner values or beliefs of consumers. This implies that the effect of private self-consciousness can reveal a consumer's nature of 'true' self, and thus the findings seem to reveal both the altruistic self and the egoistic self. On the one hand, the result of activating private self-consciousness alone (without presenting a normative message) seems to suggest that activating the private self-consciousness may reveal an underlying altruistic self, leading consumers to be more likely to make a greener choice. On the other hand, the result of activating private self-consciousness with a personal normative message also seems to suggest that activating the private self-consciousness may reveal the egocentric self, leading to decisions that not to prioritise green values over others. Overall, this research highlights the complexity of the debate about the nature of the 'true' self. The results of this research are not intended to criticise the assumption of the norm activation model that humans have an altruistic nature. However, by supporting Sidarus et al.'s (2019) view that value-based decision-making should involve trade-offs, this research suggests that decision-making based solely on activated private self-consciousness, without considering value trade-offs may not reflect an individual's true self or highest priority value. Instead, value-based decision-making should involve trade-offs that can elicit the 'true' self, reflecting the highest priority value.

Fifth, in contrast to the research by Groot et al. (2013), which focused on the personal norm intervention, this research offers another perspective on the operationalisation of manipulating personal norms by systematically following the NAM with manipulation checks and identifying the underlying specifics of the effect of personal norms: when the personal normative information is more effective to promote greener choices and how personal norms affect greener choices. Therefore, this research, which builds on Schwartz's (1977) NAM, also has methodological implications for activating personal norms.

In summary, this research highlights the need to increase consumers' sense of obligation to make greener choices in order to induce changes in consumer behaviour. Despite improvements in consumer awareness, concern, and attitudes towards environmental issues, these improvements have not been sufficient to result in behavioural change (Žagar, 2020). These results add to existing body of research on the shared responsibility of consumers for green consumption and shed lights on how to generate or increase this sense of responsibility to make greener choices. Additionally, these findings propose that the NAM and VBN theories can be enhanced by considering the mediating role of overall green preference and the moderating role of private self-consciousness in the relationship between personal norms and green consumption.

## *Contribution to the understanding of activating social norms*

The following contribution is derived from uncovering the route of activating social norms to promote greener choices by demonstrating the relationships among social norms, public self-consciousness, and greener choices.

First, in response to Bicchieri's (1990) suggestion of establishing the rationality behind conformity to social norms, this research included rationality for conformity social norms into the existing operationalisation of manipulating descriptive norms and injunctive norms (Goldstein et al., 2008; Smith and Louis, 2008; White and Simpson, 2013). However, the presentation of descriptive or injunctive normative information failed to produce an effect on green preference. This result suggests that even understanding the underlying motives for what most other people do or approve of is insufficient for activating consumers' personal, deeper 'green' values and thus prioritising their green preference to the fore. This contribution is important, as it provides valuable insights into

which types of norms can or cannot influence consumers' personal values and preferences, which is crucial for those who seek to promote green consumption.

Second, building on previous research on the positive relationship between descriptive norms and pro-environmental behaviour (Cialdini, 2003; Keizer and Schultz, 2018; Nolan et al., 2008; Schultz et al., 2016; Schultz et al., 2007; Schultz et al., 2008b), and between injunctive norms and pro-environmental behaviour (Cialdini, 2003; Keizer and Schultz, 2018; Schultz et al., 2008b), this research replicates and supports previous findings and contributes to the identification of a new moderator on social normative influence in addition to those already identified (see other moderators in: Kavvouris et al., 2019; Melnyk et al., 2021; Schultz et al., 2016). This contribution is important, as it provides a new understanding of the boundary conditions of the influence of social normative information, and provides an explanation for some previous studies that failed to effectively produce the social normative effect [e.g., Schultz et al. (2007); Russell et al. (2005); Burchell et al. (2013)]. The finding that public self-consciousness moderates the influence of social normative information on greener choice also proposes that the theory of planned behaviour, the model of goal-directed behaviour, and the focus theory of normative conduct can be expanded to provide a more comprehensive understanding of the relationships between social norms and green consumption by adding the moderating role of public self-consciousness.

Third, the result regarding public self-consciousness, which shows a similar pattern to the moderating effect of private self-consciousness on greener choice, contributes to the literature by providing an explanation for the inconsistent results of previous research on public self-consciousness. For example, Froming and Carver (1981) found that individuals with a high level of public self-consciousness tend to present themselves in a way that conforms to social standards and gain the approval of others. This study supports this finding by showing that activating the public self alone (without presenting a normative message) can lead to a higher likelihood of making greener choices. In contrast, Burnkrant and Page (1982, p. 454) found that 'people with high public self-consciousness are not inclined to act in accordance with the reward contingencies inherent in social situations' (in this research, social norms). This study also supports this finding by showing that activating the public self with a social normative message leads to consumers being less likely to make a greener choice due to public self-consciousness exhibiting a negative moderating effect on greener choices.

Chapter 9: Conclusion

In sum, the results regarding the activation of social norms (i.e., descriptive and injunctive) contribute to the development of a robust body of literature on the role of social norms in promoting green consumption, and to the research stream on investigating the moderators of the effectiveness of social norms on consumer behaviour. Understanding the effect of activated public self-consciousness is crucial, as it could provide an explanation for the unsuccessful or mixed results of the influences of social norms.

Taking the findings on the activation of personal and social norms together, this research affirms that these three distinct types of norms are all viable in producing societally beneficial conduct when the particular type of norm is salient. This is not to say that these three types of normative interventions are equally effective or conceptually similar. Comparing the effect sizes across studies, this research suggests that while social norms may have a greater effect on behaviour change, as found in previous studies, focusing on personal norms leads to sustained greener choices due to their strong link to green preference. Additionally, these findings highlight the importance of considering the self-consciousness traits of green consumers when attempting to persuade them to make greener choices, since the effectiveness of personal and social normative information on green behaviour depends on one's topical awareness of the private and public self. Activated self-consciousness by reducing the impact of information presented can also help understand the green attitude-behaviour gap. This is based on Nguyen et al's (2019) suggestion that identifying moderators of the relationship between attitude and behaviour contributes to understanding of this gap. In other words, when green consumers become more self-conscious, they may be less likely to act on their green attitudes. This research also contributes to the understanding of when normative appeals are more effective by highlighting the role of self-consciousness, which goes beyond the insights provided by Goldstein et al. (2008); Kavvouris et al. (2019); White and Simpson (2013). However, these works had not considered the importance of personal norms as a means of green marketing communication. Furthermore, the positive effect of activated self-consciousness alone in certain situations should not be disregarded, as even a small positive effect can be meaningful in promoting green behaviour. However, presenting normative appeals has a stronger effect than activating self-consciousness alone.

## Contribution related to the effect of self-concept clarity

The following contribution is to uncover the impact on self-concept clarity under the routes of activating personal and social norms that promote greener choices.

This research is a response to the growing concern in the green consumption movement to ensure consumer well-being while changing behaviour (Steg and De Groot, 2019). Building on prior research that has shown a positive relationship between self-concept clarity and happiness (Merdin-Uygur et al., 2018), subjective well-being (Furchheim et al., 2020; Ritchie et al., 2011), or life stratification (Mittal, 2015), the finding of increased self-concept clarity may relieve Furchheim et al.'s (2020) concerns about the potential negative impacts on well-being when encouraging sustainable consumption, by focusing on activating personal norms and the private self.

The result of this research seems to be consistent with the findings of Goukens et al. (2009) that consumers should make choices that match their personal preferences (inner beliefs, past choices) better by increasing their self-awareness, which could result in higher satisfaction with the choice. This research suggests that by increasing self-awareness, consumers may be less likely to be influenced by interventions focused on activating personal norms (stimulus to activate the ideal or super-self) and make choices that align with one's inner self (consciousness about the actual self, thus less green preferences), resulting in greater clarity of their self-concept and thus increased life satisfaction.

In postmodern societies, the characteristics of the 'self' are fluid, multiple, and even contradictory, with tendencies towards self-consciousness (Simon, 2015; Van Antwerpen and Oster, 2019). This makes it possible for extant green consumers to trade-off contemporary environmentalism, materialism, post-materialism and postmodernism in society by reshaping, reforming, and/or changing their self-concept without compromising the self-concept's clarity. This research suggests that activating consumers' self-consciousness by presenting normative information for promoting green consumption can help avoid compromising consumers' subjective well-being by increasing self-concept clarity while reducing the impact of normative information on green consumption. Understanding the effect of behavioural interventions on self-concept clarity is important, as it sheds light on the understanding of potential side effects of behavioural interventions to promote green consumption and has implications for market

practitioners and policymakers who seek to promote green consumption while ensuring the well-being of consumers.

## 9.5 Managerial Contribution

Green marketing is a valuable approach to promoting green consumption that contributes to achieving SDG12 as well as other interrelated SDGs. SDG12 involves reducing waste through prevention, reduction, recycling and reuse, and encouraging companies to adopt sustainable practices (Un, 2022). Companies can adopt practices such as green labelling, green advertising, eco-efficiency and the reuse of materials to promote products or services based on their environmental benefits and attributes. These marketing practices are related to green communication and strategies, which aim to improve consumers' attitudes towards a green brand and influence their behaviour towards green consumption (Elizabeth and Rafael, 2022). Overall, the practice of green marketing benefits not only societies and consumers by promoting a sustainable environment, but also companies by increasing their appealing to green consumers, leading to increased sales and economic benefits.

The findings of the research on hotel towel reuse have important implications for hotel managers in implementing sustainable practices and developing strategies for promoting reuse behaviour. These practices can yield benefits such as cost savings, and compliance with environmental protection related regulations. Moreover, these findings have broader implications for general green marketing practitioners and sustainable policymakers. Understanding how consumers would respond to normative information that promotes greener choices is crucial for promoting green consumption beyond the hotel industry. For instance, the impact of nudge interventions using social normative information has been recognised in several other related green practices, such as energy conservation and recycling.

Bettman's (1979) information processing view of consumer choice suggests that marketing strategies, such as promotion and product design decisions, can intentionally influence consumer choices through the presentation of information. This includes packaging, product design, and displays inside and outside the store environment. As a result, the research on how consumers respond to normative information and when and how presented information is most influential in promoting greener choices has

significant implications for implementing effective marketing strategies and communication plans to encourage consumers to make greener choice for greener products and services. Specifically, the study offers guidance on the types of normative information that can serve different communication purposes. These findings provide valuable insights for marketing practitioners on the effectiveness of personal and social normative appeals in influencing green consumption and how to craft effective normative appeals for different communication purposes.

## Contributions related to normative intervention

### *Contributions to the application of activating personal norms*

Regarding the implications of the findings on the impact of personal norms, hotel managers and marketing practitioners in other sectors seeking to promote green consumption can consider the following suggestions to develop effective marketing strategies and communication plans:

First, when designing appeals or campaigns, managers should apply the effect of personal norms as intervention tools to encourage long-term greener choices instead of applying the effect of social norms. Personal norms strongly relate to overall green preference, but green preference can only be affected when consumers' private self-consciousness is not activated. For hotel managers, this could mean activating consumers' sense of obligation to reuse hotel towels, instead of highlighting most other guests' hotel towel reusing behaviour and their approval of it. This approach can increase consumers' overall green preference, which then leads not only to a hotel towel reuse behaviour but also to a series of other green consumption practices consumers adopt during their stay, with a spill-over effect even after they return home. As aforementioned, these applications can be applied to other-related green consumption contexts. For marketing practitioners in other sectors, this could mean emphasising the design of the appeals' content to activate consumers' sense of obligation to their target greener choices, thus generating an effect on their overall green preference and greener choices.

Second, managers could use the research findings to develop marketing strategies and communication plans that serve different purposes. Specifically, to maximise the effect of promoting greener choices by presenting personal normative information, managers should manage the choice-making context in a way that does not easily activate

consumers' private self-consciousness. For hotel managers, this could mean placing the hotel towel reuse prompts far away from mirrors and avoiding personal nouns in guest room communication. The practice can help avoid incidental cues that redirect consumers' attention to their private selves, which reduces the effectiveness of personal normative information to encourage greener choices. For marketing practitioners in other sectors, they should reduce the chance of using any form of communication in practice (e.g., using words such as 'I', 'me', 'my', and 'mine') when presenting normative appeals. In the postmodern era, self-interest is promoted as an individualistic virtue (Simon, 2015). 'The self' or self-identity is emphasised and reinforced in general marketing communication through slogans, such as 'Be yourself' and 'Think for yourself'. This type of communication could activate consumers' private self-consciousness, which can lead to greater ego involvement, increased defensiveness about choosing a particular behaviour, and decreased likelihood of acting in accordance with the presented normative message. Practitioners of green marketing should be mindful of the impact of private self-consciousness on consumers' decision-making processes when developing marketing communication plans in the present age.

*Contributions to the application of activating social norms*

Regarding the implications of the findings on the impact of social norms, hotel managers and marketing practitioners in other sectors seeking to promote green consumption can consider the following suggestions to develop effective marketing strategies and communication plans:

First, managers can use descriptive and injunctive normative information as intervention tools to encourage greener choices, as these have been found can increase the likelihood of making greener choices. For hotel managers, this could mean activating consumers' perceptions that the majority of other hotel guests have adopted the practice of reusing hotel towels, or that this behaviour has been approved by most other hotel guests, such as through written information. For marketing practitioners in other sectors, this could mean designing the content of appeals to establish the perception among consumers that the target green behaviour is commonly practiced and approved by the majority of other guests.

Second, similar to applying personal normative information, to maximise the effect of promoting greener choices by presenting social normative information, managers must

carefully manage the choice-making context to avoid activating consumers' public self-consciousness when presenting descriptive and injunctive normative information. For example, if hotel managers are promoting hotel towel reuse by highlighting that the majority of their guests participate, they should avoid any form of communication that may lead the hotel guests to be concerned about how others would judge them for participating or not participating in the hotel towel reuse programme or how their hotel towel reuse choice could affect their image. This type of communication can decrease the impact of the appeal, according to this research. However, managers can also choose to activate consumers' public self-consciousness alone to promote greener choices that are consistent with their public 'green' image. Although the impact on greener choice may decrease when presenting social normative appeals and activating public self-consciousness at the same time, it remains positive.

Taken the managerial implications together, the study offers managers with a toolbox to promote greener choices by applying different types of normative information to serve different communication purposes. The research allows marketing managers to design appeals or campaigns that seek to encourage long-term greener choices by using informational prompts focusing on personal norms. In addition, this research informs green marketing practitioners to pay attention about whether to activate self-consciousness when designing marketing communications or campaigns in the present age. Moreover, marketing managers can choose to either activate consumers' private or public self-consciousness alone to promote greener choices that align with their 'green' values or 'green' image, but this is only effective when the target society is highly environmentally friendly.

## Contributions related to the effect of self-concept clarity

The findings regarding the positive effect of normative interventions on self-concept clarity when private self-consciousness is activated, can provide insight to managers on the social implications of marketing communications and Corporate Social Responsibility (CSR). The findings suggest that activating personal norms in a way that doesn't compromise consumers' consumers' well-being could be a useful tactic for marketers. This approach can help companies establish positive brand images and distinguish themselves from other green marketing practitioners by practicing green marketing strategies considering side effect of marketing communications.

For example, hotel managers can adopt the communication tactics that enable consumers through introspecting about one's inner thoughts and feelings regarding the hotel reuse behaviour, when applying personal normative intervention that promotes reuse behaviour. This type of communication may reduce the negative side effect of personal normative intervention on consumer well-being due to an increase in one's self-concept clarity (and thus lowering stress and anxiety). Therefore, the choices made by hotel guests should better match their 'real' beliefs, or values.

By highlighting the positive impact of these good practices in their CSR reports, companies can demonstrate their value to their stakeholders and establish positive brand images with investors, which can ultimately can attract more investment. Overall, applying the mechanism of personal norms (in a way that increases self-concept clarity) in marketing and CSR initiatives that prioritise consumer well-being has positive social and economic implications for companies.

## 9.6 Limitations

This research acknowledges its limitations in both conceptual and methodological terms.

