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THE PROMOTION OF RESILIENCE AND PREVENTION
OF DEPRESSION: IMPACT OF CLASSROOM CLIMATE

by

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degree of Doctorate in Educational Psychology

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Abstract

This study evaluated the effectiveness of the Penn Resiliency Program (PRP), which teaches children cognitive-behavioural skills. Delivered by teachers to their whole class as a universal intervention, the aim was to reduce negative explanatory style and depression symptoms whilst enhancing positive explanatory style, self-esteem and problem solving skills. Broadening the literature on school based preventive interventions the impact of classroom climate on cognitive style and depression was assessed, including whether self-talk and self-esteem acted as mediators and whether implementation integrity factors moderated the effectiveness of the PRP.

221 children from primary 6 and primary 7 classes across 5 mainstream schools were randomly allocated by school to the PRP intervention cohort and wait-list control group. Teachers delivered the intervention after children completed self-report measures to assess explanatory style, dysfunctional attitudes, self-esteem, depression symptoms and classroom climate. Parents and teachers also completed a measure to assess children's behaviour. Measures were repeated post-intervention and at 2-month follow-up.

Hierarchical multiple regression analyses found no significant intervention effects on explanatory style, dysfunctional attitudes or depression symptoms although significant intervention effects were found on teacher reported externalising behaviour and children's perceptions of classroom climate. One-way, within-subjects ANOVA did not identify significant intervention effects on depression symptoms at 2-month follow-up. Regression analyses found that a positive class climate significantly predicted lower negative self-talk, dysfunctional attitudes, depression symptoms and better peer relationships and global self-esteem. Implementation integrity did not moderate the effect on depression symptoms or class climate either post-intervention or follow-up.

Insufficient time to practice PRP skills by two-month follow-up or untested implementation factors may have affected outcomes. The impact of the PRP on class

climate, although the direction of the effect is unclear, is promising and may indicate that interventions designed to enhance classroom climate are useful tools to promote resilience and prevent symptoms of depression.

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Introduction

In Great Britain, around 10% of children aged 5-15 years show evidence of clinically significant mental health difficulties, of which 4% are emotional, i.e. anxiety or depression (Meltzer, Gatward, Goodman & Ford, 2000). Whilst the study by Meltzer et al. (2000) was based on criteria for mental disorders as defined by ICD-10 (International Classification of Diseases, 10th edition: World Health Organization, 1993) and DSM-IV (Diagnostic and Statistical Manual, 4th edition: American Psychiatric Association, 1994), the terminology, mental health difficulties, is not without debate as to what it means given the value and culturally loaded nature of the terminology (Weare, 2000). For example, a formal clinical diagnosis of depression has the potential to locate the problem as deficit based and residing within a child, without taking due cognisance of the multiple and interactional contexts which impact on a child (Carr, 1999).

Bearing in mind the above note of caution, an episode of major depression in childhood or adolescence, whilst distressing in itself, also constitutes a risk factor for affective disorder in adulthood (Dunn and Goodyer, 2006; Garber, Kriss, Koch & Lindholm, 1988), with even sub-threshold levels indicating increased risk (Lewinsohn, Solomon, Seeley & Zeiss, 2000; Maughan & Kim-Cohen, 2005). Depression in children and adolescents can be episodic and associated with many negative outcomes including academic difficulties (Nolen-Hoeksema, Girgus & Seligman, 1992), problems with both family and peer relationships (Rao, Ryan, Birmaher, Dahl, Williamson, Kaufman, Rao & Nelson, 1995), development of a substance abuse disorder (Lewinsohn et al., 2000) and increased risk for subsequent suicide attempts (Weissman, Wolk, Goldstein, Moreau, Adams, Greenwald, Klier, Ryan, Dahl & Wickramaratne, 1999).

Problems associated with depression extend also to children and young people with sub-clinical levels of depression who experience similar kinds of academic and interpersonal difficulties (Gotlib, Lewinsohn, & Seeley, 1995). Despite the potential for adverse outcomes not every depressed child or adolescent is

identified as such, with only between 20% and 50% receiving treatment before their late teens (Kessler, Avenevoli & Merikangas, 2001; Offord, Boyle, Szatmari, Rae-Grant, Links, Cadman, Byles, Crawford, Blum, Byrne, Thomas & Woodward, 1987).

Models of depression in respect of children and adolescents have traditionally been based on models developed by researchers working with adults. This is potentially problematic as the models have not always taken sufficient account of developmental differences or the transaction between protective and stressor factors pertinent to children and adolescents (Gibb & Coles, 2005). More recent developments have attempted to address this issue by locating theories of depression in a developmental psychopathology framework, such as the elaborated cognitive vulnerability-transactional stress model of depression developed by Hankin and Abramson (2001).

This useful model of depression (Hankin & Abramson, 2001) suggests that pre-existing vulnerabilities such as genetic, personality and environmental adversities interact with cognitive vulnerabilities to increase negative affect, which in turn can trigger depression in the occurrence of a negative life event. This model allows for some possibilities for intervening to prevent depression or reduce symptoms of depression, e.g. through intervening in the environmental context to increase support or to try and intervene in relation to cognitive vulnerabilities.

An individual's cognitive style, i.e. the causal attributions they make to explain positive and negative events, plays a role in the development of depression (Abramson, Seligman & Teasdale, 1978). Interventions designed to enhance cognitive - behavioural skills, such as realistic thinking about problems, being able to generate a variety of solutions to problems and thinking about consequences, are competencies which may help to buffer children and adolescents during the inevitable challenges of daily life (Reivich, Gillham, Chaplin & Seligman, 2006). They also link well to characteristics of children which are considered by Masten (2001) to contribute towards good outcomes when faced with risk, i.e. having effective cognitive and self regulation skills can promote resilience.

Within schools, increasing attention is being given to promoting social and emotional well-being in recognition that similar family, school and community factors may predict success and failure in school (Catalano, Berglund, Ryan, Lanczak & Hawkins, 2002). ‘Mainstreaming’ mental health is also important given the extent of problems in this area and as a means to reduce stigma (Public Health Institute of Scotland, 2003).

In Scotland, to meet the aspirations of the *Curriculum for Excellence* (Scottish Executive, 2004) young people require a ‘sense of physical, mental and emotional well-being’ to be ‘able to relate to others and manage themselves’ whilst also showing ‘resilience’ and being able to ‘solve problems’ (p12).

Furthermore, since 2007, the Scottish Executive has expected that every school in Scotland should be a health promoting school; a main aim of which is to promote the emotional well-being of pupils and staff (Learning and Teaching Scotland, 2004). Thus, within Scotland an increasing policy framework supports the promotion of emotional health in schools, recognizing the role schools can play in facilitating children and young people’s emotional health through the creation of a climate within school which enables optimal learning in a safe and supportive context (Scottish Executive, 2005).

Factors within the school environment can have an impact on children’s well-being (Sellström & Bremberg, 2006). Although not invariably the case, there tends to be general agreement that differences in teacher effectiveness tends to outweigh differences between schools (Luyten, 2003; Teddlie & Reynolds, 2000). This suggests that in considering the impact of school effects on interventions to promote emotional resilience it may be important to take particular account of factors related to the context of the classroom.