First, in relation to the conceptualisation of promoting greener choices, the research through the integrated lens, from the perspective of choice investigated the impact of perceived norms and self-consciousness as mechanisms for nudging towards green consumption. The choice perspective and norm-centered theories are important in understanding the psychological processes of decision making, which are largely based on a cognitive approach. However, it is possible that consumption perspectives based on different philosophical approaches could enhance the understanding of promoting green consumption. For example, a functional perspective of consumption that considers fulfilling consumers' needs and wants (Jackson, 2005) or a humanistic approach that emphasises a key factor of emotions (Bray, 2008) could establish different routes for promoting green consumption. By applying the impact of negative or positive emotions or moral emotions on fulfilling the needs and wants of green consumption, these perspectives could complement the current understanding of promoting green consumption. Investigating the role of emotions in greater detail would provide more insight into the impact of perceived norms and self-consciousness. However, integrating these perspectives would require more time and resources. It should be noted that controlling the inactivation of self-consciousness may not be practical, and the

manipulation procedure of personal norms may require further study to establish it as an exemplified procedure.

Second, in relation to self-related concepts, the current study focused on examining the role of self-concept clarity in describing the reduced impact of perceived norms under the influence of self-consciousness. However, due to limited time and resources, the underlying causal processes may be more complex than what was examined. While an increased clarity of self-concept can imply relationships among self-consistency, self-evaluation, and self-regulation, examining self-concept clarity alone is insufficient to outline the entire underlying process. Moreover, the findings regarding the role of self-concept clarity are limited and initial. To provide a complete explanation of the underlying process, further studies are necessary to test self-consistency and create a clear map of the process. However, current studies on the self may not provide enough background knowledge to fulfil this mission.

Third, with regard to the choice of method, while 'experiments are considered the best-suited method for determining cause-and-effect relationships' (Churchill Gilbert, 1995, p145) between normative interventions and greener choices, it should be noted that experimental research has its limitations. Although three experimental studies have been designed in a controlled manner to ensure internal validity as prior and maximise external validity within the limits of the laboratory setting, the limitations cannot be ignored. Using a laboratory-type experimental scenario to enable the testing of a novel variable like self-consciousness implies the findings cannot be directly overgeneralised. This research pursues *theory application* (see detailed discussion in Chapter 5, Section 5.6.2), which is to test the designed intervention based on accepted theories before they can be applied in a real-world situation. Therefore, further research is needed to validate the findings of this research in other contexts, in real-world fields, with other populations, or in other settings to increase their generalisability.

Fourth, with respect to the experimental design, several limitations need to be considered. Regarding the ways of assigning test participants to multiple conditions, this research adopted a between-subjects design (different participants tested each condition) instead of a within-subjects design (a participant tested all conditions) to avoid the learning effect. However, using a between-subjects design should consider the effect of individual differences on the results. Although this research has examined and controlled for all

known factors through participant selection or scenario design, it is still impossible to account for all unknown factors. The limitations caused by the methods of assigning test participants to multiple conditions are inevitable. Using either a between-subjects or within-subjects design has its own drawbacks, and the within-subjects design is not suitable for the adopted analysis method (Koschate-Fischer and Schandelmeier, 2014). Regarding the manipulation of personal norms, it was designed in a way that carefully followed the principle of the norm activation model and was revised based on the professional reviewers' feedback. However, the control message contained fewer words than the personal normative message, which may be criticised for its potential to produce an unexpected effect. Nonetheless, existing theories suggest that this difference is unlikely to affect the outcome. This is an unachievable mission in experimental design to keep exactly 'one' difference between conditions when identifying one as the smallest unit. For example, if defining the difference as one item, the only difference between the personal normative present condition and the control message condition should be the message card, which does not refer to every element consisting of the message card. Certainly, the design of two message cards was kept as similar as possible, but some elements, such as the size of words, the number of words, and word content, could not be entirely the same. These differences in experimental design are typical of previous research. Keeping the difference as the smallest unit is a challenge in experimental design for all researchers.

Fifth, the sample used in this research should be more representative than a lab sample or a student sample due to the advantages of a Prolific sample, and it should cover the whole UK population based on pre-screening criteria. However, the sample is limited to internet users, even though 92% of UK adults were internet users in 2020, when the data were collected. To understand whether non-online users have different behavioural patterns and respond differently to the impact of perceived norms in promoting greener choices, further studies are needed.

## 9.7 Future Research Direction

This section outlines future research directions derived from this research.

In relation to current research objectives 3 and 4, the result of this research raises questions about the role of self-concept clarity on the causal processes of how the personal

normative, descriptive normative, and injunctive normative message affects greener choice when private or public self-consciousness is activated. Future research can focus on investigating why the hypotheses were not supported in both Study 3a and Study 3b.

First, regarding the unsupported role of self-concept clarity in the route of activating personal norms, one possibility is that the 'intensity of conflict' was not considered as a moderating factor on self-concept clarity. This explanation supports the deeper influence of personal normative information, suggesting that, by changing value priority, it may have a deeper influence on the level of self-concept, which could be partially or completely intertwined with personal norms (Trujillo et al., 2021). However, this impact may not be strong enough to cause intensive conflicts between coexisting, inconsistent self-concepts, which could reduce the level of the self-concepts. Hertel (2018) suggested that the inconsistency and instability across different working self-concepts may not necessarily decrease self-concept clarity, but the awareness of conflicts between self-concepts can trigger the self-consistency mechanism to reinforce the clarity of the self-concept when self-consciousness is activated. Therefore, the intensification of conflicts between self-concepts may play a crucial role in determining the impact direction on self-concept clarity. Further research could explore the role of the intensity of conflicts between self-concepts on self-concept clarity when activating personal norms and private self-consciousness. Additionally, the role of self-consistency in explaining the reduced impact of personal normative information when the private self is activated could also be explored in future research.

Second, regarding the unsupported role of self-concept clarity in the route of activating social norms, current results suggest that the descriptive norms do not have any impact on one's personal self-concepts, values, goals and preferences. However, injunctive norms should be treated differently as previous research found that injunctive norms have an impact on behaviour through personal attitude change. While descriptive norms affect behaviour, they may not necessarily change attitude (Melnyk et al., 2010). Therefore, further research can focus on examining the difference in underlying mechanisms between descriptive and injunctive norms when public self-consciousness is activated.

Third, the investigation can focus on the study of emotion to explain the negative moderating effect of self-consciousness when presented with normative information. According to Beresford and Sloper (2008), negative emotions may arise when consumer decision-making involves trade-offs among values or self-concept conflicts, and efforts

to deal with negative emotions during decision-making can affect the decision-making process. This also explains why previous research has found an association between negative emotions and private or public self-consciousness (Mor and Winquist, 2002). This may be because of the activation of self-consciousness leads to value trade-offs which in turn generate negative emotions. Therefore, it is possible that when facing value conflicts, the generated negative emotion reduces the impact of normative information when self-consciousness is activated, and self-concept consistency is triggered to solve the conflicts that result in higher self-concept clarity. Future research can examine whether consumers whose self-consciousness is activated and presented with normative information would have more negative emotions and investigate whether such negative emotions are responsible for the reduced impact of normative information when self-consciousness is activated.

Furthermore, future research can focus on examining the interrelationships among descriptive norms, injunctive norms, and personal norms. Understanding their interrelationships fully may help design more effective behavioural interventions. A study by Thøgersen (2014) based on large meta-analyses has found that descriptive norms and injunctive norms have positive correlations, partly because the same external stimuli can activate both and one of them is inferred from another. The results of this research are consistent with the above findings. As discussed in Chapter 7, participants presented with descriptive normative information have significantly higher descriptive norms and also injunctive norms, and vice versa. There was a category question in the pretest of Study 3b to verify that participants could differentiate these two types of norms, as the similar effect on greener choices may lead to questioning their conceptualisation differences. These results suggest considering whether only using one type of social norm with a greater effect on behaviour change could have a positive impact on other types of social norms. Thøgersen (2014) also found that the influence of injunctive norms on behavioural intention is (at least in part) mediated by personal norms, while the influence of descriptive norms on behavioural intention is (at least in part) mediated by self-efficacy and attitude. However, existing research has inconsistent results with respect to the role of mediators of descriptive and injunctive norms. Therefore, future research should seek to fully understand their interrelationships, their mediators, and moderators, and how those three types of norms might interact with each other to affect greener choice-making. This will provide a more detailed understanding of the current routes for activating perceived norms for greener choices.

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The last avenue for future research is exploring more understanding of self-consciousness. As discussed earlier, activating self-consciousness alone towards the private or public self has a positive impact on the greener choice. However, the manipulation check results for public self-consciousness in both the Study 2 and the Study 3b pretest (which were only conducted in the pretest) reveal that although participants in the public self-consciousness present group rated significantly higher on public self-consciousness than those in the public self-consciousness absent group, the mean value of the public self-consciousness is at an intermediate level of the top value. This result should not be used to discredit the manipulation effect of public self-consciousness; however, it does raise an interesting question. That is whether people in general (or only UK citizens) have a lower level of public self-consciousness. In other words, they may be less concerned about how others perceive them and their way of doing things, and may not care much about how they present themselves to others. If this is not the case, these results may suggest that people are unlikely to admit that they are concerned about what others think of them. Exploring consumers' actual perception of public self-consciousness would be valuable in understanding consumers and could influence the ways of applying this mechanism to change consumer behaviour. Moreover, further research is needed to examine the moderating role of self-consciousness on normative interventions in other types of green consumption behaviour, in field studies with different groups of people, or in other settings to increase their generalisability. Furthermore, according to White and Simpson's (2013) findings, activating the collective level of the self (e.g., 'we' or 'our') is more effective in encouraging green consumption than activating the individual level of the self. Hence, further research is needed to determine the most effective self (individual or collective) that should be promoted in marketing practices. Such investigations could provide valuable insights into the most effective ways to activate social norms and personal norms that promote green consumption.

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# 11 APPENDICES

Chapter 11: Appendices

# Chapter 11: Appendices

| | |
|---|---|
| Green consumption | Refers to the behaviour of an individual who considers environmental issues while making purchasing or non-purchasing decisions (adapted from Peattie, 2010, which has been summarised Sharma and Joshi (2017, p. 208); Tripathi (2017, p. 323)). |
| Green consumption values | The tendency to express the value of environmental protection through one's purchases and consumption behaviours. |
| Greener option | Refers to an option that has a less negatively consumption impact on the environment compared with other alternatives (to be defined according to the definition of green consumption) |
| Green preference (adapted from environmental preference) | Refers to consumers preferring to choose the products or services that have a less negative impact on the environment throughout the process of manufacture, distribution, use, reuse and recycling, and disposal, among alternatives. |
| Environmental preference | to revise product specifications, policies, and/or purchasing contract terms to request or give preference to products or services that minimize impacts on the environment throughout the process of manufacture, distribution, use, reuse and recycling, and disposal (Thefreedictionary, 2012). |
| Greener choice | Refers to an act of choosing a greener option (adapted from the definition of choice in oxford dictionary) |
| Personal norms (a sense of obligation) | It is about one's *personal normative beliefs*. In green consumption, it refers to the one's a sense of obligation to make greener choice (adapted from Schwartz, 1977) |
| Personal normative beliefs | It determines personal norms. Refers to what one believes about what I should do; What one believes about what others should do (Bicchieri, 2017) |
| Moral personal normative beliefs | It determines moral norms. It refers to one's ethical convictions and moral related personal beliefs about 'should do' and 'right thing to do'. It is the higher intensity of personal normative beliefs. It is expected to have punishment follows if the one does not conform to do the thing they should, or the one do not avoid doing something they should not. So to avoid punishment would motivate the one to do 'right' thing. |
| Descriptive norms | Norms about what most others do in one's networks or what is commonly done (Heinzen and Goodfriend, 2018). It is about one's descriptive normative beliefs or empirical expectations. Is a behavioural rule, individual prefer to conform to it on condition that they believe that most people in their reference network conform to it (empirical expectation) (Bicchieri, 2016, p25-30) |
| Injunctive norms | Norms about what others think we should do (Ajzen and Fishbein, 2013, p133). It is about the one's injunctive normative beliefs or normative expectations. |
| Social norms | Is a behavioural rule, individual prefer to conform to it on condition that they believe that (a) most people in their reference network conform to it (empirical expectation) and (b) that most people in their reference network believe they ought to conform to it (normative expectation) (Bicchieri and Dimant, 2019, p4). Social norms include descriptive norms and injunctive norms. |

| | |
|---|---|
| Sanctions | There are positive and negative sanctions (reward and punishment). Negative sanctions include reputation loss, emotional punishment (e.g., guilt). Positive sanctions include emotional reward (e.g., pride), liking, appreciation, high status, trust, good reputation and social respect (Bicchieri, 2017, p38). |
| Self-awareness | Refers to the extent to which we are currently fixing our attention on your own-concept. When our self-concept becomes highly assessable because of our concerns about being overserved and potentially judged by others, we experience the publicly induced self-awareness known as self-consciousness (Stangor et al, 2014, p113). <br> Fenigstein (1975, p522) defined it as a state: the existence of self-directed attention, as a result of either transient situational variables, chronic dispositions, or both. |
| Self-consciousness | Seen as person's chronic trait, it refers to the enduring tendency of persons to direct attention toward themselves (Fenigstein, 1979, p76). |
| Private self-consciousness | refers to the tendency to introspect about our inner thoughts and feelings (Stangor et al, 2014, p116) |
| Public self-consciousness | Refers to the tendency to focus on our outer public image and to be particularly aware of the extent to which we are meeting the standards set by others (Stangor et al, 2014, p116). Steve Heine and colleagues (2008) found the culture difference in public self-consciousness. East Asian, collectivistic cultures having higher public self-consciousness than people from western, individualistic cultures. The manipulations designed to increase public self-consciousness are useful for western cultures while it influences collectivistic cultures less. |
| Self-focused attention | It refers to "an awareness of self-referent, internally generated information that stands in contrast to an awareness of externally generated information derived through sensory receptors" (Change and Hung, 2018, p587). <br> Self-focused attention use interchangeably with private self-focused attention and self-focus. Private self-focused attention used was to differ the pre-hold chronic trait private self-consciousness. People's tendency to direct attention toward or away from self could be due to their chronic trait (i.e., self-consciousness) or can be triggered by the situation. Any stimulus that directs attention back to the self is assumed to be capable of activating self-focused attention. |
| Expectations | Are beliefs about what is going to happen or what should happen (Bicchieri, 2017, p11) |
| Self-expectation | The expectations one has about what oneself ought to do. |
| Social-expectation | The expectations the one have about other people's behaviours and beliefs. The one believes most of others is doing that and most others think the one ought to do it (Bicchieri, 2017, p11) |
| Awareness of consequence (AC) | It refers to the beliefs about awareness when choosing or not choosing the particular greener choice has certain consequence (adapted from Onwezen, 2013, p142). <br> Specific beliefs about awareness of consequences of environmental problems (Stern et al, 1995). |

| | In the model of VBN, AC refers to the consequences for valued objects (egoistic consequence, altruistic consequence, and biospheric consequence of environmental problems) (Hansla, 2011, p10) |
|---|---|
| Ascription of responsibility (AR) | refer to the beliefs that avert the noxious consequences through choosing the particular choice (feeling responsibility for preventing noxious consequences) (Stern, 1994) |
| Behavioural intention | Behavioural intention refers a readiness to perform a given behaviour (Fishbein and Ajzen, 2010, p39). It means that the individual estimates/perceives the likelihood/probability of performing or not performing a given behaviour. |
| Underlying preference vs attitude | Psychologists, typically use the term preference denotes a latent tendency to consider something desirable or undesirable. By this interpretation, preferences are equivalent to attitudes and typically measured through scale ratings or response latency measures (Warren, et al, 2010, p2). |
| Expressed Preference | Economists and behavioural decision theorists often equate preference with choice. By this interpretation, a preference for option A over options B and C means that a decision maker selected A over B or C (Warren, et al, 2010, p1-2). In this research, preference refers to expressed preference, which is the interactional response between underlying preference and the environment. |

**APPENDIX 2: EXAMPLES OF EMPIRICAL STUDIES IN JCR**

| Authors | Testing theories | Research strategy |
|---|---|---|
| Mead and Williams (2022) | The effect of *pursuit of meaning* on consumer choice | experiment |
| Chen et al. (2022) | The effect of *product anthropomorphism* on consumers' intention to share positive thoughts in their word-of-mouth communication about such products | experiment |
| Daniels and Kupor (2022) | *Magnitude heuristic* (large difference increase perceived causality) leads to biases in consumers decisions | experiment |
| Monnier and Thomas (2022) | The effect *quantity description* (perceptual units vs standardised units) on consumers perceived economic value | experiment |
| Shani-Feinstein et al. (2022) | The *perceived speed* (fast vs slow) influences mental representation and decision making | experiment |
| Grewal et al. (2022) | *God Salience* lowers interest in self-improvement products | experiment |
| … | | |
| Goldstein et al. (2008) | The effect of *descriptive norms* on hotel towel reuse behaviour | experiment |
| … | | |
| Shimp et al. (1991) | Conditioned Stimulus | experiment |

# Participant Information and Consent Form for survey

You are being invited to participate in a research study titled Greener Choice. This study is being done by Yuanyuan Zhou from the University of Strathclyde.