There are a number of different mechanisms through which classroom environments affect well-being, including impact on academic self concept (Burden,

1998), academic expectations (Kasen, Johnson & Cohen, 1990) and achievement goal orientations (Ryan, Pintrich & Midgley, 2001). Feelings of confidence in oneself as a learner and interest in academic work can have a protective effect in circumstances where adolescents are otherwise experiencing emotional distress. Conversely, adolescents who do not feel capable academically and who feel emotionally distressed are more vulnerable to problematic behaviour in schools and academic failure (Roeser, Eccles & Strobel, 1998).

In thinking about the context of the classroom, the climate within the classroom has been the subject of some research (e.g. Fraser, 1986; Moos, 1979). Tagiuri (1968) suggested that there were four main dimensions within an organisational climate: aspects of the physical environment, characteristics of the individuals within the organisation, the beliefs or values of those individuals and the relationships between individuals within the organisation. The interpersonal aspect of a classroom climate, therefore, comprises the relationships and interactions between teachers and their pupils, between the pupils themselves, and the perceptions, attitudes and behaviour of pupils and teachers which occur within the context of the classroom (Montague and Rinaldi, 2001).

The climate within the classroom, i.e. the collective perceptions of children, intellectually, motivationally and emotionally, as to what it feels like to be a pupil in a particular teacher's classroom, has an impact on pupils' motivation to learn (Bethel-Fox & O'Connor, 2000). Furthermore, perceptions of social support in classrooms also predict reduced frequency of stress in class and in turn more effective coping strategies (Boekaerts, 1993). This suggests that how children perceive classroom climate, including the quality of relationships and the dialogue between teachers and children, may have an impact on resilience.

Cognitive-behavioural interventions have been shown to be effective in treating children and adolescents with depression (Kaslow & Thompson, 1998; Reinecke, Ryan & DuBois, 1998). Similarly, interventions in schools aimed at promoting cognitive-behavioural skills indicate some potential to reduce depressive

symptoms including targeted interventions, i.e. directed at those at risk of developing a disorder (e.g. Gillham & Reivich, 1999), indicated interventions, i.e. directed at those with symptoms of a disorder (e.g. Clarke, Hawkins, Murphy, Sheeber, Lewinsohn & Seeley, 1995), and universal interventions, i.e. aimed at whole populations (e.g. Cardemil, Reivich & Seligman, 2002; Merry, McDowell, Wild, Bir & Cunliffe, 2004; Pössel, Horn & Groen, 2004).

Although showing promise, considerable variability in programme effectiveness has been noted (Spence Sheffield & Donovan, 2003) with implementation effects and factors within the child, family and school context likely affecting outcomes (Greenberg, Domitrovich & Bumbarger, 2001).

The research presented here has two main aims: the first aim is to evaluate whether the Penn Resiliency Program (Reivich et al., 2006), a cognitive behavioural and social problem solving programme which teaches children skills in moderating self-talk and explanatory style alongside assertiveness and negotiations skills, is effective in a Scottish context. Delivered by teachers to their whole class as a universal intervention, the intention is to promote emotional resilience in order to reduce subsequent symptoms of depression in primary school aged children. By teaching children cognitive-behavioural skills it is hoped to lead to a reduction in pessimistic thinking (negative explanatory style) and associated depressive symptoms whilst enhancing optimistic thinking (positive explanatory style) and problem solving skills. It is also anticipated that exposure to the Penn Resiliency Program will result in a more positive classroom climate. In keeping with the need for preventive interventions to demonstrate effectiveness through a period of elevated risk of symptoms of depression it is anticipated that the intervention will also demonstrate effectiveness at 2-month follow-up.

The second aim is to broaden the literature on school based preventive interventions by assessing the impact of classroom climate variables on depression and resilience. It is anticipated that a positive class climate will predict a more positive explanatory style, higher self-esteem and fewer symptoms of depression,

with the effects of classroom climate on depression being mediated by self-talk and self-esteem. The impact of implementation integrity on outcomes will also be explored.

Chapter 1

Depression in children

Symptoms of depression

Symptoms of depression in children and adolescents are not dissimilar to those found in adults and can include a depressed or irritable mood, loss of interest in normally pleasurable activities, feelings of hopelessness and despair, difficulties concentrating, social withdrawal, sleep disturbance and somatic complaints (Evans, Beardslee, Biederman, Brent, Charney, Coyle, Craighead, Crits-Christoph, Findling, Garber, Johnson, Keller, Nemeroff, Rynn, Wagner, Weissman & Weller, 2005). All of these symptoms can contribute to significant distress for children and young people and can have an adverse impact on their relationships with peers (e.g. Peterson, Mullins & Ridley-Johnson, 1985), problematic behaviour and academic failure (Roeser et al., 1998).

According to the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (American Psychiatric Association, 2000) an episode of major depression in childhood or adolescence is diagnosed with the same symptoms as in adulthood, although with the addition of irritability as a mood symptom for adolescents. Thus, depressed or irritable mood, diminished interest or pleasure in almost all activities, significant weight or appetite changes, sleep disturbance, psychomotor agitation or retardation, fatigue / loss of energy, feelings of inappropriate guilt or hopelessness, indecisiveness, loss of concentration and suicidal ideation may feature in an episode of major depression in young people and must cause significant impairment in functioning to warrant a clinical diagnosis (American psychiatric Association, 2000). In contrast, Cicchetti and Toth (1998) and Weiss and Garber (2003) argue that it is important to take developmental differences in cognition, emotional and social aspects into account in thinking of depression in children and adolescents. For example, somatic symptoms may be more evident in younger children (Ryan, Puig-Antich, Ambrosini, Rabinovich, Robinson, Nelson, Iyengar & Twomey, 1987) and

decrease with age. Similarly very young children are less likely to report depressed mood or feelings of hopelessness (Ryan et al. 1987).

Prevalence

Prevalence rates vary depending on the criteria used, for example, whether clinical diagnoses are being used, i.e. based on criteria for mental disorders as indicated by ICD-10 (International Classification of Diseases, 10th edition, WHO, 1993) and DSM-IV (Diagnostic and Statistical manual. 4th edition, APA, 1994), or symptoms of depression. Debate ensues about whether such emotional difficulties are increasing whilst methodological limitations, such as changing diagnostic practices and differing assessment tools, make conclusions difficult (Collishaw, Maughan, Goodman & Pickles, 2004).

A meta-analysis by Costello, Erkanli and Angold (2006) examining formal diagnoses of depressive disorders suggested a depression prevalence rate for children below 13 years of 2.8%, with this increasing for girls to 5.9% and boys to 4.6% at adolescence. They found no evidence, however, of an increase in prevalence of child or adolescent depression over the past 30 years. Meltzer et al. (2000) in their national survey of children in Great Britain recorded 4% of children aged between 5 to 15 years as meeting the criteria for a clinical diagnosis of anxiety or depression, with approximately 1% meeting the criteria for depression. A second national survey (Green, McGinnity, Meltzer, Ford & Goodman, 2004) found a small but significant decrease in the numbers of boys aged 5-10 years who had an emotional disorder (a decrease from 3 to 2%) between 1999 and 2004.

Collishaw et al. (2004) in examining three large-scale British cohorts noted, however, an increase in self reported emotional distress (measuring symptoms rather than diagnoses of depression) between 1986 and 1999. West and Sweeting (2003) similarly reported increases in levels of 'psychological distress' in two cohorts of 15 year old girls (but not in boys) in Scotland between 1987 and 1999, again suggestive of increases in sub-clinical levels of depression. The latter authors attributed the increased distress in girls to increased educational expectations.

Up to one third of depressed children show comorbid conduct disorder (Kovacs, Paulauskas, Gatsonis & Richards, 1988) with anxiety symptoms also frequently occurring alongside depression, which if not treated may progress into depression (Cole, Peeke, Martin, Truglio & Seroczynski, 1998).

Studies of depression with preadolescent children show inconsistent findings in relation to gender differences. Nolen-Hoeksema, Girgus and Seligman (1991) found that self-reported depressive symptoms were higher in boys than girls, whereas Petersen, Sariagiani and Kennedy (1991) reported no gender differences in depression in children below 12 years of age. Nolen-Hoeksema et al. (1991) suggested that whilst boys reported more depressive symptoms than girls this was affected by boys reporting more disturbances in behaviour and in social relationships.

A meta-analysis by Twenge and Nolen-Hoeksema (2002) of studies using the Children's Depression Inventory (CDI) (Kovacs, 1985) suggested that testing effects of repeat administrations of the CDI may be a confounding variable. What does appear to be clear is that gender differences in depression emerge by around 13 / 14 years of age (Petersen et al., 1991; Wade, Cairney, & Pevalin, 2002). Thereafter, between 15-18 years, the incidence of depression rises sharply with the rate for females becoming double that for males (Hankin, Abramson, Moffitt, Silva, McGee & Angell, 1998).

Risk factors

There are many different developmental pathways which can contribute to a child experiencing symptoms of depression, including behavioural inhibition (Caspi, Moffitt, Newman & Silva, 1996), stressful life events (Grant, Compas, Stuhlmacher, Thurm, McMahon & Halpert, 2003), having a parent who is depressed (Hammen, Burge, Burney & Adrian, 1990), problematic family environments (e.g. Fendrich, Warner & Weissman, 1990), a family history of depression (Warner, Weissman, Mufson & Wickramaratne, 1999) and cognitive vulnerability (Abramson et al., 1978;

Abramson, Alloy & Metalsky, 1989). Aspects of these will be considered further in the discussion of models of depression.

As mentioned above, gender is also a risk factor for depression given that the rate doubles for girls after puberty (Hankin et al., 1998). It is not clear precisely what causes this gender difference although Wade et al. (2002) suggest that it may well be a complex interplay of biological, hormonal and psychosocial influences. The onset of puberty, as measured by Tanner stage and hormonal levels, as opposed to chronological age, appears to predict the increase in depression reported by girls (Angold, Costello, & Worthman, 1998). In contrast, Hankin and Abramson (2001) postulated that gender differences in adolescents in terms of life events, especially interpersonal ones, and cognitive vulnerabilities may contribute to the increased risk of depression for girls.

Models of depression

Different models have been suggested to explain depression, including biological, genetic, interpersonal, cognitive and stress models. These models have their origins in depression research with adults with it being relatively recently that attempts have been made to take account of developmental aspects. Each of these models has a contribution to make in explaining depression although arguably no one is sufficient in its own right to completely explicate depression. Accordingly, models which explicitly focus on the interaction between vulnerability and stress, i.e. diathesis-stress models (Meehl, 1962), currently dominate the literature. These models have been developed to integrate different vulnerabilities, albeit with different weightings given to the different vulnerabilities, which can lead to depression in the event of stress. Brief reference will be made to each of these different models prior to focusing in more detail on cognitive models which play a significant role in vulnerability-stress models of depression.

Biological models

Davidson, Pizzagalli, Nitschke & Putnam (2002) suggested that a number of parts of the brain were implicated in depression, including hypoactivation of the left

prefrontal cortex and anterior cingulate cortex and hyperactivation of the right prefrontal cortex, affecting approach behaviours and contributing to increased withdrawal and anxiety; reduced activity of the left prefrontal cortex which contributed to negative mood through its impact on the amygdala; and abnormalities of the hippocampus which was thought to interfere with contextual modulation of affect. Neurochemical changes have also been reported in relation to depression, including reduced serotonin levels and reduced levels of the inhibitory neurotransmitter, GABA (Stockmeier, 2003).

Most studies looking at the biological bases of depression have focused on adults, making it unclear what contribution biology makes in relation to the emergence and development of depression in children and adolescents (Pihl and Nantel-Vivier, 2005). Whilst it appears that biology has a role to play in depression, biology alone does not provide a sufficient explanation as to why some individuals and not others become depressed.

Genetic models

Increased vulnerability to depression has been linked to the heritable trait, neuroticism, which predicts subsequent negative affect and emotional distress (Costa & McCrae, 1980). In studies of children involving a related trait, behavioural inhibition, Caspi et al. (1996) observed that children rated as behaviourally inhibited at age 3 had elevated levels of depression at age 21, suggesting that temperament is implicated in subsequent depression. A study by Scourfield, Rice, Thapar, Harold, Martin and McGuffin (2003) of 670 twin pairs in a UK sample aged 5-17 years examined environmental and genetic influences on depression symptoms. The researchers observed that shared environments had a significant influence on the younger children but not for the adolescents where depression scores were more heritable. Once again, whilst having a part to play in understanding depression other factors also feature and it is unclear precisely how genetic aspects influence depression across development.

Interpersonal models

Undoubtedly interpersonal experiences have the potential to impact both positively and adversely on emotional well-being, by providing a buffer in the form of social support when life is challenging or directly impacting on well-being if interpersonal relations break down or are absent (Segrin, 2001). Joiner (2002) described maladaptive interpersonal beliefs, maladaptive interpersonal behaviours and interpersonal self-propagatory processes as being implicated in interpersonal vulnerabilities to depression.

Interpersonal beliefs are cognitions or schemata about the relationship between oneself and the world, which may be underpinned by maladaptive cognitions, which in turn results in bias in processing of information, (e.g. Markus, 1977). One interpersonal belief which can contribute to vulnerability to depression is a perception of an unmet need to belong (Baumeister & Leary, 1995). Interpersonal behaviours consist of behaviours displayed in the interpersonal arena as individuals communicate with one another (Segrin, 2001) and which set the scene for reciprocal interpersonal relationships. Social skills deficits are implicated in depression in children, for example, Cole, Jacquez and Maschman (2001) found that children's social competence, as rated by peers, predicted subsequent levels of depression symptoms. Cole, Martin and Powers (1997) found that the kinds of competency feedback children received from parents, peers or teachers predicted changes in children's perceived self-competence over time for girls, with self-perceived competence generally being related to changes in depression. Depression, in turn, predicted changes in perceptions of competence. Self-propagatory processes, based on interpersonal beliefs and behaviour, may impact on social interactions in a way which contributes to or is an outcome of interpersonal difficulties (Joiner, 2000). Coyne (1976) suggested that depressed individuals interact with their environment in such a way that they obtain depressogenic feedback, thus in turn contributing to the maintenance of depression. This model is an example of a transactional model, as described by Cicchetti and Toth (1987), as it implies a reciprocal interaction between an individual's cognitions, behaviour and social domain.