The purpose of this research study is about Green consumer behaviour in the hotel towel reuse programme and will take you approximately 10-15 minutes to complete. You are kindly requested to answer all questions. However, your participation is entirely voluntary and free to withdraw from the project at any time, up to the point of completion, without having to give a reason.

This survey includes attention and instruction check questions. If you answer them incorrectly, you will be redirected to the end of the survey and your participation will not count.

We believe there are no known risks associated with this research study; however, as with any online related activity the risk of a breach is always possible. To the best of our ability your participation in this study will remain confidential, and only anonymised data will be published, thus no information that identifies you will be made publicly available. Your response will be keep for 3 years for research purpose only and it will be shared within this research investigators only.

If you have any question regarding the survey or study in general, please do not hesitate to contact me via-mail.


Yuanyuan Zhou

PhD student

Department of Marketing

University of Strathclyde

E-mail: Yuanyuan.zhou@strath.ac.uk


To complete your electronic consent, please type your name below.

- Have read and understood the above information
- Are 18 years old and above
- Consent to being a participant in this study

| Participant: | Date: |
|---|---|
| | |

Chapter 11: Appendices

StudyAPPENDIX 4: STUDY 1-RELEVANT LITERATURE ON MANIPULATING SELF-CONSCIOUSNESS TABLES

| Goukens et al, 2009, JMR | Constructs | Ways of manipulation/Priming | Manipulation check |
|---|---|---|---|
| Study 1 | Private self-awareness | By placing a mirror | Not mentioned |
| | Public self-awareness | By a person who sat near participants | **Questions**: 'what is that person expecting me to do' or 'what does he or she think of my behaviour' |
| Study 2 | High private self-awareness | Story-writing task by self-relevant words, 10 mins, include the words: I me myself, alone, mirror | Not mentioned |
| | Low private self-awareness | Story-writing task by other relevant words, 10 mins, include the words: he himself him, together, picture | Not mentioned |
| Study 3 | Private self-awareness | By placing a mirror | A seven-point scale Indicate the extent to which they were thinking about themselves from 1 (not at all) to 7 (very much), when completing the task |
| Study 4 | High private self-awareness | Story-writing task by self-relevant words, 10 mins, include the words: I me myself, alone, mirror | Not mentioned |
| | Low private self-awareness | Story-writing task by other relevant words, 10 mins, include the words: he himself him, together, picture | Not mentioned |
| **Chang and Hung, 2018, JMR** | **Constructs** | **Manipulation/Priming** | **Manipulation check** |
| Experiment 1 | High (private) self-focused attention | Story-writing task ,10 mins, write a story about themselves (making oneself the protagonist) by using self-relevant words (e.g., I, myself) | Not mentioned |
| | Low (private) self-focused attention | Story-writing task ,10 mins, write story about a well-known public figure (making that person the protagonist) by using others-relevant words (e.g., she, herself) | Not mentioned |
| Experiment 2 | High (private) self-focused attention | By placing a mirror | Not mentioned |

| | | | |
|---|---|---|---|
| | Low (private) self-focused attention | Mirror absent | Not mentioned |
| Experiment 3 | High (private) self-focused attention | By placing a mirror | 1. Sentence-construction task (e.g., take taxi I a they), 25 sentences, the number of sentences in which participants used a self-related pronoun should be more than others-related pronoun in high private self-focused attention<br>2. Participants Indicate the extent to which they were thinking about themselves or about others from 1 (not at all) to 7 (very much), when completing the task. In the high-self-focus condition thought more about themselves and less about others compared to those in the low-self-focus condition (pretest) |
| | Low (private) self-focused attention | Mirror absent | |
| Experiment 4 | High (private) self-focused attention | By placing a mirror | Not mentioned |
| | Low (private) self-focused attention | Mirror absent | Not mentioned |
| Experiment 5 | High (private) self-focused attention | Self-referential message (i.e., I donate) | 1. Sentence-construction task (e.g., take taxi I a they). 25 sentences, the number of sentences in which participants used a self-related pronoun should be more than others-related pronoun in high |

| | | | private self-focused attention |
|---|---|---|---|
| | Low (private) self-focused attention | Or not (i.e., donate) | Not mentioned |
| **Fenigstein and Levine, 1984** | | **Manipulation/Priming** | **Manipulation check** |
| Experiment 1 | self-referent thought (high private self-consciousness) | Story-writing task by self-relevant words, 10 mins, include the words: I me myself, my, and alone | Two items rating from 1 (not at all) to 7 (completely) The degree to which the story focused on persons other than the self |
| | Other-referent thought (low private self-consciousness) | Story-writing task by other relevant words, 10 mins, include the words: he, him, his, himself and together | |
| **Ybarra & Trafimow, 1998** | | **Manipulation/Priming** | **Manipulation check** |
| Experiment 1 | Private self (cognitions from the private self) | For the next two minutes, you will not need to write anything. Please think of what makes you different from your family and friends. Then they were asked to answer the question, what do you expect yourself to do? | Not mentioned |
| | Collective self (cognitions from the collective self) | For the next two minutes, you will not need to write anything. Please think of what you have in common with your family and friends. Then they were asked to answer the question, what do they expect you to do? | **Not mentioned** |
| Experiment 2 | Private self (cognitions from the private self) | | Not mentioned |
| | Collective self (cognitions from the collective self) | | Not mentioned |
| Experiment 3 | Private self (cognitions from the private self) | The same priming procedure from Experiment 2 | Compete the sentence "I am…" six times To code the response either private-self (I am kind, I am athletic) or collective-self (I am an older sister, I am a good friend) |
| | Collective self (cognitions from the collective self) | The same priming procedure from Experiment 2 | |

## Study 1

---------------------------------------------Introduction---------------------------------------------

Before you start, please switch off phone/email/music/ so you can focus on this study.

This survey contains a video watching section, please ensure you have tools that can let you hear sound.

Thanks!

---------------------------------------------Page Break---------------------------------------------

Dear participant,

You are being invited to participate in a research study titled Greener Choice. This study is being done by Yuanyuan Zhou from the University of Strathclyde.
The purpose of this research study is about Green consumer behaviour in the hotel towel reuse programme and will take you approximately 10-20 minutes to complete. You are kindly requested to answer all questions. However, your participation is entirely voluntary and you are free to withdraw from the project at any time, up to the point of completion, without having to give a reason.
We believe there are no known risks associated with this research study; however, as with any online related activity the risk of a breach is always possible. To the best of our ability your participation in this study will remain confidential, and only anonymised data will be published, thus no information that identifies you will be made publicly available. Your response will be keep for 3 years for research purpose only and it will be shared within this research investigators only.

If you have any question regarding the survey or study in general, please do not hesitate to contact me via email.

**This survey includes attention and instruction check questions. If you answer them incorrectly, you will be redirected to the end of the survey and you participation will not count.**

Best regards,
Yuanyuan Zhou
PhD student
Department of Marketing
University of Strathclyde

E-mail: **yuanyuan.zhou.100@strath.ac.uk**

**To complete your electronic consent, please select your choice below.**

**Clicking on the "agree" button below indicates that you:**
- have read and understood the above information
- are 18 years old or above
- consent to being a participant in this study

Agree ⭘     Disagree ⭘

-----------------------------------Section 1-Screening out questions---------------------------------

1. Have you ever stayed in a hotel?

Yes ( )    No (  )

2. When travelling, how frequently do you use your own towels (i.e., towels that you have brought) while staying at a hotel?

   (1) always, (2) often, (3)sometimes, (4)never

-----------------------------------------------Section 2—Past hotel towel reuse behaviour-------------------------

3. Do you ever choose to reuse the hotel-towel more than one day while staying in a hotel for several days?

Yes ( )    No (  )

-------------------------------------------------ATTENTION CHECK----------------------------------------------

Please indicate the extent to which you agree or disagree with the following statement

This is an attention check

Click on the second option from the right

1        2        3        4        5        6        7

-------------------------------------Section 3—Treatments (one participant only receive one treatment)--------

-------------------------------------Section 3.1—PN present + Pri-Sc absent condition -----------------------

Imagine that you just checked into a hotel **for 3 days** and that you are **staying alone**. Also you did not bring your own towels as the hotel offers **clean** towels. Those towels are all cleaned professionally, with high temperature sterilization (75-80 ºC wash temperature, 80-90 ºC drying temperature and 150-180 ºC ironing temperature), chemical sterilization and Ozone sterilization. You found the following same message-card in the bath room, on the desk and bedside table, and you read it carefully when you are free:



We take our responsibility seriously to save the environment through a series of activities (e.g., energy star air-conditions).

You can take your part of responsibility to save energy and water simply through reusing your towel during your stay.

Changing a towel every day:
• increases water, sewer, energy, and labour costs—by 17 percent, according to the British Hotel and Lodging Association
• causes high risk to sea animals and fish health
• has consequences on human health
• increases the carbon emissions
• leads to harmful effects on climate change.
• affects ecosystems, agriculture and in turn even human survival.

In brief, changing a towel every day increases the adverse impact on the environment which poses threats to self, other humans and the bio-sphere.
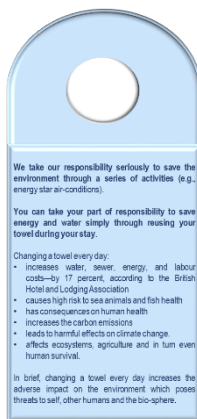
----------------------------------------Section 3.2—control condition (PN absent + Pri-Sc absent)----------------

Imagine that you just checked into a hotel **for 3 days** and that you **stay alone**. Also you did not bring your own towels as the hotel offers **clean** towels. Those towels all cleaned with professional procedures, including high temperature sterilization (75-80 ºC wash temperature, 80-90 ºC drying temperature and 150-180 ºC ironing temperature), chemical sterilization and Ozone sterilization. You found the following same message-card in the bathroom, on the desk and bedside table, and you read it carefully when you are free:



Help save the environment

----------------------------------------Section 3.3—PN absent+Pri-SC present condition ------------------------

-------------------------------------------Section 3.3.1—priming Pri-SC -------------------------------------------

4. The below test is a warm up section to make sure you can fully focused for the upcoming scenario task. This section is a sentence construction task.

Instructions: for each set of words below, make a grammatical sentence and type it down:

For example:

flew eagle the around

The eagle flew around.

1. like understand I to myself
2. am playing I the piano
3. my from mistakes I learn
4. important me food is to
5. to reading me important is
6. figure I myself should out
7. sky the turns grey to
8. shoes the have repaired been

---------------------------------------------Section 3.3.2 —Scenario of control ---------------------------------------

Imagine that you just checked into a hotel **for 3 days** and that you **stay alone**. Also you did not bring your own towels as the hotel offers **clean** towels. Those towels all cleaned with professional procedures, including high temperature sterilization (75-80 ℃ wash temperature, 80-90 ℃ drying temperature and 150-180 ℃ ironing temperature), chemical sterilization and Ozone sterilization. You found the following same message-card in the bath room, on the desk and bedside table, and you read it carefully when you are free:



**Help save the environment**
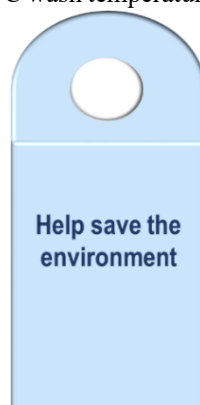
---------------------------------------------Section 3.4—PN present+Pri-SC present condition --------------------
---------------------------------------------Section 3.4.1— priming Pri-SC -------------------------------------------

4. The below test is a warm up section to make sure you can fully focused for the upcoming scenario task. This section is a sentence construction task.

Instructions: for each set of words below, make a grammatical sentence and type it down:

For example:

flew eagle the around

The eagle flew around.

1. like understand I to myself
2. am playing I the piano
3. my from mistakes I learn
4. important me food is to
5. to reading me important is
6. figure I myself should out

7. sky the turns grey to
8. shoes the have repaired been

-------------------------------------------------Section 3.4.2—Scenario of PN----------------------------

**5.** Imagine that you just checked into a hotel **for 3 days** and that you are **staying alone**. Also you did not bring your own towels as the hotel offers **clean** towels. Those towels are all cleaned professionally, with high temperature sterilization (75-80 ºC wash temperature, 80-90 ºC drying temperature and 150-180 ºC ironing temperature), chemical sterilization and Ozone sterilization. You found the following same message-card in the bath room, on the desk and bedside table, and you read it carefully when you are free:

We take our responsibility seriously to save the environment through a series of activities (e.g., energy star air-conditions).

You can take your part of responsibility to save energy and water simply through reusing your towel during your stay.

Changing a towel every day:
- increases water, sewer, energy, and labour costs—by 17 percent, according to the British Hotel and Lodging Association
- causes high risk to sea animals and fish health
- has consequences on human health
- increases the carbon emissions
- leads to harmful effects on climate change.
- affects ecosystems, agriculture and in turn even human survival.

In brief, changing a towel every day increases the adverse impact on the environment which poses threats to self, other humans and the bio-sphere.

-------------------------------------------------Section 4—Dependent and mediator questions--------------------

**6. Please indicate your level of agreement or disagreement with the following statement from extremely unlikely (1) to extremely likely (7)**

- How likely or unlikely is it that you will reuse the hotel towel for all 3 days?

------------------------------------------ Manipulation check of Private self-consciousness --------------------

**7. To what extent, from 1: Not at all to 7: Very much, you were thinking about...**

- …you are thinking about yourself

- …you are thinking about others

------------------------------------------ Mediator: Green preference -------------------------------------------

**8. Please indicate your level of agreement or disagreement with the following statements from strongly disagree (1) to strongly agree (7)**

- It is important to me that the products I use do not harm the environment
- I consider the potential environmental impact of my actions when making many of my decisions
- My purchase habits are affected by my concern for our environment
- I am concerned about wasting the resources of our planet
- I would describe myself as environmentally responsible
- I am willing to be inconvenienced in order to take actions that are more environmentally friendly

-------------------------------------------------Section 5—Manipulation check------------------------------------
-------------------------------------------------Section 5.1 the perception of cleanliness ----------------------------

**9. Did the hotel offer 'clean' towel?**

Yes (   ), No (   )

--------------------------------------------Section 5.2 Personal norms scales-----------------------------------

**10. Please indicate your level of agreement or disagreement with the following statements from Strongly disagree (1)-Strongly agree (7)**

- I feel an obligation to make greener choice to save energy and water by choosing to reuse the towel in the hotel

- I feel that I should protect the environment for saving energy and water by choosing to reuse the towel in the hotel

- I feel it is important that people in general protect the environment by making greener choice to save energy and water

- Regardless of what other people do, because of my own values /principles, I feel that I should make greener choice to save energy and water by choosing to reuse the towel in the hotel

-----------------------------------------------ATTENTION CHECK----------------------------------------------

Please indicate the extent to which you agree or disagree with the following statement

This is an attention check

Click on the third option from the left

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

---------------------------------------------------Section 6—Control variables------------------------------------------

---------------------------------------------Section 6.1—descriptive norms and injunctive norms----------------

**11. To what extent, from 1: Not at all to 7: Very much, would you say that…**
- …most guests take their responsibility to protect the environment by reusing towel while staying at a hotel?
- …people who are important to you (e.g., family and friends) take their responsibility to protect the environment by reusing towel while staying at a hotel?
- … people whose opinions you value take their responsibility to protect the environment by reusing towel while staying at a hotel?

**12. To what extent, from 1: Not at all to 7: Very much, would you say that…**

- …typical hotel guests approve of those who take the responsibility to protect environment by reusing towels while staying at a hotel?
- … people who are important to you (e.g., family and friends) approve of those who take the responsibility to protect environment by reusing towels while staying at a hotel?
- … people whose opinions you value approve of those who take the responsibility to protect environment by reusing towels while staying at a hotel?