A risk factor for depression in children is having a parent who is depressed (Hammen et al., 1990), with Hammen (1999) suggesting that interpersonal interactions between parent and child, e.g. negative mood or behaviours may engender a reciprocal influence between parent and child in a cyclical manner. Disruption in a child's attachment to his or her parent is also associated with depression, e.g. Hammen, Burge, Daley, Davila, Paley and Rudolph (1995) reported an association between insecure attachments and increased depressive symptoms in adolescent girls, although this was moderated by interpersonal stressors. A lack of consensus as to how best to conceptualise and measure attachment, however, is a major issue for research in this area (Davila & Ramsay, 2004). Interpersonal models of depression assume that interpersonal stressors disrupt normative developmental tasks, which usually occur within the context of healthy interpersonal relationships (Rudolph, Hammen, Burge, Lindberg, Herzberg & Daley, 2000). This disruption is postulated to lead to the internalization of maladaptive beliefs about oneself and the social context, which in turn has an impact on an individual's sense of competence; these negative cognitions may then disrupt coping mechanisms, placing children at risk for depression (Rudolph et al., 2000). It is also worth reiterating that interpersonal factors can also serve as protective mechanisms where depression is concerned, bearing in mind the importance of social support in promoting resilience (Werner, (2000). Whilst this model is influential in its contribution to understanding depression it does not take sufficiently into account the interactional role played by stressors in the development of depression

Stress models

Debate exists in relation to how best to define stress, with the transactional theory proposed by Lazarus and Folkman (1984) viewing it as involving a relationship between an individual and the environment which is appraised as overburdening an individual's resources in a manner likely to have an impact on well-being. Where young children are concerned, however, it is unclear at what stage they are able to cognitively appraise a situation as stressful (Nolen-Hoeksema et al., 1992). Grant, Compas, Stuhlmacher, Thurm, McMahon & Halpert (2003) introduced the notion of stress being an environmental event or conditions which objectively

threatens physical or psychological well-being. The use of the term ‘objective’, however, appears inherently problematic as it leaves open the question of by whose appraisal the event is stressful. Measurement of stress, therefore, is not straightforward as research has relied heavily on checklists to identify stress, failing to take into account cognitive appraisals of the stressors contained in the checklists and failing to consider whether the stress experienced actually does overwhelm coping mechanisms (Grant et al. 2003).

Grant et al.’s (2003) model of the role of stressors in depression involves five main propositions including, stressors contribute to depression, moderators influence and mediators explain the relation between stressors and depression, there is specificity between stressors, moderators and mediators, with these relations being reciprocal and dynamic. Whilst acknowledging measurement issues, stressful life events are nonetheless predictive of depression in children over time (Compas, Grant & Ey, 1994; Grant, Compas, Thurm, McMahon & Gipson, 2004), including stressful family environments characterized by harsh parental discipline (e.g. Sheeber, Hops & Davis, 2001) and in particular in the context of cumulative or chronic stressors (Goodyer, Wright & Altham, 1988). Research suggests, however, that depressed individuals create some of the stressors they experience, which in turn has an impact on their depressive symptoms (Bennett, Pendley & Bates, 1995). Furthermore, whilst implicated in depression, a central focus on stress is insufficient to explain depression, given that not everyone who experiences severe stress will become depressed (Monroe & Hadjiyannakis, 2002). This suggests that other factors also play an important role, e.g., including the attributions individuals make, the level of social support individuals enjoy.

Cognitive models

Various cognitive theories of depression have been postulated including Beck’s (1963; 1967) influential information-processing model. He argued that how external events or internal stimuli were processed became biased, leading to a distortion of how the individual constructed his or her experiences, which in turn resulted in a number of cognitive errors, including negative attributions about one’s self, the world and one’s future: the negative cognitive triad (Beck, 1964). Beck’s

theory described the construct of schemata, which were viewed as relatively enduring mental representations of the self and previous experiences, which influenced how an individual subsequently interacted with the world. Underpinning depressogenic schemata were dysfunctional negative beliefs (e.g. a belief that one is inadequate or worthless) and attributions (e.g. I will never be successful) in relation to the self which made individuals more likely to become depressed when faced with a challenging life event (Beck, 2005). Negative cognitions including a pessimistic attribution style has shown a significant relationship with depression (Garber & Hilsman, 1992; Nolen-Hoeksema et al., 1991). Self-referent speech or self-talk refers to the internal conversation an individual has where the audience is primarily the individual themselves (Kendall & Hollon, 1984). This self-talk reflects the evaluations an individual makes internally, expressing thoughts and beliefs about themselves, the world and their future (Calvete & Cardeñoso (2002) and is correlated with symptoms of depression. Different hypotheses have been suggested to explain the relationship between self-talk and symptoms of depression, with one suggestion being that positive self-talk plays a protective role (e.g. Burnett, 1996). Other research suggests that it is the absence of positive self-talk rather than the presence of negative self-talk, which is related to low self-esteem and depression (Burnett, 1994). An alternative explanation, which has received empirical support, is that it is negative self-talk rather than positive self-talk which is predictive of dysfunction (e.g. Calvete & Cardeñoso, 2002; Ronan, Kendall & Rowe, 1994).

The reformulated model of learned helplessness (Abramson et al., 1978) proposed that an individual's cognitive style, i.e. the causal attributions they make to explain positive and negative events, are implicated in the development of depression. In particular, it was hypothesized that individuals who attribute the occurrence of negative events to internal, stable and global causes and positive events to external, unstable and specific causes, when faced with difficult life events, are more likely to become depressed than those with a more positive attributional style (i.e. who attribute negative events to external, unstable and specific causes). These three sets of dimensions operate on a continuum: the internal-external dimension indicates whether an outcome, i.e. helplessness, is contingent on one's