-----------------------------------------Section 6.2—general green consumption behaviour-----------------------

**13. How frequently or infrequently you have performed each of behaviour on the following 4-point scale: never (1), sometimes (2), often (3), always (4)**
- Switch off lights whenever leaving a room

- Use lower temperature washes in the washing machine

- Give or receive 'hand-me-down'

- Reading documents on screen rather than printing them out

- Buy low-energy light bulbs

- Take part in a recycling program
- Buying products containing recycled materials
- Use paper recycling bins next to photocopier
- Printing or photocopying double sided
- Buying organic food or clothing made from organic materials
- Buying 'green' cleaning products
- Walk or ride a bicycle rather than drive
- Add insulation or double glazing to house or windows
- Boycotting companies due to human rights or environmental issues
- Composting
- Use public transportation rather than drive a car
- Car sharing
- Investing in socially responsible companies

-------------------------------------------------Section 7—Demographics------------------------------------------

14. What is your age (in years)?

_____

15. To which gender identity do you most identify?

Male (   ), Female (   ), Other (_____), Prefer not to say (      )

16.  What is the highest level of school you have completed or the highest degree you have?

Primary school (          )

GCSEs or equivalent (          )

A-levels or equivalent (          )

University undergraduate programme (          )

University post-graduate programme (          )

Doctoral degree (          )

APPENDIX 6: STUDY 1-MAINTEST-SCALE RELIABILITY RESULT

| | Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|---|
| 6. Green preference scale | .928 | .929 | 6 |
| 7. Personal norms scale | .942 | .943 | 4 |
| 8. Injunctive norms scale | .854 | .856 | 3 |
| 9. Descriptive norms scale | .829 | .830 | 3 |
| 10. Green consumption behaviour scale | .792 | .802 | 18 |

APPENDIX 6: STUDY 1-MAINTEST-SCALE RELIABILITY RESULT

## APPENDIX 7: STUDY 1-MODEL 7. OUTPUT

```
Run MATRIX procedure:

**************** PROCESS Procedure for SPSS Version 3.4.1 ****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
     Documentation available in Hayes (2018). www.guilford.com/p/hayes3

*************************************************************************
Model  : 7
    Y  : DV
    X  : PNcond
    M  : GreenP
    W  : PRIScond

Sample
Size:  200

*************************************************************************
OUTCOME VARIABLE:
 GreenP

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .2297      .0528     1.2680     3.6405     3.0000   196.0000      .0137

Model
              coeff         se          t          p       LLCI       ULCI
constant     4.7633      .1592    29.9116      .0000     4.5002     5.0265
PNcond        .7233      .2252     3.2118      .0015      .3511     1.0955
PRIScond      .2933      .2252     1.3025      .1943     -.0789      .6655
Int_1        -.5500      .3185    -1.7269      .0858    -1.0764     -.0236

Product terms key:
 Int_1    :         PNcond    x        PRIScond

Test(s) of highest order unconditional interaction(s):
      R2-chng          F        df1        df2          p
X*W       .0144     2.9821     1.0000   196.0000      .0858
----------
    Focal predict: PNcond   (X)
         Mod var: PRIScond (W)

Conditional effects of the focal predictor at values of the moderator(s):

   PRIScond     Effect         se          t          p       LLCI       ULCI
      .0000      .7233      .2252     3.2118      .0015      .3511     1.0955
     1.0000      .1733      .2252      .7697      .4424     -.1989      .5455

*************************************************************************
OUTCOME VARIABLE:
 DV

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .4023      .1618     2.4812    19.0156     2.0000   197.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.3550      .5117     4.6020      .0000     1.5093     3.2007
PNcond        .0220      .2272      .0969      .9229     -.3534      .3974
GreenP        .5978      .0992     6.0280      .0000      .4339      .7616

***************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .0220      .2272      .0969      .9229     -.3534      .3974

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 PNcond     ->    GreenP      ->    DV

   PRIScond     Effect     BootSE   BootLLCI   BootULCI
      .0000      .4324      .1534      .2003      .7006
```

```
      1.0000        .1036        .1392      -.1298        .3225

Index of moderated mediation (difference between conditional indirect effects):
            Index     BootSE   BootLLCI   BootULCI
PRIScond    -.3288      .2082     -.6936     -.0178
---

*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  90.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  10000

------ END MATRIX -----
```

## APPENDIX 8: STUDY 1-MODEL 4. OUTPUT

```
Run MATRIX procedure:

**************** PROCESS Procedure for SPSS Version 3.4.1 ****************

          Written by Andrew F. Hayes, Ph.D.          www.afhayes.com
     Documentation available in Hayes (2018). www.guilford.com/p/hayes3

*************************************************************************
Model  : 4
    Y  : DV
    X  : PNcond
    M  : GreenP

Sample
Size:  200

*************************************************************************
OUTCOME VARIABLE:
 GreenP

Model Summary
          R        R-sq        MSE          F        df1        df2          p
      .1957       .0383     1.2744     7.8865     1.0000   198.0000       .0055

Model
              coeff         se          t          p       LLCI       ULCI
constant     4.9100      .1129    43.4947      .0000     4.7234     5.0966
PNcond        .4483      .1596     2.8083      .0055      .1845      .7122

*************************************************************************
OUTCOME VARIABLE:
 DV

Model Summary
          R        R-sq        MSE          F        df1        df2          p
      .4023       .1618     2.4812    19.0156     2.0000   197.0000       .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.3550      .5117     4.6020      .0000     1.5093     3.2007
PNcond        .0220      .2272      .0969      .9229     -.3534      .3974
GreenP        .5978      .0992     6.0280      .0000      .4339      .7616

***************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI       c'_ps
      .0220      .2272      .0969      .9229     -.3534      .3974       .0129

Indirect effect(s) of X on Y:
           Effect     BootSE   BootLLCI   BootULCI
GreenP      .2680      .1036      .1059      .4469

Partially standardized indirect effect(s) of X on Y:
           Effect     BootSE   BootLLCI   BootULCI
GreenP      .1566      .0601      .0623      .2608

********************** ANALYSIS NOTES AND ERRORS **********************

Level of confidence for all confidence intervals in output:
  90.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  10000

------ END MATRIX -----
```

## Study 2-Control+ Pub-SC condition

-------------------------------------------------------Introduction-------------------------------------------------------

Before you start, please switch-off your phone/email/music/ so that you can focus on this study.

This survey contains a video watching section, please ensure you have equipment that can let you hear the sound.

Thanks!

-------------------------------------------------------Page Break-------------------------------------------------------

Dear participant,

You are being invited to participate in a research study titled Greener Choice. This study is being done by Yuanyuan Zhou from the University of Strathclyde.

The purpose of this research study is about Green consumer behaviour in the hotel towel reuse programme and will take you approximately 10-20 minutes to complete. You are kindly requested to answer all questions. However, your participation is entirely voluntary and you are free to withdraw from the project at any time, up to the point of completion, without having to give a reason.

We believe there are no known risks associated with this research study; however, as with any online related activity the risk of a breach is always possible. To the best of our ability your participation in this study will remain confidential, and only anonymised data will be published, thus no information that identifies you will be made publicly available. Your response will be keep for 3 years for research purpose only and it will be shared within this research investigators only.

If you have any question regarding the survey or study in general, please do not hesitate to contact me via email.

**This survey includes attention and instruction check questions. If you answer them incorrectly, you will be redirected to the end of the survey and <u>you participation will not count.</u>**

Best regards,
Yuanyuan Zhou
PhD student
Department of Marketing
University of Strathclyde

E-mail: **yuanyuan.zhou.100@strath.ac.uk**

**To complete your electronic consent, please select your choice below.**

   **Clicking on the "agree" button below indicates that you:**
- have read and understood the above information
- are 18 years old or above
- consent to being a participant in this study

Agree ◯ | Disagree ◯

---------------------------------------------------Section 1-Screening out questions---------------------------------

1. Have you ever stayed in a hotel?

Yes (  )      No (  )

2. When travelling, how frequently do you use hotel towels while staying at a hotel?

(2) always, (2) often, (3)sometimes, (4)never

-------------------------------------------------Section 2—Past hotel towel reuse behaviour-------------------------

3. Do you ever choose to reuse the hotel-towel more than one day while staying in a hotel for several days?

Yes (  )    No (  )

--------------------------------------------------------ATTENTION CHECK----------------------------------------------

Please indicate the extent to which you agree or disagree with the following statement

This is an attention check

Click on the second option from the right

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

---------------------------------------Section 3—Treatments (one participant only receive one treatment) -------

---------------------------------------------Section 3.1—DN + public self-consciousness absent condition ------

---------------------------------------------Section 3.1— Scenario of DN condition -------------------------------

4. Imagine that you just checked into a hotel **for 3 days** and that you are **staying alone**. Also you did not bring your own towels as the hotel offers **clean** towels. Those towels are all cleaned professionally, with high temperature sterilization (75-80 ℃ wash temperature, 80-90 ℃ drying temperature and 150-180 ℃ ironing temperature), chemical sterilization and Ozone sterilization. You found the following same message-card in the bath room, on                               the desk and bedside table, and you read it carefully when you are free:

In a study conducted in Autumn 2018, about **88%** of guests participated in the hotel towel reuse programme by reusing hotel towels during their stay to take responsibility for protecting the environment by saving energy and water.

---------------------------------------------Section 3.2—     DN +public self-consciousness condition ------------

-------------------------------------------Section 3.2.1— Scenario of DN message--------------------------------

**4.** Imagine that you just checked into a hotel **for 3 days** and that you are **staying alone**. Also you did not bring your own towels as the hotel offers all cleaned professionally, with high 80 ºC wash temperature, 80-90 ºC drying ironing temperature), chemical sterilization. You found the following room, on the desk and bedside table, and are free: **clean** towels. Those towels are temperature sterilization (75- temperature and 150-180 ºC sterilization and Ozone same message-card in the bath you read it carefully when you

In a study conducted in Autumn 2018, about **88%** of guests participated in the hotel towel reuse programme by reusing hotel towels during their stay to take responsibility for protecting the environment by saving energy and water.

-------------------------------------------Section 3.2.2—Priming Pub-SC-------------------------------------------

**5.1** Please select, from 1 to 7, which of the following options best reflects your view: "if I **choose not to participate** during my stay in the hotel towel reuse programme (to which most hotel guests have participated in), the hotel staff and other guests will think about me as..."

|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  |
|---|---|---|---|---|---|---|---|---|
| Good guest | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Bad guest |
| Cooperative | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Non-cooperative |
| Helpful | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Unhelpful |
| Thoughtful | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Mindless |
| Conscientious | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Unconscientious |

5.2 Please select, from 1 to 7, which of the following options best reflects your view: "if I **choose to participate** during my stay in the hotel towel reuse programme (to which most hotel guests have participated in), the hotel staff and other guests will think about

| | 1 2 3 4 5 6 7 | |
|---|---|---|
| Good guest | ○ ○ ○ ○ ○ ○ ○ | Bad guest |
| Cooperative | ○ ○ ○ ○ ○ ○ ○ | Non-cooperative |
| Helpful | ○ ○ ○ ○ ○ ○ ○ | Unhelpful |
| Thoughtful | ○ ○ ○ ○ ○ ○ ○ | Mindless |
| Conscientious | ○ ○ ○ ○ ○ ○ ○ | Unconscientious |

--------------------------------------------Section 3.3—IN + public self-consciousness absent condition -------
--------------------------------------------Section 3.3— Scenario of IN condition --------------------------------

**4.** Imagine that you just checked into a hotel **for 3 days** and that you are **staying alone**. Also you did not bring your own towels as the hotel offers **clean** towels. Those towels are all cleaned professionally, with high temperature sterilization (75-80 ºC wash temperature, 80-90 ºC drying temperature and 150-180 ºC ironing temperature), chemical sterilization and Ozone sterilization. You found the following same message-card in the bath room, on the desk and bedside table, and you read it carefully when you are free:

In a study conducted in Autumn 2018, about **88%** of guests have expressed to us their approval of people's reusing hotel towels. Because they think it is a worthwhile way to take responsibility for protecting the environment by saving energy and water.

Please reuse hotel towels during your stay to take your responsibility for protecting the environment.

-------------------------------------------Section 3.4—IN + Public self-consciousness condition ----------------

-------------------------------------------Section 3.4.1— Scenario of IN message --------------------------------

**4.** Imagine that you just checked into a hotel **for 3 days** and that you are **staying alone**. Also you did not bring your own towels as the hotel all cleaned professionally, with high wash temperature, 80-90 ºC drying temperature), chemical sterilization following same message-card in the table, and you read it carefully when offers **clean** towels. Those towels are temperature sterilization (75-80 ºC temperature and 150-180 ºC ironing and Ozone sterilization. You found the bath room, on the desk and bedside you are free:

In a study conducted in Autumn 2018, about **88%** of guests have expressed to us their approval of people's reusing hotel towels. Because they think it is a worthwhile way to take responsibility for protecting the environment by saving energy and water.

Please reuse hotel towels during your stay to take your responsibility for protecting the environment.

-------------------------------------------Section 3.4.2 —Priming Pub-SC ------------------------------------------

5.1 Please select, from 1 to 7, which of the following options best reflects your view: "if I **choose not to participate** during my stay in the hotel towel reuse programme (to which has received the approval of most guests), the hotel staff and other guests will think about me as..."

|  | 1 2 3 4 5 6 7 |  |
|---|---|---|
| Good guest | ○ ○ ○ ○ ○ ○ ○ | Bad guest |
| Cooperative | ○ ○ ○ ○ ○ ○ ○ | Non-cooperative |
| Helpful | ○ ○ ○ ○ ○ ○ ○ | Unhelpful |
| Thoughtful | ○ ○ ○ ○ ○ ○ ○ | Mindless |
| Conscientious | ○ ○ ○ ○ ○ ○ ○ | Unconscientious |

5.2 Please select, from 1 to 7, which of the following options best reflects your view: "if I **choose to participate** during my stay in the hotel towel reuse programme (to which has received the approval of most guests), the hotel staff and other guests will think about me as..."

-------------------------------------------Section 3.5—control + public self-consciousness absent condition --

-------------------------------------------Section 3.5— Scenario of IN condition --------------------------------

**4.** Imagine that you just checked into a hotel **for 3 days** and that you are **staying alone**. Also you did not bring your own towels as the hotel offers cleaned professionally, with high temperature, 80-90 ºC drying temperature chemical sterilization and Ozone same message-card in the bath room, on it carefully when you are free:
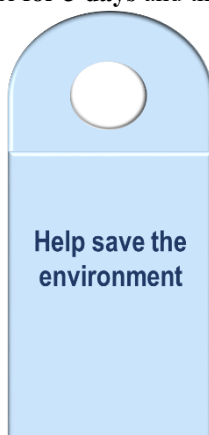
**clean** towels. Those towels are all temperature sterilization (75-80 ºC wash and 150-180 ºC ironing temperature), sterilization. You found the following the desk and bedside table, and you read

Help save the environment

-----------------------------Section 3.6—control condition + public self-consciousness condition ------------
----------------------------------------------Section 3.6.1— Scenario of control message ---------------------------

**4.** Imagine that you just checked into a hotel **alone**. Also you did not bring your own towels Those towels are all cleaned professionally, (75-80 ºC wash temperature, 80-90 ºC drying temperature), chemical sterilization and Ozone following same message-card in the bath and you read it carefully when you are free:
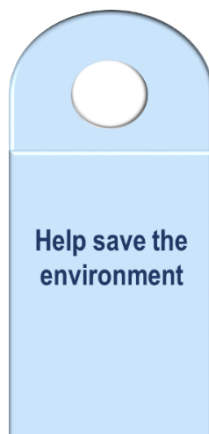
**for 3 days** and that you are **staying** as the hotel offers **clean** towels. with high temperature sterilization temperature and 150-180 ºC ironing sterilization. You found the room, on the desk and bedside table,

Help save the environment

---------------------------------------------Section 3.6.2—priming Pub-SC -------------------------------------------

5.1 Please select, from 1 to 7, which of the following options best reflects your view: "if I **choose not to participate** during my stay in the hotel towel reuse programme, the hotel staff and other guests will think about me as..."