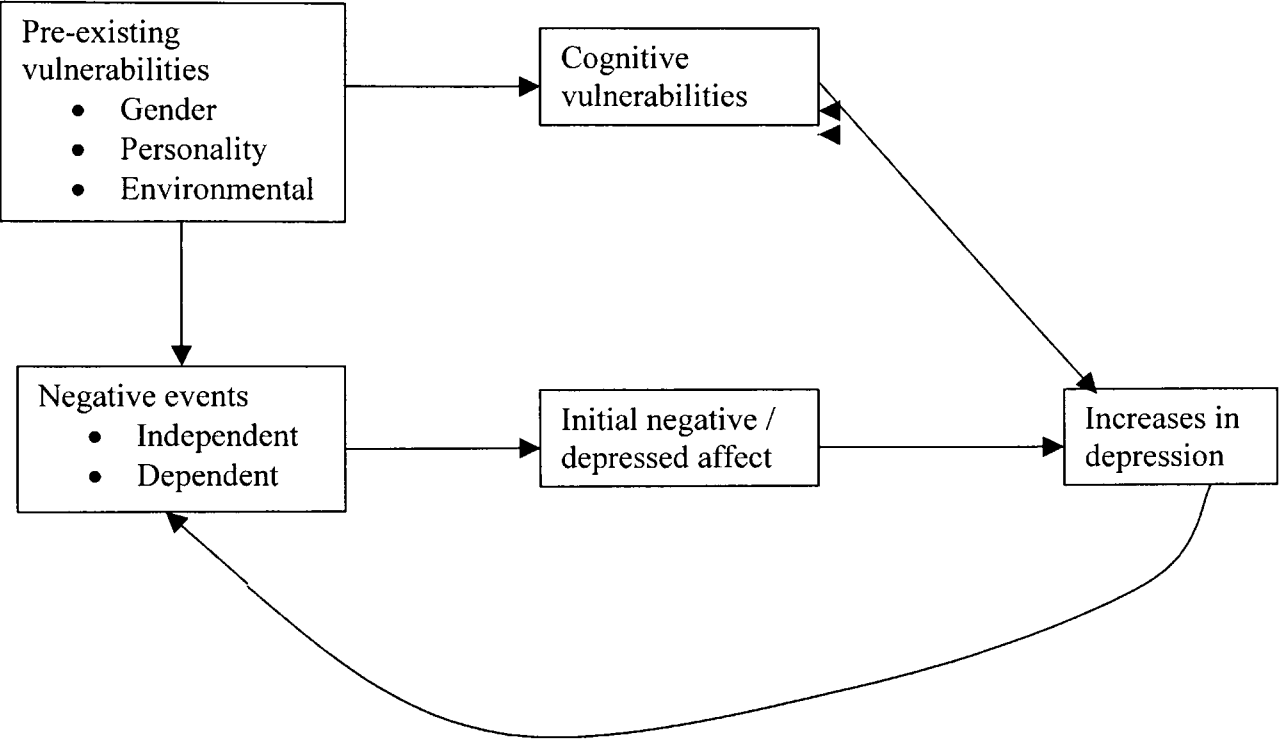
own actions (internal) or to factors outwith one's own control (external); the stable-unstable dimension refers to whether an outcome is long-lived or recurrent (stable) or short-lived and intermittent (unstable); and the global-specific dimension refers to whether an outcome applies to a broad range of different situations (global) or to a narrow range of situations (specific) (Abramson et al., 1978).

In further developing this model, Abramson, Metalsky and Alloy (1989) introduced the Hopelessness theory suggesting that three different cognitions contributed to depression through the creation of hopelessness, i.e. low self-efficacy, viewing negative events as invariably having negative consequences and viewing the consequences of these as both global and stable. This diathesis-stress model hypothesizes that helplessness and hopelessness contribute to a cognitively mediated vulnerability to depression in the presence of a negative life events (Abramson et al., 1989); a theory that has received empirical support, (e.g. Garber and Flynn, 2001, Nolen-Hoeksma, Girgus & Seligman, 1986).

Hankin and Abramson (2001) proposed an integrated theory of depression which incorporated vulnerability and stressors to account for the development of depression as a complex disorder involving a number of different factors over time. In this model the occurrence of a negative event may trigger a rise in negative affect, which if sustained, can lead to increases in depression. Similarly, pre-existing vulnerabilities such as gender, temperament, cognitive, or environmental adversities can trigger negative affect in the face of a negative event or stressor occurring, again resulting in increases in depression. Cognitive vulnerability factors are hypothesized to interact with a negative life event increasing the risk of subsequent depression. Finally, increases in depression may contribute in turn to more negative life events occurring, such as by creating interpersonal situations that lead to peer rejection (e.g. Peterson et al., 1985) or through its impact on subsequent explanatory styles (Nolen-Hoeksema et al., 1986). This model, therefore, tries to integrate the range of different vulnerabilities to depression referred to above but with cognitive vulnerabilities constituting a significant aspect.

This elaborated cognitive vulnerability-transactional stress model is illustrated below in figure 1.

Figure 1
The Elaborated Cognitive Vulnerability-Transactional Stress Model of Depression



Source: Hankin, B. L. and Abramson, L. Y. (2001). Development of gender differences in depression: An elaborated cognitive vulnerability-transactional stress theory. *Psychological Bulletin*, 127, 773-796.

Attributional style has been the focus of most research on cognitive vulnerability to depression and in a review of the evidence for cognitive vulnerability in children and adolescents, Jacobs, Reinecke, Gollan and Kane (2008) reported 21 studies supportive of the prospective effects of attribution style on symptoms of depression in children and adolescents. Children with depressive symptoms show similar attributions to depressed adults in that they are also more likely to report internal, stable and global explanations for negative events (Quiggle, Garber, Panak

& Dodge, 1992; Seligman, Peterson, Kaslow, Tanenbaum, Alloy & Abramson, 1984) and external, unstable and specific attributions for positive events (Nolen-Hoeksema, et al., 1986). Hopelessness is also positively correlated with depression and negatively with self-esteem and self reported social skills in an in-patient population of children (Kazdin, Rodgers & Colbus, 1986) and a community sample (Kashani, Reid & Rosenberg, 1989). Nolen-Hoeksema et al. (1992), however, did not find evidence indicative of helplessness being a risk factor for subsequent depression. Depressed children may also lack effective interpersonal problem solving skills, e.g. being less able to generate and to use assertive responses (Quiggle et al., 1992). Abela and Sarin (2002) in a study of seventh graders, proposed a 'weakest link' hypothesis, suggesting that an individual's most depressogenic attribution rendered them vulnerable to depression, although it is not specified how the weak attribution developed (Jacobs et al., 2008).

Attribution styles tend to develop early in life (Crick & Dodge, 1994) and are believed to stabilize around 12 years, with the greatest variability being between third and fifth grade (Nolen-Hoeksema et al., 1992). Various factors contribute to the development of a negative attribution style including negative life events, maternal depression and parenting style (Garber & Flynn, 2001). Verbal victimisation has also been shown to predict a negative attribution style (Gibb, Alloy, Walshaw, Comer, Shen & Villari, 2006). Depressive symptoms also have an impact on subsequent explanatory style, leading to a more fixed pessimistic explanatory style (Nolen-Hoeksema et al., 1986). The role played by attributional style in depression may vary with stage of development, e.g. negative life events predict depression in young children, whereas for older children pessimistic explanatory style is a more significant predictor (Nolen-Hoeksema et al., 1992). Furthermore, at least where young adults are concerned, negative attribution styles also predict the severity of depression (Iacoviello, Alloy, Abramson, Whitehouse & Hogan, 2006). Children with maladaptive explanatory styles also show deficits in achievement-oriented behaviours tending to explain lack of academic success in terms of stable, global causes (e.g. lack of ability) and success in terms of unstable, specific causes (e.g. luck) (Dweck, 1975; Nolen-Hoeksema et al., 1986).

Whilst there has been considerable support for cognitive vulnerability to depression not every study has provided support for the model, e.g. Cole and Turner (1993) found support for the model in adolescence but not childhood. One frequently mentioned explanation for mixed support is the frequent use of the Children's Attributional Style Questionnaire (Seligman et al, 1984) which has poor internal consistency (Gladstone and Kaslow, 1995). Accordingly, efforts have been made to develop psychometrically stronger measurement tools such as the Children's Cognitive Style Questionnaire (Hankin and Abramson, 2002).