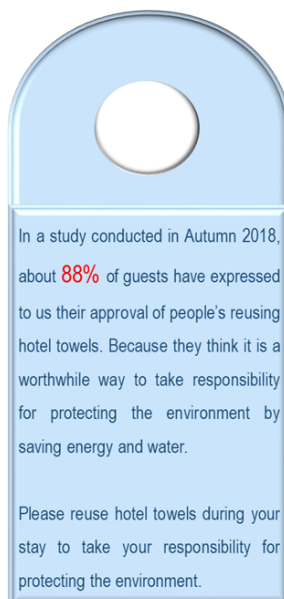|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  |
|---|---|---|---|---|---|---|---|---|
| Good guest | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Bad guest |
| Cooperative | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Non-cooperative |
| Helpful | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Unhelpful |
| Thoughtful | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Mindless |
| Conscientious | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Unconscientious |

5.2 Please select, from 1 to 7, which of the following options best reflects your view: "if I **choose to participate** during my stay in the hotel towel reuse programme, the hotel staff and other guests will think about me as..."

| | 1 2 3 4 5 6 7 | |
|---|---|---|
| Good guest | ○ ○ ○ ○ ○ ○ ○ | Bad guest |
| Cooperative | ○ ○ ○ ○ ○ ○ ○ | Non-cooperative |
| Helpful | ○ ○ ○ ○ ○ ○ ○ | Unhelpful |
| Thoughtful | ○ ○ ○ ○ ○ ○ ○ | Mindless |
| Conscientious | ○ ○ ○ ○ ○ ○ ○ | Unconscientious |

--------------------------------------------------Section 4—Dependent and mediator questions--------------------

**6. Please indicate your level of agreement or disagreement with the following statement from extremely unlikely (1) to extremely likely (7)**

- How likely or unlikely is it that you will reuse the hotel towel for all 3 days?

**7. Please indicate your level of agreement or disagreement with the following statements from strongly disagree (1) to strongly agree (7)**

- It is important to me that the products I use do not harm the environment
- I consider the potential environmental impact of my actions when making many of my decisions
- My purchase habits are affected by my concern for our environment
- I am concerned about wasting the resources of our planet
- I would describe myself as environmentally responsible
- I am willing to be inconvenienced in order to take actions that are more environmentally friendly

-------------------------------------------------Section 5—Manipulation check------------------------------------

------------------------------------------Section 5.1 Public self-consciousness -----------------------------------

**8. Please indicate your level of agreement or disagreement with the following statements from Strongly disagree (1)-Strongly agree (7)**

- I am concerned about how others would think about me regarding my participation or non-participation to the hotel towel reuse programme
- I feel that my choice of participation or non-participation to the hotel towel reuse programme would have consequences for my image
- I feel that others would judge me regarding my participation or non-participation to the hotel towel reuse

-----------------------------------Section 5.2 Manipulation check of DN and IN----------------------------------

**9. To what extent, from 1: Not at all to 7: Very much, would you say that…**

- …most guests take their responsibility to protect the environment by reusing hotel towels while staying at a hotel?

- …people who are important to you (e.g., family and friends) take their responsibility to protect the environment by reusing hotel towels while staying at a hotel?
- … people whose opinions you value take their responsibility to protect the environment by reusing hotel towels while staying at a hotel?

**10. To what extent, from 1: Not at all to 7: Very much, would you say that…**

- …typical hotel guests approve of those who take the responsibility to protect environment by reusing hotel towels while staying at a hotel?
- … people who are important to you (e.g., family and friends) approve of those who take the responsibility to protect environment by reusing hotel towels while staying at a hotel?
- … people whose opinions you value approve of those who take the responsibility to protect environment by reusing hotel towels while staying at a hotel?

-------------------------------------------------ATTENTION CHECK--------------------------------------------------

Please indicate the extent to which you agree or disagree with the following statement

This is an attention check

Click on the third option from the left

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|

-------------------------------------------Section 6—Control variables--------------------------------------

---------------------------------------Section 6.1—personal norms------------------------------------------

**11. Please indicate your level of agreement or disagreement with the following statements from Strongly disagree (1)-Strongly agree (7)**

- I feel an obligation to make greener choice to save energy and water by choosing to reuse the hotel towels in the hotel

- I feel that I should protect the environment for saving energy and water by choosing to reuse the hotel towels in the hotel

- I feel it is important that people in general protect the environment by making greener choice to save energy and water

- Regardless of what other people do, because of my own values /principles, I feel that I should make greener choice to save energy and water by choosing to reuse the hotel towels in the hotel

-------------------------------------Section 6.2—general green consumption behaviour---------------------------

**12. How frequently or infrequently you have performed each of behaviour on the following 4-point scale: never (1), sometimes (2), often (3), always (4)**

- Switch off lights whenever leaving a room

- Use lower temperature washes in the washing machine

- Give or receive 'hand-me-down'

- Reading documents on screen rather than printing them out

- Buy low-energy light bulbs

- Take part in a recycling program

- Buying products containing recycled materials

- Use paper recycling bins next to photocopier

- Printing or photocopying double sided

- Buying organic food or clothing made from organic materials

- Buying 'green' cleaning products

- Walk or ride a bicycle rather than drive

- Add insulation or double glazing to house or windows

- Boycotting companies due to human rights or environmental issues

- Composting

- Use public transportation rather than drive a car

- Car sharing

- Investing in socially responsible companies

-------------------------------------------------Section 7—Demographics-------------------------------------------

13. What is your age (in years)?

_____
14. To which gender identity do you most identify?
Male (   ), Female (   ), Other (       ), Prefer not to say (      )

15.  What is the highest level of school you have completed or the highest degree you have?
Primary school (          )
GCSEs or equivalent (         )
A-levels or equivalent (          )
University undergraduate programme (          )
University post-graduate programme (         )
Doctoral degree (          )

Chapter 11: Appendices

**APPENDIX 10: STUDY 2-MAINTEST-SCALE RELIABILITY RESULT**

| | Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|---|
| **Green preference scale** | .928 | .929 | 6 |
| **Personal norms scale** | .928 | .931 | 4 |
| **Injunctive norms scale** | .847 | .849 | 3 |
| **Descriptive norms scale** | .784 | .793 | 3 |
| **Green consumption behaviour scale** | .797 | .805 | 18 |
| **Public self-consciousness check questions** | .905 | .905 | 3 |
| **If choose not to participate** | .947 | .946 | 5 |
| **If choose to participate** | .956 | .956 | 5 |

**APPENDIX 10: STUDY 2-MAINTEST-SCALE RELIABILITY RESULT**

## APPENDIX 11: STUDY 2-MODEL 1. OUTPUT FOR DESCRIPTIVE NORMS

```
Run MATRIX procedure:

**************** PROCESS Procedure for SPSS Version 3.4.1 ****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
     Documentation available in Hayes (2018). www.guilford.com/p/hayes3

*************************************************************************
Model  : 1
    Y  : DV
    X  : DNconds
    W  : PubSCond

Sample
Size:  204

*************************************************************************
OUTCOME VARIABLE:
 DV

Model Summary
         R        R-sq        MSE          F        df1        df2          p
      .1770       .0313     3.7524     2.1564     3.0000   200.0000      .0944

Model
              coeff         se          t          p        LLCI       ULCI
constant      4.9608      .2712    18.2887      .0000      4.5125     5.4090
DNconds        .8431      .3836     2.1979      .0291       .2092     1.4770
PubSCond       .3333      .3836      .8690      .3859      -.3006      .9672
Int_1        -1.1765      .5425    -2.1686      .0313     -2.0729     -.2800

Product terms key:
 Int_1    :         DNconds   x        PubSCond

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W       .0228     4.7029     1.0000   200.0000      .0313
----------
    Focal predict: DNconds  (X)
         Mod var: PubSCond (W)

Conditional effects of the focal predictor at values of the moderator(s):

   PubSCond     Effect         se          t          p        LLCI       ULCI
      .0000      .8431      .3836     2.1979      .0291       .2092     1.4770
     1.0000     -.3333      .3836     -.8690      .3859      -.9672      .3006

*********** BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS ************

OUTCOME VARIABLE:
 DV

              Coeff    BootMean     BootSE    BootLLCI    BootULCI
constant      4.9608      4.9638      .2798      4.5000      5.4138
DNconds        .8431       .8357      .3618       .2392      1.4268
PubSCond       .3333       .3322      .3874      -.3069       .9591
Int_1        -1.1765     -1.1677      .5422     -2.0532      -.2635

********************** ANALYSIS NOTES AND ERRORS ***********************

Level of confidence for all confidence intervals in output:
  90.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  10000

NOTE: Variables names longer than eight characters can produce incorrect output.
      Shorter variable names are recommended.

------ END MATRIX -----
```

# Chapter 11: Appendices

## APPENDIX 12: STUDY 2-MODEL 1. OUTPUT FOR INJUNCTIVE NORMS

```
Run MATRIX procedure:

**************** PROCESS Procedure for SPSS Version 3.4.1 ****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
      Documentation available in Hayes (2018). www.guilford.com/p/hayes3

*************************************************************************
Model : 1
    Y  : DV
    X  : INconds
    W  : PubSCond

Sample
Size:  204

*************************************************************************
OUTCOME VARIABLE:
 DV

Model Summary
          R        R-sq        MSE          F        df1        df2          p
      .2197       .0482     3.0904     3.3797     3.0000   200.0000      .0193

Model
              coeff         se          t          p       LLCI       ULCI
constant     4.9608      .2462    20.1525      .0000     4.5540     5.3676
INconds      1.0784      .3481     3.0978      .0022      .5032     1.6537
PubSCond      .3333      .3481      .9575      .3395     -.2419      .9086
Int_1       -1.0196      .4923    -2.0710      .0396    -1.8332     -.2060

Product terms key:
 Int_1    :         INconds  x        PubSCond

Test(s) of highest order unconditional interaction(s):
      R2-chng          F        df1        df2          p
X*W      .0204     4.2891     1.0000   200.0000      .0396
----------
    Focal predict: INconds  (X)
          Mod var: PubSCond (W)

Conditional effects of the focal predictor at values of the moderator(s):

  PubSCond      Effect         se          t          p       LLCI       ULCI
     .0000      1.0784      .3481     3.0978      .0022      .5032     1.6537
    1.0000       .0588      .3481      .1690      .8660     -.5165      .6341

*********** BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS ************

OUTCOME VARIABLE:
 DV

              Coeff    BootMean     BootSE    BootLLCI    BootULCI
constant     4.9608      4.9579      .2803     4.4878      5.4043
INconds      1.0784      1.0811      .3400      .5250      1.6413
PubSCond      .3333       .3357      .3885     -.3053       .9615
Int_1       -1.0196     -1.0221      .4934    -1.8314      -.2143

********************** ANALYSIS NOTES AND ERRORS **********************

Level of confidence for all confidence intervals in output:
  90.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  10000

NOTE: Variables names longer than eight characters can produce incorrect output.
      Shorter variable names are recommended.

------ END MATRIX -----
```

# Study 3a

--------------------------------------------Introduction--------------------------------------------
Before you start, please switch-off your phone/email/music/ so that you can focus on this study.

This survey contains a video watching section, please ensure you have equipment that can let you hear the sound.

Thanks!

--------------------------------------------------Page Break--------------------------------------------

Dear participant,

You are being invited to participate in a research study conducted by Yuanyuan Zhou from the University of Strathclyde.

The purpose of this research study is about green consumer behaviour and will take you approximately 10 minutes to complete. You are kindly requested to answer all questions. However, your participation is entirely voluntary and you are free to withdraw from the project at any time, up to the point of completion, without having to give a reason.

We believe there are no known risks associated with this research study. Your participation in this study will remain confidential, and only anonymised data will be published, thus no information that identifies you will be made publicly available.

If you have any questions regarding the survey or study in general, please do not hesitate to contact me via email.

Best regards,
Yuanyuan Zhou
PhD student
Department of Marketing
University of Strathclyde

E-mail: **yuanyuan.zhou.100@strath.ac.uk**

**To complete your electronic consent, please click on the "agree" button below to indicate that you:**
- have read and understood the above information
- are 18 years old or above
- consent to being a participant in this study

Agree ○       Disagree ○

------------------------------------------------Section 1-Screening out questions--------------------------------
1. Have you ever stayed in a hotel?

Yes ( )    No ( )

2. When travelling, how frequently do you use your own towels (i.e., towels that you have brought) while staying at a hotel?

(3) always, (2) often, (3) sometimes, (4) never

-----------------------------------------------Section 2—Past hotel towel reuse behaviour-------------------------

3. Do you ever choose to reuse the hotel-towel more than one day while staying in a hotel for several days?

Yes ( )    No ( )

-----------------------------------------------------ATTENTION CHECK--------------------------------------------

Please indicate the extent to which you agree or disagree with the following statement
This is an attention check

Click on the second option from the right

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

-------------------------------------Section 3—Treatments (one participant only receives one treatment) ------
---------------------------------------------Section 3.1—PN absent + Pri-sc absent condition ---------------------
---------------------------------------------Section 3.1.1—Pri-sc absent ------------------------------------------

4. The below test is a warm up section to make sure you can fully focus for the upcoming scenario task. This section is a sentence construction task.

Instructions: for each set of words below, make a grammatical sentence and type it down:

For example:

flew eagle the around

1.  sky the turns grey to

2.  shoes the have repaired been

3.  the working washing is machine
4.  turns the lights green cross

5.  on sit ducks the pond

6.  seems this bitter drink not

7.  ground a stands on building

8.  crosses old street man the

---------------------------------------------Section 3.1.2—control message scenario ------------------------------

Video watching: https://youtu.be/IVye1ho5vLU

**5.** Imagine that you just checked into a hotel **for 3 days** and that you are **staying alone**. Also you did not bring your own towels as the hotel cleaned professionally, with high temperature, 80-90 °C drying temperature), chemical sterilization following same message-card in the you read it carefully when you are offers **clean** towels. Those towels are all temperature sterilization (75-80 °C wash temperature and 150-180 °C ironing and Ozone sterilization. You found the bath room, on the desk and bedside table, and free:

Help save the environment
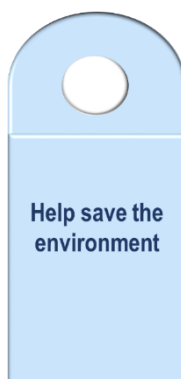
# Chapter 11: Appendices

--------------------------------------------Section 3.2—PN present+ Pri-sc absent condition ---------------------
--------------------------------------------Section 3.2.1—Pri-sc absent ------------------------------------------------

4. The below test is a warm up section to make sure you can fully focus for the upcoming scenario task. This section is a sentence construction task.

Instructions: for each set of words below, make a grammatical sentence and type it down:
For example:

flew eagle the around

1. sky the turns grey to
2. shoes the have repaired been

3. the working washing is machine

4. turns the lights green cross

5. on sit ducks the pond

6. seems this bitter drink not

7. ground a stands on building

8. crosses old street man the

---------------------------------------------------------Section 3.2.2—PN scenario ----------------------------------------
Video watching: https://youtu.be/PHHY4IiUtlo

**5.** Imagine that you just checked into a hotel **for 3 days** and that you are **staying alone**. Also you did not bring your own towels as the hotel offers **clean** towels. Those towels are all cleaned professionally, with high temperature sterilization (75-80 ºC wash temperature, 80-90 ºC drying temperature and 150-180 ºC ironing temperature), chemical sterilization and Ozone sterilization. You found the following same message-card in the bath room, on the desk and bedside table, and you read it carefully when you are free:

We take our responsibility seriously to save the environment through a series of activities (e.g., energy star air-conditions).

You can take your part of responsibility to save energy and water simply through reusing your towel during your stay.

Changing a towel every day:
• increases water, sewer, energy, and labour costs—by 17 percent, according to the British Hotel and Lodging Association
• causes high risk to sea animals and fish health
• has consequences on human health
• increases the carbon emissions
• leads to harmful effects on climate change.
• affects ecosystems, agriculture and in turn even human survival.

In brief, changing a towel every day increases the adverse impact on the environment which poses threats to self, other humans and the bio-sphere.

--------------------------------------------- Section 3.3—PN absent+ Pri-sc present condition ---------------------
--------------------------------------------Section 3.3.1—Pri-sc present------------------------------------------------

4. The below test is a warm up section to make sure you can fully focused for the upcoming scenario task. This section is a sentence construction task.
Instructions: for each set of words below, make a grammatical sentence and type it down:

For example:

flew eagle the around
<u>The eagle flew around.</u>

9. like understand I to myself
10. am playing I the piano
11. my from mistakes I learn
12. important me food is to
13. to reading me important is
14. figure I myself should out
15. sky the turns grey to
16. shoes the have repaired been
--------------------------------------------Section 3.3.2—control message scenario -------------------------------

Video watching: https://youtu.be/IVye1ho5vLU

**5.** Imagine that you just checked into a hotel **for 3 days** and that you are **staying alone**. Also you did not bring your own towels as the hotel offers **clean** towels. Those towels are all cleaned professionally, with high temperature sterilization (75-80 ℃ wash temperature, 80-90 ℃ drying temperature and 150-180 ℃ ironing temperature), chemical sterilization and Ozone sterilization. You found the following same message-card in the bath room, on the desk and bedside table, and you read it carefully when you are free:



Help save the environment
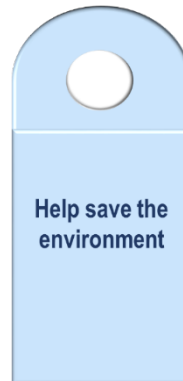
--------------------------------------------Section 3.4—PN present+ Pri-sc present condition --------------------

----------------------------------------------------Section 3.4.1—Pri-sc absent -------------------------------------

4. The below test is a warm up section to make sure you can fully focused for the upcoming scenario task. This section is a sentence construction task.

Instructions: for each set of words below, make a grammatical sentence and type it down:

For example:
flew eagle the around

The eagle flew around.

1. like understand I to myself
2. am playing I the piano
3. my from mistakes I learn
4. important me food is to
5. to reading me important is
6. figure I myself should out
7. sky the turns grey to
8. shoes the have repaired been

-------------------------------------------------------Section 3.4.2—PN scenario --------------------------------------

Video watching: https://youtu.be/PHHY4IiUtlo

**5.** Imagine that you just checked into a hotel **for 3 days** and that you are **staying alone**. Also you did not bring your own towels as the hotel offers **clean** towels. Those towels are all cleaned professionally, with high temperature sterilization (75-80 ℃ wash temperature, 80-90 ℃ drying temperature and 150-180 ℃ ironing temperature), chemical sterilization and Ozone sterilization. You found the following same message-card in the bath room, on the desk and bedside table, and you read it carefully when you are free:



We take our responsibility seriously to save the environment through a series of activities (e.g., energy star air-conditions).

You can take your part of responsibility to save energy and water simply through reusing your towel during your stay.

Changing a towel every day:
- increases water, sewer, energy, and labour costs—by 17 percent, according to the British Hotel and Lodging Association
- causes high risk to sea animals and fish health
- has consequences on human health
- increases the carbon emissions
- leads to harmful effects on climate change.
- affects ecosystems, agriculture and in turn even human survival.

In brief, changing a towel every day increases the adverse impact on the environment which poses threats to self, other humans and the bio-sphere.

--------------------------------------------------    ---Section 4—Dependent and mediators questions-------------------

**6. Please indicate your level of agreement or disagreement with the following statement, from extremely unlikely (1) to extremely likely (7)**

- How likely or unlikely is it that you will reuse the hotel towel for all 3 days?

-------------------------------------------- Mediator 1: Self-concept clarity --------------------------------------------

**7. Please indicate your level of agreement or disagreement with the following statements, from strongly disagree (1) to strongly agree (7)**
- My beliefs about myself often conflict with one another.
- On one day I might have one opinion of myself and on another day I might have a different opinion.
- I spend a lot of time wondering about what kind of person I really am.
- Sometimes I feel that I am not really the person that I appear to be.
- When I think about the kind of person I have been in the past, I'm not sure what I was really like.
- I seldom experience conflict between the different aspects of my personality.
- Sometimes I think I know other people better than I know myself.
- My beliefs about myself seem to change very frequently.
- If I were asked to describe my personality, my description might end up being different from one day to another day.
- Even if I wanted to, I don't think I could tell someone what I'm really like.
- In general, I have a clear sense of who I am and what I am.
- It is often hard for me to make up my mind about things because I don't really know what I want.

-------------------------------------------- Mediator 2: Green preference --------------------------------------------

**8. Please indicate your level of agreement or disagreement with the following statements, from strongly disagree (1) to strongly agree (7)**
- It is important to me that the products I use do not harm the environment
- I consider the potential environmental impact of my actions when making many of my decisions
- My purchase habits are affected by my concern for our environment
- I am concerned about wasting the resources of our planet
- I would describe myself as environmentally responsible
- I am willing to be inconvenienced in order to take actions that are more environmentally friendly

-----------------------------------------------------Section 5—Manipulation check-----------------------------------
-----------------------------------------------------Section 5.1 Personal norms scales-----------------------------------

**9. Please indicate your level of agreement or disagreement with the following statements, from Strongly disagree (1)-Strongly agree (7)**
- I feel an obligation to make greener choice to save energy and water by choosing to reuse the hotel towels in the hotel
- I feel that I should protect the environment by saving energy and water by choosing to reuse the hotel towels in the hotel
- I feel it is important that people in general protect the environment by making greener choice to save energy and water
- Regardless of what other people do, because of my own values /principles, I feel that I should make greener choice to save energy and water by choosing to reuse the hotel towels in the hotel

-------------------------------------------------------ATTENTION CHECK-----------------------------------------------

Please indicate the extent to which you agree or disagree with the following statement

This is an attention check

Click on the third option from the left

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

---------------------------------------------------Section 6—Control variables---------------------------------------

-------------------------------------------Section 6.1—descriptive norms and injunctive norms-----------------

**10. To what extent, from 1: Not at all to 7: Very much, would you say that…**

- …most guests take their responsibility to protect the environment by reusing hotel towels while staying at a hotel?

- …people who are important to you (e.g., family and friends) take their responsibility to protect the environment by reusing hotel towels while staying at a hotel?

- … people whose opinions you value take their responsibility to protect the environment by reusing hotel towels while staying at a hotel?

**11. To what extent, from 1: Not at all to 7: Very much, would you say that…**

- …typical hotel guests approve of those who take the responsibility to protect the environment by reusing hotel towels while staying at a hotel?
- … people who are important to you (e.g., family and friends) approve of those who take the responsibility to protect the environment by reusing hotel towels while staying at a hotel?
- … people whose opinions you value approve of those who take the responsibility to protect the environment by reusing hotel towels while staying at a hotel?

-------------------------------------Section 6.2—general green consumption behaviour-------------------------

**12. How frequently or infrequently you have performed each of behaviour on the following 4-point scale: never (1), sometimes (2), often (3), always (4)**

- Switch off lights whenever leaving a room
- Use lower temperature washes in the washing machine
- Give or receive 'hand-me-down'
- Reading documents on screen rather than printing them out
- Buy low-energy light bulbs
- Take part in a recycling program
- Buying products containing recycled materials
- Use paper recycling bins next to photocopier
- Printing or photocopying double sided
- Buying organic food or clothing made from organic materials
- Buying 'green' cleaning products
- Walk or ride a bicycle rather than drive
- Add insulation or double glazing to house or windows
- Boycotting companies due to human rights or environmental issues
- Composting
- Use public transportation rather than drive a car
- Car sharing
- Investing in socially responsible companies

---------------------------------------------Section 7—Demographics-------------------------------------------

13. What is your age (in years)?

_____

14. To which gender identity do you most identify?

Male (   ), Female (   ), Other (_____), Prefer not to say (    )


15.  What is the highest level of school you have completed or the highest degree you have?

Primary school (          )

GCSEs or equivalent (         )

A-levels or equivalent (          )

University undergraduate programme (          )

University post-graduate programme (          )

Doctoral degree (          )

14. To which gender identity do you most identify?

**APPENDIX 14: STUDY 3A-MAINTEST-SCALE RELIABILITY TEST**

| | Cronbach's Alpha | Cronbach's Alpha Based on Standardised Items | N of Items |
|---|---|---|---|
| 11. Green preference scale | .924 | .924 | 6 |
| 12. Personal norms scale | .925 | .925 | 4 |
| 13. Injunctive norms scale | .819 | .819 | 3 |
| 14. Descriptive norms scale | .809 | .811 | 3 |
| 15. Green consumption behaviour scale | .729 | .738 | 18 |
| 16. Self-concept clarity | .924 | .924 | 12 |

**APPENDIX 14: STUDY 3A-MAINTEST-SCALE RELIABILITY TEST**

**Descriptives**

| | | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound | | |
| Personal norms | PN absent | 125 | 5.1800 | 1.21466 | .10864 | 4.9650 | 5.3950 | 1.25 | 7.00 |
| | PN present | 124 | 5.5867 | 1.23633 | .11103 | 5.3669 | 5.8065 | 1.75 | 7.00 |
| | Total | 249 | 5.3825 | 1.23988 | .07857 | 5.2278 | 5.5373 | 1.25 | 7.00 |
| Descriptive norms | PN absent | 125 | 4.3333 | 1.07929 | .09653 | 4.1423 | 4.5244 | 2.00 | 7.00 |
| | PN present | 124 | 4.5000 | 1.10063 | .09884 | 4.3044 | 4.6957 | 1.00 | 7.00 |
| | Total | 249 | 4.4163 | 1.09097 | .06914 | 4.2802 | 4.5525 | 1.00 | 7.00 |
| Injunctive norms | PN absent | 125 | 4.8933 | 1.07146 | .09583 | 4.7037 | 5.0830 | 2.67 | 7.00 |
| | PN present | 124 | 4.8629 | 1.10022 | .09880 | 4.6673 | 5.0584 | 2.00 | 6.67 |
| | Total | 249 | 4.8782 | 1.08379 | .06868 | 4.7429 | 5.0134 | 2.00 | 7.00 |
| Green Consumption behaviour | PN absent | 125 | 2.6804 | .36571 | .03271 | 2.6157 | 2.7452 | 1.67 | 3.94 |
| | PN present | 124 | 2.7119 | .36372 | .03266 | 2.6472 | 2.7765 | 1.72 | 3.56 |
| | Total | 249 | 2.6961 | .36432 | .02309 | 2.6506 | 2.7416 | 1.67 | 3.94 |
| Do you ever choose to reuse the hotel-towel more than one day while staying in a hotel for several days? | PN absent | 125 | .78 | .413 | .037 | .71 | .86 | 0 | 1 |
| | PN present | 124 | .85 | .362 | .032 | .78 | .91 | 0 | 1 |
| | Total | 249 | .82 | .389 | .025 | .77 | .86 | 0 | 1 |

**ANOVA**

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Personal norms | Between Groups | 10.296 | 1 | 10.296 | 6.856 | .009 |
| | Within Groups | 370.956 | 247 | 1.502 | | |
| | Total | 381.252 | 248 | | | |
| Descriptive norms | Between Groups | 1.730 | 1 | 1.730 | 1.456 | .229 |
| | Within Groups | 293.446 | 247 | 1.188 | | |
| | Total | 295.175 | 248 | | | |
| Injunctive norms | Between Groups | .058 | 1 | .058 | .049 | .825 |
| | Within Groups | 291.244 | 247 | 1.179 | | |
| | Total | 291.302 | 248 | | | |
| Green Consumption behaviour | Between Groups | .062 | 1 | .062 | .462 | .497 |
| | Within Groups | 32.856 | 247 | .133 | | |
| | Total | 32.918 | 248 | | | |
| Do you ever choose to reuse the hotel-towel more than one day while staying in a hotel for several days? | Between Groups | .245 | 1 | .245 | 1.626 | .203 |
| | Within Groups | 37.257 | 247 | .151 | | |
| | Total | 37.502 | 248 | | | |

# Chapter 11: Appendices

## APPENDIX 16: STUDY 3A-MODEL 7. OUTPUT

```
Run MATRIX procedure:

**************** PROCESS Procedure for SPSS Version 3.4.1 ****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2018). www.guilford.com/p/hayes3

*************************************************************************
Model  : 7
    Y  : DV
    X  : PNcond
    M  : GreenP
    W  : PRIScond

Sample
Size:  249

*************************************************************************
OUTCOME VARIABLE:
 GreenP

Model Summary
          R        R-sq        MSE          F        df1        df2          p
      .1758       .0309     1.1404     2.6051     3.0000   245.0000      .0524

Model
              coeff         se          t          p       LLCI       ULCI
constant     4.6583      .1379    33.7896      .0000     4.4307     4.8860
PNcond        .4263      .1926     2.2129      .0278      .1082      .7443
PRIScond      .0058      .1912      .0302      .9760     -.3099      .3214
Int_1        -.4620      .2708    -1.7057      .0893     -.9091     -.0148

Product terms key:
 Int_1    :      PNcond    x       PRIScond

Test(s) of highest order unconditional interaction(s):
        R2-chng          F        df1        df2          p
X*W       .0115     2.9096     1.0000   245.0000      .0893
----------
   Focal predict: PNcond    (X)
         Mod var: PRIScond (W)

Conditional effects of the focal predictor at values of the moderator(s):

  PRIScond      Effect         se          t          p       LLCI       ULCI
     .0000       .4263      .1926     2.2129      .0278      .1082      .7443
    1.0000      -.0357      .1904     -.1875      .8514     -.3500      .2786

*************************************************************************
OUTCOME VARIABLE:
 DV

Model Summary
          R        R-sq        MSE          F        df1        df2          p
      .3966       .1573     2.4628    22.9527     2.0000   246.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.7508      .4549     6.0475      .0000     1.9998     3.5019
PNcond        .8270      .1998     4.1400      .0000      .4972     1.1568
GreenP        .4602      .0928     4.9579      .0000      .3069      .6135

***************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .8270      .1998     4.1400      .0000      .4972     1.1568

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 PNcond     ->    GreenP     ->    DV

  PRIScond      Effect     BootSE    BootLLCI   BootULCI
     .0000       .1962      .0927      .0614      .3646
    1.0000      -.0164      .0979     -.1895      .1318

Index of moderated mediation (difference between conditional indirect effects):
            Index     BootSE   BootLLCI   BootULCI
PRIScond   -.2126      .1424     -.4746     -.0116
---

********************* ANALYSIS NOTES AND ERRORS *********************

Level of confidence for all confidence intervals in output:
  90.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  10000

------ END MATRIX -----
```