Dysfunctional attitudes have also been examined in relation to cognitive vulnerability to depression (e.g. Beck, 1967) with a number of studies (e.g. Abela & Sullivan, 2003; Lewinsohn et al. 1994) supporting the predictive nature of dysfunctional attitudes in the development of depression. One possibility is that children with dysfunctional attitudes may believe that their self-worth is contingent on approval from others (Hankin & Abela, 2005) although Southall & Roberts (2002) noted that some children with negative attributional styles may be able to distance themselves from stressful life events through having noncontingent self-esteem. In exploring the interaction between self-esteem and depression, Abela & Sullivan (2003) noted an interaction between dysfunctional attitudes and depression in children with high self-esteem, whereas Abela & Skitch (2007) noted the same interaction but in children reporting low self-esteem. Despite Abela and Sullivan's (2003) contrary findings, research (e.g. Abela, 2002; Abela & Payne, 2003; Conley, Haines, Hilt & Metalsky, 2001) has generally supported the notion that high self-esteem acts as a buffer for individuals whose cognitive style renders them vulnerable to depression.

In conclusion, different types of cognitive vulnerabilities have been proposed as associated with depression including dysfunctional attitudes (Abela & Sullivan, 2003; Beck, 1967), depressive attributional style (Abramson et al., 1989), cognitive distortions (Beck, 1967) and hopelessness (Abramson et al., 1989). Cross-sectional studies have shown a strong correlation between a range of negative cognitions and depression (Garber & Hillsman, 1992). Similarly meta-analyses (e.g. Gladstone &

Kaslow, 1995) have reported concurrent associations between negative attributions and depressive symptoms in children and adolescents. Studies looking at how effectively negative cognitions predict depression symptoms over time whilst generally supportive are not without conflicting findings (e.g. Nolen-Hoeksema, 1992, found that attributional style only predicted depression in older children). The presence of conflicting findings, alongside measurement issues, suggest that there is still some way to go to clarify how the many different cognitive vulnerabilities interact with protective factors at different stages of development to contribute to the emergence of depression in children and adolescents (Hankin & Abela, 2005).

Treatment of depression

Psychotherapeutic interventions including cognitive behavioural therapy (CBT) have emerged as effective treatments for depressive disorders and self reported depressive symptoms in children and adolescents (Birmaher, Ryan, Williamson, Brent & Kaufman, 1996; Wood, Harrington & Moore, 1996), including meta-analyses by Lewinsohn and Clarke (1999); Michael and Crowley (2002); Reinecke et al. (1998). A more recent meta-analysis by Weisz, McCarty and Valeri (2006) of 19 studies, which included peer and non-peer reviewed studies found, however, only a small to moderate mean effect size of .34, less than those found in previous meta-analyses, which they attributed as perhaps due to their more rigorous data analytic methods or the different pool of studies examined. Furthermore, it is less clear whether treatment effects persist in the longer term (Butler, Chapman, Forman & Beck, 2006; Curry, 2001, Weisz et al., 2006).

Cognitive behavioural therapy (CBT)

Cognitive behavioural therapy is often used as an umbrella term to describe a range of techniques based on cognitive therapy and using a range of behavioural techniques (Beck, 2005) to identify and modify negative thinking patterns and alter associated self-regulation and behavioural difficulties. Durlak, Fuhrman and Lampman (1991) and Mansell (2008), however, argue that the diverse range of techniques making up CBT is unhelpful as it is then difficult to differentiate which core components or combinations of components of CBT are the active ingredients

in resolving psychopathologies. For example, in a study of depressed adults, Jacobsen, Dobson, Traux, Addis, Koerner, Gollan, Gortner and Prince (1996) randomly allocated the participants to three conditions to test out the effectiveness of different components of CBT: behavioural activation, automatic thoughts and cognitive therapy. No significant differences were found between the three groups at the end of treatment or at 6-month follow-up, thus raising questions about which components of CBT are essential. Longmore and Worrell (2000) however, in reviewing this study queried whether there might have been some cross-over from cognitive aspects into the behavioural condition. There is a need, therefore, to be clearer in defining cognitive behaviour therapy with children to understand what specific components are effective for which children (Durlak et al., 1991).

The effectiveness of CBT, however, may also be affected by a number of variables including who delivers the intervention and characteristics of those receiving the intervention (Curry, 2001; Parker, Roy & Eyers, 2003). Information as to the moderators and mediators of change is also often not explicated (Kazdin & Weisz, 1998) although some evidence indicates that reductions in negative thinking underlie reductions in depressive symptoms (Kaufman, Rohde, Seeley, Clarke & Stice, 2005; Muñoz, Ying, Bernal, Perez-Stable, Sorensen & Hargreaves, 1995). In contrast, it is still unclear how a child's developmental stage interacts with the techniques used to influence outcomes (Spence, 1994) although Durlak et al. (1994) suggested that the child's cognitive developmental level was a moderator of outcomes in cognitive behavioural therapy. Furthermore, Stallard (2002) noted that models of CBT used with children and adolescents tend to be derivatives of models used with adults and argued that more emphasis required to be placed on understanding the developmental status of the child.

In summary, interventions aimed at cognitive restructuring, e.g. encouraging children to reflect on and challenge their attributional style and to consider a range of evidence to aid evaluation of their thoughts, with the intention of reducing negative self evaluation and promoting more realistic, balanced and optimistic explanations, may reduce or prevent depressive symptoms. Such interventions may also contribute

towards resilience both in terms of prevention of depression, but also in other areas of their life, e.g. such as how children interpret academic success and failure.

Chapter 2

Promotion of resilience

The concept of resilience is fraught with definitional issues (Kaplan, 2006) but may be considered as referring to

‘a pattern of positive adaptation in the context of past or present adversity’
(O’Dougherty Wright & Masten, 2006, p. 18).

They suggested that two criteria have to be met before resilience is evidenced, i.e. the individual has to have experienced an occurrence that was a threat to his or her development or adaptation and the individual has to have demonstrated an ability to bounce back from this threat and show satisfactory adaptation or coping skills.

Competence, therefore, has to be evidenced in the context of challenges to adaptation or development (Luthar, Cicchetti & Becker, 2000; Masten & Coatsworth, 1998).

This perspective is helpful for prevention research in that it allows for examination of variables which may mediate between child and environmental factors to influence outcomes (O’Dougherty Wright & Masten, 2006). A child who shows resilience in one domain and at one developmental stage, however, may not show the same degree of resilience in another domain or at another point of development (Masten & Coatsworth, 1998).

Factors associated with resilience in children include protective factors, i.e. which function as moderators of risk and adversity (Werner, 2000). Such factors might include characteristics of the child, e.g. good emotional control, effective coping and interpersonal problem solving skills and a style of cognitive and affective processing which is reflective and facilitates processing of experiences in a way that acts as a buffer against stress and adversity (Rutter, 2000). High levels of self-esteem may also act as a buffer for individuals who otherwise might be at risk of experiencing depressive symptoms as a result of an interaction between their cognitive style and a negative life event (Abela & Payne, 2003). Other protective factors include support from family and peers and effective schools (Masten, 2001).

In effect these protective factors may ‘immunize’ a child and moderate the impact future stressors have on him or her (Garmezy, Masten & Tellegen, 1984).

When concerned with preventing symptoms of depression it is worth thinking of resilience in terms of emotional resilience, as positive adaptation in this area might require effective emotional self-regulation (Cicchetti & Toth, 1998) through developing positive attributions and effective interpersonal problem solving skills. This in turn should help prevent symptoms of depression by increasing opportunities for social support and reducing cognitive vulnerabilities for depression, such as pessimistic attributions and negative self-talk.

Individual children demonstrate differences in their emotional understanding with this being linked to positive social behaviour in toddlers (Ensor & Hughes, 2005); pre-school children (Cassidy, Werner, Rourke, Zubernis & Balaraman, 2003) and school-aged children (Hoffman, 1982). Saarni (1999) highlighted the importance of children being able to discuss personal and interpersonal experiences as a prerequisite for emotional competence. Emotion regulation may be defined as the

‘process of initiating, avoiding, inhibiting, maintaining, or modulating the occurrence, form, intensity, or duration of internal feeling states, emotion-related physiological, attentional processes, motivational states, and / or the behavioral concomitants of emotion in the service of accomplishing affect-related biological or social adaptation or achieving individual goals’

(Eisenberg & Spinrad, 2004, p338).

Effective emotional regulation underpins emotional competence and may promote problem solving and enhance relationships with others through its impact on cognitions and behaviour (Cole, Martin & Dennis, 2004). Furthermore, emotional regulation may have a mediating role in transactions between poverty and the development of behaviour problems in children (Maughan & Cicchetti, 2002).

There is evidence that mothers promote emotional competence in their children through their sensitive and responsive interactions (Eisenberg, Zhou,

Spinrad, Valiente, Fabes & Jeffrey, 2005; Stams, Juffer & van Ijzendoorn, 2002) and through causal conversational interactions around psychological themes (de Rosnay & Hughes, 2006). It is less clear, however, what impact different contexts and different conversational partners have on the promotion of emotional competence, although potentially social partners may promote competence through direct teaching, modeling of responses and by the attributions they make (Thompson, 1994).

Interventions designed to enhance cognitive – behavioural skills, such as realistic thinking about problems, being able to generate a variety of solutions to problems and thinking about consequences, are competencies which may help to buffer children and adolescents during the inevitable challenges of daily life and thereby increase resilience (Reivich et al., 2006). For example, encouraging more realistic thinking and less negative self-talk may have a positive impact on cognitively vulnerable children through reducing their tendency to make thinking errors such as negative attributions about themselves, the world and the future, all of which are implicated in depression (Beck, 1967, 1983). These competencies also link well to characteristics of children which are considered by Masten (2001) to contribute towards good outcomes when faced with risk, e.g. having effective cognitive and self regulation skills. Operationally, reductions in dysfunctional attitudes and negative self-talk, alongside increases in positive self-talk, may enable children to think about challenging circumstances in a way which allows them to cope more effectively. Similarly, increases in self-esteem may act as a buffer for children when faced with adversity.

The social contexts in which young people find themselves influence their success in navigating the stresses of adolescence, with connectedness to one's parents / family and school, acting as protective factors against emotional distress (Costello, Swenden, Rose & Dierker, 2008; Resnick, Bearman, Blum, Bauman, Harris, Jones, Tabor, Beuhring, Sieving, Shaw, Ireland, Bearminger & Udry, 1997). Social context, therefore, is also implicated in resilience with Sameroff's (2000) ecological transactional model of influence illustrating the complex interactions between child,

home, school and community factors which affect outcomes. The impact of social context is mediated through a variety of mechanisms including the child's perceptions of his or her experiences (Boyce, Frank, Jensen, Kessler, Nelson & Steinberg, 1998) and whether a child has a relationship with a caring adult (Rutter, 1985). It is, therefore important to consider which factors are important for which individuals in which contexts (O'Dougherty Wright & Masten, 2006).

The classroom context is one where interpersonal relationships between teacher and children and between peers are of importance in promoting resilience given their potential impact on emotional well-being in creating a sense of belonging or otherwise in the classroom (Anderman, 2002). For example, Somersalo, Solantaus and Almquist (2002) examined the impact of classroom climate on children's emotional and behavioural problems at 12 years of age. Although this cross sectional study had some methodological limitations due to different measurement tools being used at Time 1 and Time 2 and levels of attrition, it did find an association between teacher reported classroom climate and internalizing and externalizing problems in children.

In summary, effective interpersonal problem solving skills, a cognitive style which is reflective and optimistic, an ability to effectively regulate emotion and the presence of social supports from peers and adults, are all implicated in resilience in children. These factors operate transactionally with the contexts in which children spend their time. The implementation of a cognitive-behavioural intervention within the context of the classroom may contribute towards resilience through various pathways. Speculatively, these might include skill development on the part of the teacher delivering the intervention, e.g. in emotional self-regulation and problem solving skills, which in turn impacts on the classroom climate. Increased emotional competence and active problem solving skills in the children receiving the intervention may help them cope better under adversity (Saarni, 1999) whilst also possibly enhancing positive relationships between teacher and children, and creating a climate where more effective problem solving occurs. Finally, encouraging children to challenge dysfunctional attitudes and negative self-talk and increase

positive self-talk may enable children to reflect effectively on adverse circumstances and appraise them realistically in a manner which increases resilience.

Chapter 3

School effects on well-being

School effectiveness research has identified that schools can and do make a difference for the children they teach, with a meta-analysis by Sammons, Mortimore and Thomas (1996) identifying a range of factors including school leadership, the learning environment, high expectations and positive reinforcement, as being associated with effective schools. Teacher effects are particularly significant and can have an enduring impact on children even after they are no longer taught by that teacher (Sammons, Hillman & Mortimore, 1994).

In recent years increasing interest has occurred in relation to what impact schools have on the emotional well-being of their pupils (e.g. Anderman, 2002; Cowen, 1991). Indeed, Roeser et al. (1998) suggested that aspects of the school context may have an adverse impact on children's academic and emotional well-being by undermining children's basic psychological needs (e.g. Deci, Vallerand, Pelletier & Ryan, 1991) or by their influence in socializing children into particular ways of viewing themselves and their world and the attributions they make (e.g. Seligman et al., 1984). Invariably, characteristics of the child will interact with characteristics of the school context to create a reciprocal influence (Roeser et al., 1998).

In exploring school effects on well-being it may be useful to consider aspects of the climate within the classroom given that children's perceptions of classroom climate impacts on both cognitive and affective outcomes for children (Fraser, 1986). As mentioned earlier, classroom climate could be considered to comprise aspects of the physical environment of the classroom, characteristics of the pupils and teacher within the classroom, the beliefs and values they hold and the relationships between children and their teachers (Tauguir, 1968). The interpersonal aspect of a classroom climate, therefore, comprises the relationships and interactions between teachers and their pupils, between the pupils themselves, and the perceptions, attitudes and

behaviour of pupils and teachers which occur within the context of the classroom (Montague & Rinaldi, 2001). The quality of these psychosocial factors influences pupils' satisfaction with classroom climate (Allodi, 2002) with Anderson (1989) showing that pupil perception of climate is more realistic than that of teachers, who tend towards reporting more positive perceptions of their classroom climates than do pupils (Fisher & Fraser, 1983) .