## APPENDIX 17: STUDY 3A-MODEL 85. OUTPUT

```
Run MATRIX procedure:

**************** PROCESS Procedure for SPSS Version 3.4.1 ****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
     Documentation available in Hayes (2018). www.guilford.com/p/hayes3

*************************************************************************
Model  : 85
    Y  : DV
    X  : PNcond
   M1  : SCC
   M2  : GreenP
    W  : PRIScond

Sample
Size:  249

*************************************************************************
OUTCOME VARIABLE:
 SCC

Model Summary
          R        R-sq        MSE          F        df1        df2          p
      .1410       .0199     1.4016     1.6559     3.0000   245.0000      .1772

Model
              coeff         se          t          p       LLCI       ULCI
constant     4.0583      .1528    26.5531      .0000     3.8060     4.3107
PNcond        .1956      .2136      .9161      .3605     -.1570      .5482
PRIScond      .1660      .2119      .7833      .4342     -.1839      .5160
Int_1         .1101      .3002      .3666      .7143     -.3857      .6058

Product terms key:
 Int_1    :        PNcond    x        PRIScond

Test(s) of highest order unconditional interaction(s):
      R2-chng          F        df1        df2          p
X*W      .0005      .1344     1.0000   245.0000      .7143

*************************************************************************
OUTCOME VARIABLE:
 GreenP

Model Summary
          R        R-sq        MSE          F        df1        df2          p
      .1885       .0355     1.1396     2.2477     4.0000   244.0000      .0646

Model
              coeff         se          t          p       LLCI       ULCI
constant     4.4054      .2714    16.2329      .0000     3.9573     4.8535
PNcond        .4141      .1929     2.1466      .0328      .0956      .7326
SCC           .0623      .0576     1.0818      .2804     -.0328      .1574
PRIScond     -.0046      .1914     -.0239      .9809     -.3205      .3114
Int_1        -.4688      .2708    -1.7312      .0847     -.9159     -.0217

Product terms key:
 Int_1    :        PNcond    x        PRIScond

Test(s) of highest order unconditional interaction(s):
      R2-chng          F        df1        df2          p
X*W      .0118     2.9970     1.0000   244.0000      .0847
----------
    Focal predict: PNcond   (X)
         Mod var: PRIScond (W)

Conditional effects of the focal predictor at values of the moderator(s):

   PRIScond     Effect         se          t          p       LLCI       ULCI
      .0000      .4141      .1929     2.1466      .0328      .0956      .7326
     1.0000     -.0547      .1911     -.2864      .7748     -.3703      .2608

*************************************************************************
OUTCOME VARIABLE:
 DV

Model Summary
          R        R-sq        MSE          F        df1        df2          p
      .4417       .1951     2.3813    11.7775     5.0000   243.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.9791      .5658     5.2654      .0000     2.0449     3.9133
PNcond       1.3008      .2815     4.6214      .0000      .8360     1.7655
SCC          -.1611      .0835    -1.9304      .0547     -.2990     -.0233
```

```
GreenP         .4669      .0925     5.0448      .0000      .3141      .6197
PRIScond       .7856      .2766     2.8400      .0049      .3289     1.2423
Int_1         -.8406      .3939    -2.1344      .0338    -1.4910     -.1903

Product terms key:
 Int_1    :         PNcond    x         PRIScond

Test(s) of highest order unconditional interaction(s):
      R2-chng          F         df1        df2          p
X*W       .0151     4.5555     1.0000   243.0000      .0338
----------
    Focal predict: PNcond    (X)
         Mod var: PRIScond (W)

Conditional effects of the focal predictor at values of the moderator(s):

   PRIScond      Effect         se          t          p        LLCI       ULCI
      .0000     1.3008      .2815     4.6214      .0000      .8360     1.7655
     1.0000      .4601      .2763     1.6652      .0972      .0039      .9164

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y ******************

Conditional direct effect(s) of X on Y:
   PRIScond      Effect         se          t          p        LLCI       ULCI
      .0000     1.3008      .2815     4.6214      .0000      .8360     1.7655
     1.0000      .4601      .2763     1.6652      .0972      .0039      .9164

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 PNcond      ->     SCC         ->     DV

   PRIScond      Effect      BootSE    BootLLCI    BootULCI
      .0000     -.0315      .0418      -.1135      .0196
     1.0000     -.0493      .0447      -.1302      .0105

Index of moderated mediation (difference between conditional indirect effects):
            Index      BootSE    BootLLCI    BootULCI
PRIScond    -.0177      .0533      -.1037      .0725
---

INDIRECT EFFECT:
 PNcond      ->    GreenP       ->     DV

   PRIScond      Effect      BootSE    BootLLCI    BootULCI
      .0000      .1933      .0912       .0582      .3524
     1.0000     -.0256      .1022      -.2065      .1286

Index of moderated mediation (difference between conditional indirect effects):
            Index      BootSE    BootLLCI    BootULCI
PRIScond    -.2189      .1428      -.4760     -.0124
---

INDIRECT EFFECT:
 PNcond      ->     SCC         ->    GreenP       ->     DV

   PRIScond      Effect      BootSE    BootLLCI    BootULCI
      .0000      .0057      .0108      -.0051      .0275
     1.0000      .0089      .0128      -.0064      .0344

Index of moderated mediation (difference between conditional indirect effects):
            Index      BootSE    BootLLCI    BootULCI
PRIScond     .0032      .0125      -.0160      .0242
---

********************* ANALYSIS NOTES AND ERRORS *********************

Level of confidence for all confidence intervals in output:
  90.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  10000

------ END MATRIX -----
```

# Chapter 11: Appendices

**APPENDIX 18: STUDY 3B-QUESTIONNAIRE**

# Study 3b

-------------------------------------------------Introduction----------------------------------

Before you start, please switch-off your phone/email/music/ so that you can focus on this study.

This survey contains a video watching section, please ensure you have equipment that can let you hear the sound.

Thanks!


---------------------------------------------------Page Break-------------------------------------------


Dear participant,

You are being invited to participate in a research study conducted by Yuanyuan Zhou from the University of Strathclyde.

The purpose of this research study is about green consumer behaviour and will take you approximately 10 minutes to complete. You are kindly requested to answer all questions. However, your participation is entirely voluntary and you are free to withdraw from the project at any time, up to the point of completion, without having to give a reason.

We believe there are no known risks associated with this research study. Your participation in this study will remain confidential, and only anonymised data will be published, thus no information that identifies you will be made publicly available.

If you have any questions regarding the survey or study in general, please do not hesitate to contact me via email.

Best regards,
Yuanyuan Zhou
PhD student
Department of Marketing
University of Strathclyde

E-mail: **yuanyuan.zhou.100@strath.ac.uk**

**To complete your electronic consent, please click on the "agree" button below to indicate that you:**
- have read and understood the above information
- are 18 years old or above
- consent to being a participant in this study

Agree ⭘     Disagree ⭘


-------------------------------------Section 1-Screening out questions----------------------------------

1. Have you ever stayed in a hotel?

Yes ( )      No ( )

2. When travelling, how frequently do you use hotel towels while staying at a hotel?

   (4) always, (2) often, (3)sometimes, (4)never

-----------------------------------Section 2—Past hotel towel reuse behaviour----------------

3. Do you ever choose to reuse the hotel-towel more than one day while staying in a hotel for several days?

 Yes ( )    No ( )

-------------------------------------------ATTENTION CHECK-------------------------------------------

Please indicate the extent to which you agree or disagree with the following statement

This is an attention check

Click on the second option from the right

1          2              3              4            5              6              7

-----------------Section 3—Treatments (one participant only receives one treatment) ----------------

-----------------Section 3.1—DN presnet+ public self-consciousness absent condition --------------

--------------------------------------------Section 3.1.1—DN condition ----------------------------------------

Video watching in the Survey https://youtu.be/7N7tdFfVndk

**4.** Imagine that you just checked into a hotel **for 3 days** and that you are **staying alone**. Also you did not bring your own towels as the hotel offers **clean** towels. Those towels are all cleaned professionally, with high temperature sterilization (75-80 ℃ wash temperature, 80-90 ℃ drying temperature and 150-180 ℃ ironing temperature), chemical sterilization and Ozone sterilization. You found the following same message-card in the bath room, on the desk and bedside table, and you read it carefully when you are free:

> In a study conducted in Autumn 2019, about 88% of guests participated in the towel reuse programme by reusing hotel towels during their stay to take responsibility for protecting the environment by saving energy and water.

--------------------------------------------Section 3.1.2—priming Pub-SC absent ----------------------------------

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5. Please select, from 1 to 7, which of the following options best reflects your view about the video you watched…

|  | 1 2 3 4 5 6 7 |  |
|---|---|---|
| Easy understand | ○ ○ ○ ○ ○ ○ ○ | Difficult understand |
| Ran smoothly | ○ ○ ○ ○ ○ ○ ○ | Run lagging |
| Well structured | ○ ○ ○ ○ ○ ○ ○ | Poor structured |
| Too long | ○ ○ ○ ○ ○ ○ ○ | Too short |
| Good design | ○ ○ ○ ○ ○ ○ ○ | Bad design |

-------------------Section 3.2— DN present+public self-consciousness present condition -----------

----------------------------------------------Section 3.2.1—DN condition ----------------------------------------------

Video watching in the Survey https://youtu.be/7N7tdFfVndk

4. Imagine that you just checked into a hotel **for 3 days** and that you are **staying alone**. Also you did not bring your own towels as the hotel offers **clean** towels. Those towels are all cleaned professionally, with high temperature sterilization (75-80 ºC wash temperature, 80-90 ºC drying temperature and 150-180 ºC ironing temperature), chemical sterilization and Ozone sterilization. You found the following same message-card in the bath room, on the desk and bedside table, and you read it carefully when you are free:



In a study conducted in Autumn 2019, about **88%** of guests participated in the towel reuse programme by reusing hotel towels during their stay to take responsibility for protecting the environment by saving energy and water.

----------------------------------------------Section 3.2.2—Priming Pub-SC-----------------------------

5.1 Please select, from 1 to 7, which of the following options best reflects your view: "if I **choose not to participate** during my stay in the hotel towel reuse programme, the hotel staff and other guests will think about me as..."

|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  |
|---|---|---|---|---|---|---|---|---|
| Good guest | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Bad guest |
| Cooperative | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Non-cooperative |
| Helpful | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Unhelpful |
| Thoughtful | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Mindless |
| Conscientious | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Unconscientious |

5.2 Please select, from 1 to 7, which of the following options best reflects your view: "if I **choose to participate** during my stay in the hotel towel reuse programme, the hotel staff and -------------------

|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  |
|---|---|---|---|---|---|---|---|---|
| Good guest | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Bad guest |
| Cooperative | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Non-cooperative |
| Helpful | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Unhelpful |
| Thoughtful | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Mindless |
| Conscientious | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Unconscientious |

-------------------Section 3.3—IN present+ public self-consciousness absent condition -------------

---------------------------------------Section 3.3.1—IN condition ---------------------------------------------

Video watching in the Survey https://youtu.be/yzZVtOaY_Es

**4.** Imagine that you just checked into a hotel **for 3 days** and that you are **staying alone**. Also you did not bring your own towels as the hotel offers **clean** towels. Those towels are all cleaned professionally, with high temperature sterilization (75-80 ℃ wash temperature, 80-90 ℃ drying temperature and 150-180 ℃ ironing temperature), chemical sterilization and Ozone sterilization. You found the following same message-card in the bath room, on the desk and bedside table, and you read it carefully when you are free:

In a study conducted in Autumn 2019, about **88%** of guests have expressed to us their approval of people's reusing hotel towels. Because they think it is a worthwhile way to take responsibility for protecting the environment by saving energy and water.

Please reuse hotel towels during your stay to take your responsibility for protecting the environment.

-------------------------------------------Section 3.3.2—priming Pub-SC absent ----------------------------------

5. Please select, from 1 to 7, which of the following options best reflects your view about the video you watched…

| | 1 2 3 4 5 6 7 | |
|---|---|---|
| Easy understand | ○ ○ ○ ○ ○ ○ ○ | Difficult understand |
| Ran smoothly | ○ ○ ○ ○ ○ ○ ○ | Run lagging |
| Well structured | ○ ○ ○ ○ ○ ○ ○ | Poor structured |
| Too long | ○ ○ ○ ○ ○ ○ ○ | Too short |
| Good design | ○ ○ ○ ○ ○ ○ ○ | Bad design |

--------------------Section 3.4—IN present+ Public self-consciousness present condition ------------

---------------------------------------------Section 3.4.1—IN condition -----------------------------------------

Video watching in the Survey https://youtu.be/yzZVtOaY_Es

**4.** Imagine that you just checked into a hotel **for 3 days** and that you are **staying alone**. Also you did not bring your own towels as the hotel offers **clean** towels. Those towels are all cleaned professionally, with high temperature sterilization (75-80 ℃ wash temperature, 80-90 ℃ drying temperature and 150-180 ℃ ironing temperature), chemical sterilization and Ozone sterilization. You found the following same message-card in the bath room, on the desk and bedside table, and you read it carefully when you are free:

In a study conducted in Autumn 2019, about **88%** of guests have expressed to us their approval of people's reusing hotel towels. Because they think it is a worthwhile way to take responsibility for protecting the environment by saving energy and water.

Please reuse hotel towels during your stay to take your responsibility for protecting the environment.

-------------------------------------------Section 3.4.2—Priming Pub-SC-----------------------------

5.1 Please select, from 1 to 7, which of the following options best reflects your view: "if I **choose not to participate** during my stay in the hotel towel reuse programme, the hotel staff and other guests will think about me as..."

|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  |
|---|---|---|---|---|---|---|---|---|
| Good guest | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Bad guest |
| Cooperative | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Non-cooperative |
| Helpful | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Unhelpful |
| Thoughtful | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Mindless |
| Conscientious | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Unconscientious |

5.2 Please select, from 1 to 7, which of the following options best reflects your view: "if I **choose to participate** during my stay in the hotel towel reuse programme, the hotel staff and ---------------Section -

|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  |
|---|---|---|---|---|---|---|---|---|
| Good guest | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Bad guest |
| Cooperative | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Non-cooperative |
| Helpful | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Unhelpful |
| Thoughtful | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Mindless |
| Conscientious | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Unconscientious |

-----------Section 3.5—control (DN/IN absent)+public self-consciousness absent condition------

---------------------------------------------Section 3.5.1—control condition ----------------------------------------

Video watching in the Survey https://youtu.be/IVye1ho5vLU

**4.** Imagine that you just checked into a hotel **for 3 days** and that you are **staying alone**. Also you did not bring your own towels as the towels are all cleaned professionally, (75-80 $^{o}$C wash temperature, 80-90 $^{o}$C ironing temperature), chemical You found the following same the desk and bedside table, and you

Help save the environment
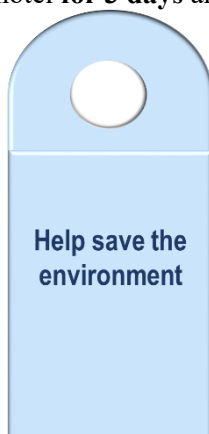
hotel offers **clean** towels. Those with high temperature sterilization drying temperature and 150-180 $^{o}$C sterilization and Ozone sterilization. message-card in the bath room, on read it carefully when you are free:

---------------------------------------------Section 3.5.2—priming Pub-SC absent ----------------------

5. Please select, from 1 to 7, which of the following options best reflects your view about the video you watched…

|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  |
|---|---|---|---|---|---|---|---|---|
| Easy understand | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Difficult understand |
| Ran smoothly | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Run lagging |
| Well structured | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Poor structured |
| Too long | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Too short |
| Good design | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Bad design |

# Chapter 11: Appendices

Video watching in the Survey https://youtu.be/IVye1ho5vLU

**4.** Imagine that you just checked into a hotel **for 3 days** and that you are **staying alone**. Also you did not bring your own towels as the hotel offers **clean** towels. Those towels are all cleaned professionally, with high temperature sterilization (75-80 ℃ wash temperature, 80-90 ℃ drying temperature and 150-180 ℃ ironing temperature), chemical sterilization and Ozone sterilization. You found the following same message-card in the bath room, on the desk and bedside table, and you read it carefully when you are

Help save the
environment

-------------------------------------------Section 3.6.2—Priming Pub-SC-----------------------------

5.1 Please select, from 1 to 7, which of the following options best reflects your view: "if I **choose not to participate** during my stay in the hotel towel reuse programme, the hotel staff and other guests will think about me as..."

|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  |
|---|---|---|---|---|---|---|---|---|
| Good guest | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Bad guest |
| Cooperative | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Non-cooperative |
| Helpful | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Unhelpful |
| Thoughtful | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Mindless |
| Conscientious | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Unconscientious |

5.2 Please select, from 1 to 7, which of the following options best reflects your view: "if I **choose to participate** during my stay in the hotel towel reuse programme, the hotel staff and other guests will think about me as..."

| | 1 2 3 4 5 6 7 | |
|---|---|---|
| Good guest | ○ ○ ○ ○ ○ ○ ○ | Bad guest |
| Cooperative | ○ ○ ○ ○ ○ ○ ○ | Non-cooperative |
| Helpful | ○ ○ ○ ○ ○ ○ ○ | Unhelpful |
| Thoughtful | ○ ○ ○ ○ ○ ○ ○ | Mindless |
| Conscientious | ○ ○ ○ ○ ○ ○ ○ | Unconscientious |

--------------------------------------Section 4—Dependent and mediator questions----------------

6. Please indicate your level of agreement or disagreement with the following statement, from extremely unlikely (1) to extremely likely (7)

- How likely or unlikely is it that you will reuse the hotel towel for all 3 days?

--------------------------------------------- Mediator 1: Self-concept clarity -------------------------------

7. Please indicate your level of agreement or disagreement with the following statements, from strongly disagree (1) to strongly agree (7)

- My beliefs about myself often conflict with one another.
- On one day I might have one opinion of myself and on another day I might have a different opinion.
- I spend a lot of time wondering about what kind of person I really am.
- Sometimes I feel that I am not really the person that I appear to be.
- When I think about the kind of person I have been in the past, I'm not sure what I was really like.
- I seldom experience conflict between the different aspects of my personality.
- Sometimes I think I know other people better than I know myself.
- My beliefs about myself seem to change very frequently.
- If I were asked to describe my personality, my description might end up being different from one day to another day.
- Even if I wanted to, I don't think I could tell someone what I'm really like.

- In general, I have a clear sense of who I am and what I am.

- It is often hard for me to make up my mind about things because I don't really know what I want.

------------------------------------------- Mediator 2: Green preference ------------------------------

**8. Please indicate your level of agreement or disagreement with the following statements, from strongly disagree (1) to strongly agree (7)**

- It is important to me that the products I use do not harm the environment

- I consider the potential environmental impact of my actions when making many of my decisions

- My purchase habits are affected by my concern for our environment

- I am concerned about wasting the resources of our planet

- I would describe myself as environmentally responsible

- I am willing to be inconvenienced in order to take actions that are more environmentally friendly

----------------------------------------------------Section 5—Manipulation check------------------------

----------------------------------------------- Manipulation check of DN and IN----------------------

**9. To what extent, from 1: Not at all to 7: Very much, would you say that…**

- …most guests take their responsibility to protect the environment by reusing hotel towels while staying at a hotel?

- …people who are important to you (e.g., family and friends) take their responsibility to protect the environment by reusing hotel towels while staying at a hotel?

- … people whose opinions you value take their responsibility to protect the environment by reusing hotel towels while staying at a hotel?

**10. To what extent, from 1: Not at all to 7: Very much, would you say that…**

- …typical hotel guests approve of those who take the responsibility to protect the environment by reusing hotel towels while staying at a hotel?

- … people who are important to you (e.g., family and friends) approve of those who take the responsibility to protect the environment by reusing hotel towels while staying at a hotel?

- … people whose opinions you value approve of those who take the responsibility to protect the environment by reusing hotel towels while staying at a hotel?

-----------------------------------------------------ATTENTION CHECK--------------------------------

Please indicate the extent to which you agree or disagree with the following statement

This is an attention check

Click on the third option from the left

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

---------------------------------------------------Section 6—Control variables----------------------------

----------------------------------------------Section 6.1—personal norms----------------------------------

**11. Please indicate your level of agreement or disagreement with the following statements, from Strongly disagree (1)-Strongly agree (7)**

- I feel an obligation to make greener choice to save energy and water by choosing to reuse the hotel towels in the hotel
- I feel that I should protect the environment by saving energy and water by choosing to reuse the hotel towels in the hotel
- I feel it is important that people in general protect the environment by making greener choice to save energy and water
- Regardless of what other people do, because of my own values /principles, I feel that I should make greener choice to save energy and water by choosing to reuse the hotel towels in the hotel

--------------------------------Section 6.2—general green consumption behaviour-------------------

**12. How frequently or infrequently you have performed each of behaviour on the following 4-point scale: never (1), sometimes (2), often (3), always (4)**

- Switch off lights whenever leaving a room
- Use lower temperature washes in the washing machine
- Give or receive 'hand-me-down'
- Reading documents on screen rather than printing them out
- Buy low-energy light bulbs
- Take part in a recycling program
- Buying products containing recycled materials
- Use paper recycling bins next to photocopier
- Printing or photocopying double sided
- Buying organic food or clothing made from organic materials
- Buying 'green' cleaning products
- Walk or ride a bicycle rather than drive
- Add insulation or double glazing to house or windows
- Boycotting companies due to human rights or environmental issues
- Composting
- Use public transportation rather than drive a car
- Car sharing

- Investing in socially responsible companies

-----------------------------------------------Section 7—Demographics-------------------------------

13. What is your age (in years)?

_____

14. To which gender identity do you most identify?

Male (   ), Female (   ), Other (        ), Prefer not to say (     )


15.  What is the highest level of school you have completed or the highest degree you have?

Primary school (          )

GCSEs or equivalent (         )

A-levels or equivalent (         )

University undergraduate programme (         )

University post-graduate programme (        )

Doctoral degree (         )

**APPENDIX 19: STUDY 3B-MAINTEST-SCALE RELIABILITY TEST**

|  | Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|---|
| Personal norms scale | .936 | .937 | 4 |
| Injunctive norms scale | .880 | .880 | 3 |
| Descriptive norms scale | .843 | .849 | 3 |
| Green consumption behaviour scale | .832 | .837 | 18 |
| Self-concept clarity | .925 | .925 | 12 |

**APPENDIX 19: STUDY 3B-MAINTEST-SCALE RELIABILITY TEST**

# Chapter 11: Appendices

## APPENDIX 20: STUDY 3B-MODEL 1. OUTPUT FOR DESCRIPTIVE NORMS

```
Run MATRIX procedure:

**************** PROCESS Procedure for SPSS Version 3.4.1 ***************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2018). www.guilford.com/p/hayes3

*************************************************************************
Model  : 1
    Y  : DV
    X  : DNconds
    W  : PubScond

Sample
Size:  320

*************************************************************************
OUTCOME VARIABLE:
 DV

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .2320      .0538     3.5248     5.9894     3.0000   316.0000      .0006

Model
             coeff         se          t          p       LLCI       ULCI
constant    4.3500      .2099    20.7237      .0000     4.0037     4.6963
DNconds     1.1250      .2969     3.7898      .0002      .6353     1.6147
PubScond    1.0000      .2969     3.3687      .0008      .5103     1.4897
Int_1      -1.2125      .4198    -2.8882      .0041    -1.9051     -.5199

Product terms key:
 Int_1    :        DNconds   x       PubScond

Test(s) of highest order unconditional interaction(s):
      R2-chng          F        df1        df2          p
X*W      .0250     8.3418     1.0000   316.0000      .0041
----------
    Focal predict: DNconds  (X)
          Mod var: PubScond (W)

Conditional effects of the focal predictor at values of the moderator(s):

   PubScond     Effect         se          t          p       LLCI       ULCI
      .0000     1.1250      .2969     3.7898      .0002      .6353     1.6147
     1.0000     -.0875      .2969     -.2948      .7684     -.5772      .4022

*********** BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS ************

OUTCOME VARIABLE:
 DV

            Coeff   BootMean     BootSE    BootLLCI    BootULCI
constant   4.3500     4.3494      .2255     3.9872      4.7215
DNconds    1.1250     1.1285      .3040      .6187      1.6249
PubScond   1.0000      .9997      .3037      .5008      1.5000
Int_1     -1.2125    -1.2112      .4142    -1.9057      -.5230

********************** ANALYSIS NOTES AND ERRORS **********************

Level of confidence for all confidence intervals in output:
  90.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

NOTE: Variables names longer than eight characters can produce incorrect output.
      Shorter variable names are recommended.

------ END MATRIX -----
```

## APPENDIX 21: STUDY 3B-MODEL 1. OUTPUT FOR INJUNCTIVE NORMS

```
Run MATRIX procedure:

**************** PROCESS Procedure for SPSS Version 3.4.1 ****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
     Documentation available in Hayes (2018). www.guilford.com/p/hayes3

*************************************************************************
Model  : 1
    Y  : DV
    X  : INconds
    W  : PubScond

Sample
Size:  321

*************************************************************************
OUTCOME VARIABLE:
 DV

Model Summary
          R        R-sq        MSE          F        df1        df2          p
      .2444       .0597     3.3101     6.7132     3.0000   317.0000       .0002

Model
              coeff         se          t          p       LLCI       ULCI
constant     4.3500      .2034    21.3852      .0000     4.0144     4.6856
INconds      1.1932      .2868     4.1607      .0000      .7201     1.6663
PubScond     1.0000      .2877     3.4762      .0006      .5254     1.4746
Int_1       -1.3432      .4062    -3.3068      .0011    -2.0133     -.6731

Product terms key:
 Int_1    :        INconds  x       PubScond

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W       .0324    10.9350     1.0000   317.0000       .0011
----------
    Focal predict: INconds  (X)
         Mod var: PubScond (W)

Conditional effects of the focal predictor at values of the moderator(s):

   PubScond     Effect         se          t          p       LLCI       ULCI
      .0000     1.1932      .2868     4.1607      .0000      .7201     1.6663
     1.0000     -.1500      .2877     -.5214      .6024     -.6246      .3246

*********** BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS ************

OUTCOME VARIABLE:
 DV

              Coeff    BootMean     BootSE    BootLLCI    BootULCI
constant     4.3500      4.3507      .2271      3.9750      4.7209
INconds      1.1932      1.1922      .2915       .7056      1.6681
PubScond     1.0000      1.0013      .3040       .4983      1.5006
Int_1       -1.3432     -1.3478      .4013     -2.0040      -.6769

********************** ANALYSIS NOTES AND ERRORS ***********************

Level of confidence for all confidence intervals in output:
  90.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

NOTE: Variables names longer than eight characters can produce incorrect output.
      Shorter variable names are recommended.

------ END MATRIX -----
```

## APPENDIX 22: STUDY 3B-MODEL 8. OUTPUT FOR DESCRIPTIVE NORMS

```
Run MATRIX procedure:

**************** PROCESS Procedure for SPSS Version 3.4.1 ***************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2018). www.guilford.com/p/hayes3

*************************************************************************
Model  : 8
    Y  : DV
    X  : DNconds
    M  : SCCmean
    W  : PubScond

Sample
Size:  320

*************************************************************************
OUTCOME VARIABLE:
 SCCmean

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .1332      .0177     1.8456     1.9023     3.0000   316.0000      .1291

Model
              coeff         se          t          p        LLCI       ULCI
constant     4.3550      .1519    28.6725      .0000     4.1044     4.6056
DNconds       .2788      .2148     1.2977      .1953     -.0756      .6331
PubScond     -.2200      .2148    -1.0242      .3065     -.5744      .1344
Int_1        -.1338      .3038     -.4403      .6600     -.6349      .3674

Product terms key:
 Int_1   :        DNconds  x        PubScond

Test(s) of highest order unconditional interaction(s):
      R2-chng          F        df1        df2          p
X*W      .0006      .1939     1.0000   316.0000      .6600

*************************************************************************
OUTCOME VARIABLE:
 DV

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .2327      .0541     3.5347     4.5083     4.0000   315.0000      .0015

Model
              coeff         se          t          p        LLCI       ULCI
constant     4.2349      .3989    10.6160      .0000     3.5768     4.8930
DNconds      1.1176      .2981     3.7497      .0002      .6259     1.6093
SCCmean       .0264      .0779      .3396      .7344     -.1020      .1549
PubScond     1.0058      .2978     3.3779      .0008      .5146     1.4970
Int_1       -1.2090      .4205    -2.8749      .0043    -1.9027     -.5152

Product terms key:
 Int_1   :        DNconds  x        PubScond

Test(s) of highest order unconditional interaction(s):
      R2-chng          F        df1        df2          p
X*W      .0248     8.2649     1.0000   315.0000      .0043
----------
    Focal predict: DNconds  (X)
          Mod var: PubScond (W)

Conditional effects of the focal predictor at values of the moderator(s):

    PubScond     Effect         se          t          p        LLCI       ULCI
      .0000     1.1176      .2981     3.7497      .0002      .6259     1.6093
     1.0000     -.0913      .2975     -.3070      .7590     -.5821      .3994

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y ****************

Conditional direct effect(s) of X on Y:
    PubScond     Effect         se          t          p        LLCI       ULCI
```

```
      .0000      1.1176      .2981      3.7497      .0002      .6259     1.6093
     1.0000      -.0913      .2975      -.3070      .7590     -.5821      .3994


Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 DNconds     ->    SCCmean      ->     DV

   PubScond     Effect     BootSE    BootLLCI    BootULCI
      .0000      .0074      .0299     -.0371       .0589
     1.0000      .0038      .0226     -.0296       .0428
```

<span style="color:red">Index of moderated mediation (difference between conditional indirect effects):</span>

```
```
<span style="color:red">            Index     BootSE    BootLLCI    BootULCI</span>
<span style="color:red">PubScond   -.0035      .0291     -.0541       .0382</span>
```
---


*********** BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS ************

OUTCOME VARIABLE:
 SCCmean

              Coeff    BootMean     BootSE    BootLLCI    BootULCI
constant     4.3550      4.3566      .1419      4.1198      4.5857
DNconds       .2788       .2773      .2085      -.0687       .6178
PubScond     -.2200      -.2233      .1956      -.5467       .0999
Int_1        -.1338      -.1312      .2978      -.6192       .3667

----------


OUTCOME VARIABLE:
 DV

              Coeff    BootMean     BootSE    BootLLCI    BootULCI
constant     4.2349      4.2387      .4193      3.5598      4.9331
DNconds      1.1176      1.1222      .3146       .6038      1.6420
SCCmean       .0264       .0258      .0856      -.1160       .1655
PubScond     1.0058      1.0049      .3062       .4887      1.4928
Int_1       -1.2090     -1.2149      .4236     -1.9046      -.5206

*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  90.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

NOTE: Variables names longer than eight characters can produce incorrect output.
      Shorter variable names are recommended.

------ END MATRIX -----
```

# Chapter 11: Appendices

## APPENDIX 23: STUDY 3B-MODEL 8. OUTPUT FOR INJUNCTIVE NORMS

```
Run MATRIX procedure:

**************** PROCESS Procedure for SPSS Version 3.4.1 ***************

          Written by Andrew F. Hayes, Ph.D.        www.afhayes.com
     Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**************************************************************************
Model  : 8
    Y  : DV
    X  : INconds
    M  : SCCmean
    W  : PubScond

Sample
Size:  321

**************************************************************************
OUTCOME VARIABLE:
 SCCmean

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .1154      .0133     1.7591     1.4258     3.0000   317.0000      .2352

Model
              coeff         se          t          p       LLCI       ULCI
constant     4.3550      .1483    29.3686      .0000     4.1104     4.5996
INconds      -.1538      .2091     -.7355      .4626     -.4986      .1911
PubScond     -.2200      .2097    -1.0491      .2949     -.5660      .1260
Int_1         .5513      .2961     1.8616      .0636      .0628     1.0398

Product terms key:
 Int_1    :         INconds  x        PubScond

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W       .0108     3.4657     1.0000   317.0000      .0636
----------
    Focal predict: INconds  (X)
          Mod var: PubScond (W)

Conditional effects of the focal predictor at values of the moderator(s):

   PubScond     Effect         se          t          p       LLCI       ULCI
      .0000     -.1538      .2091     -.7355      .4626     -.4986      .1911
     1.0000      .3975      .2097     1.8955      .0589      .0515      .7435

**************************************************************************
OUTCOME VARIABLE:
 DV

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .2451      .0601     3.3194     5.0484     4.0000   316.0000      .0006

Model
              coeff         se          t          p       LLCI       ULCI
constant     4.4616      .3929    11.3550      .0000     3.8134     5.1098
INconds      1.1893      .2874     4.1377      .0000      .7151     1.6634
SCCmean      -.0256      .0772     -.3322      .7399     -.1529      .1016
PubScond      .9944      .2886     3.4458      .0006      .5183     1.4704
Int_1       -1.3291      .4090    -3.2497      .0013    -2.0038     -.6544

Product terms key:
 Int_1    :         INconds  x        PubScond

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W       .0314    10.5607     1.0000   316.0000      .0013
----------
    Focal predict: INconds  (X)
          Mod var: PubScond (W)

Conditional effects of the focal predictor at values of the moderator(s):
```

```
    PubScond      Effect         se         t          p        LLCI        ULCI
      .0000      1.1893       .2874     4.1377      .0000       .7151      1.6634
     1.0000      -.1398       .2897     -.4826      .6297      -.6177       .3381

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Conditional direct effect(s) of X on Y:
    PubScond      Effect         se         t          p        LLCI        ULCI
      .0000      1.1893       .2874     4.1377      .0000       .7151      1.6634
     1.0000      -.1398       .2897     -.4826      .6297      -.6177       .3381


Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 INconds     ->    SCCmean     ->     DV

    PubScond      Effect     BootSE    BootLLCI    BootULCI
      .0000       .0039      .0215     -.0299       .0395
     1.0000      -.0102      .0364     -.0707       .0485

Index of moderated mediation (difference between conditional indirect effects):
             Index     BootSE    BootLLCI    BootULCI
PubScond    -.0141      .0506     -.0987       .0696
---

*********** BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS ************

OUTCOME VARIABLE:
 SCCmean

            Coeff    BootMean     BootSE    BootLLCI    BootULCI
constant    4.3550    4.3555      .1406     4.1190     4.5824
INconds     -.1538    -.1512      .2097     -.4912      .2058
PubScond    -.2200    -.2201      .1983     -.5460      .1040
Int_1        .5513     .5496      .2936      .0558     1.0407

----------

OUTCOME VARIABLE:
 DV

            Coeff    BootMean     BootSE    BootLLCI    BootULCI
constant    4.4616    4.4604      .4002     3.7910     5.1131
INconds     1.1893    1.1914      .2947      .6958     1.6763
SCCmean     -.0256    -.0253      .0809     -.1582      .1101
PubScond     .9944     .9958      .3093      .4863     1.5121
Int_1      -1.3291   -1.3293      .4087    -2.0128     -.6618

********************** ANALYSIS NOTES AND ERRORS ***********************

Level of confidence for all confidence intervals in output:
   90.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
   5000

NOTE: Variables names longer than eight characters can produce incorrect output.
      Shorter variable names are recommended.

------ END MATRIX -----
```