Pupil perceptions of classroom climate are not static but may shift as relationships change within the classroom (Way, Reddy & Rhodes, 2007). Where teaching practice is concerned, Ellis, Malloy, Meece and Sylvester (2007), examined the relationship between pupil and trained observer perceptions of changes in aspects of mathematics teaching, finding moderately strong correlations between sixth grade pupil and observer perceptions. There is some evidence, however, that pupil perception, rather than a more objective measurement of climate, is most relevant when considering pupil well-being (Eccles, Midgley, Buchanan, Wigfield, Reuman & MacIver, 2003). Roeser et al. (1998) found that pupil perception of classroom climate significantly predicted changes over time in emotional well-being of seventh grade children. Likewise, Hope, Smit & Hanson (1990) found increases in self-esteem were predicted by increases in positive perceptions of classroom climate. One possibility, however, is that perceptions of class climate are influenced by children's own level of well-being or adjustment. Way et al. (2007) tested for this possibility in their study of the trajectories of change in middle school pupils' perceptions of teacher and peer support, pupil autonomy and consistency of school rules on symptoms of depression and behavioural adjustment. They found that the direction of effects in relation to teacher support and pupil autonomy were unidirectional, from perceptions of class climate to levels of symptoms of depression rather than bidirectional or the reverse. The direction of changes in self-esteem was also unidirectional, from perceptions of autonomy to self-esteem, indicating that perceptions of climate predicted adjustment not the other way around (Way et al. 2007).

Battistich, Solomon and Schaps (1997) suggested that creating caring communities in the classroom, where members care about and support one another, is related to a number of positive outcomes for pupils, including social competence and skills in conflict resolution. Based on their involvement in working closely with teachers over seven years in their Child Development Project they concluded that to be an effective and caring classroom community the context required to meet children's needs for belonging, autonomy and competence (Deci et al., 1991).

Baumeister and Leary (1995) hypothesized that 'belonging' was a basic psychological need. They suggested that two criteria had to be met before this drive could be considered satisfied: one being the need for frequent emotionally pleasing interactions with a few other people, and two being the importance of these interactions occurring in the context of lasting concern for one another over a period of time. This sense of belonging or connectedness to one's school is also associated with lower levels of depression, greater optimism and higher grade point average (Anderman, 2002). Östberg (2003) reported that in classrooms where a child was marginalized by their peers, all the children in the class, not just the child who was marginalised, experienced increased malaise. This suggested that the dynamics of a class and the process by which a child becomes marginalised has implications for the well-being of all children in the class.

Deci et al. (1991) considered autonomy or self-determination as implying that behaviours are intrinsically motivated, i.e. engaged in freely for their own sake and not as a consequence of being controlled or directed. Within the classroom, intrinsic motivation is associated with positive academic performance (Pintrich & De Groot, 1990) and positive emotions and satisfaction with school (Vallerand, Blais, Brière & Pelletier, 1989). So, for a classroom climate to be considered a caring community the atmosphere created by the teacher is important to ensure that children's need for autonomy is met.

The type of teacher discourse within a class is related to the quality of outcomes for children in terms of pupil collaboration and problem solving skills

(Webb, 2009). For example, teachers who use probing questions to explore children's thinking enhance children's own explanations of their thinking (Hogan, Nastasi & Pressley, 2000). Another factor influencing classroom climate is the kind of feedback offered to children by teachers, with positive feedback being associated with increased intrinsic motivation through its impact on a child's perception of their own competence (e.g. Blanck, Reis & Jackson, 1984). This, however, is only the case when the feedback is provided in a context which also supports the need for autonomy (e.g., Ryan, 1982).

Furthermore, the kind of attributional feedback, e.g. ability or effort feedback, offered to children by teachers, also plays a significant role, with the latter being related to more positive relationships with teachers (Burnett, 2002). Ability focused feedback may also have an adverse impact on a child who is already vulnerable to thinking of themselves in a negative light academically, by contributing towards a sense of helplessness as a learner (Dweck & Wortman, 1982). Children's perceptions of their own competence are strongly correlated with the appraisals of parents, teachers and peers, with positive self-evaluations predicting lower levels of depressive symptoms and negative self-evaluations predicting increased depressive symptoms (Cole et al. 2001).

There is some evidence that the kinds of negative feedback provided to children by teachers varies by gender with boys tending to receive explanations that are unstable and specific and girls tending to receive explanations that are internal, stable and global (Dweck & Licht, 1980). For some children their sense of self-worth is contingent on the feedback they receive, e.g. from teachers (Burhans & Dweck, 1995). Burhans & Dweck (1995) found that for some young children helplessness ensued following negative feedback from teachers about their performance. Feedback also has an impact on children's academic self concepts with positive and negative statements from teachers predicting both positive and negative self-talk in turn in girls (Burnett, 1996). Self-talk refers to a cognitive strategy by which children express beliefs, thoughts and attitudes about themselves, with positive self-talk and

positive self-evaluations in turn being negatively related to depression (Burnett, 1994, Cole et al., 2001).

In summary, schools could conceivably enhance emotional well-being in their pupils by paying attention to the context of the classroom climate, promoting a sense of belonging, where relationships between teacher and pupils and between pupils themselves are good. Contexts which promote a sense of autonomy in children and which encourage children to make more positive attributions may also enhance perceptions of classroom climate. The assumptions children bring into school about themselves has an impact on how they think as well as on their curiosity and motivation to learn (Park, 2001), which will in turn influence their perceptions about their classroom climate. Furthermore, it is important for teachers to exercise care in the kind of feedback they provide to children bearing in mind the potential for particular feedback to undermine perceptions of competence. Given the distress associated with emotional difficulties such as symptoms of depression and their impact on schooling, the possibility of intervening within schools to try and promote emotional resilience is important in its own right and to try and prevent symptoms of depression is timely.

Chapter 4

Intervening to promote resilience and prevent symptoms of depression

Approaches to prevention

Cowen (1998) argued that it was important to try to promote wellness rather than just trying to prevent difficulties such as depression, i.e. going beyond disorder prevention to the enhancement of wellness. He suggested that the most effective approach was to create the conditions for building wellness from the start of life, and then taking opportunities to maintain and enhance wellness throughout the life span, perhaps through universal interventions, as defined by the Institute of Medicine Report (Mrazek & Haggerty, 1994). Linked to this vision is the possibility of intervening in schools, as universal settings which can provide opportunities for children to develop and practice competencies in relation to social and emotional well-being (Consortium on the School-Based Promotion of Social Competence, 1994). More recently positive psychology discourses (e.g. Seligman & Csikszentmihalyi, 2000) have build on this approach to highlight the importance of positive human functioning, moving away from the prevention of disorders to the promotion of human strengths such as optimism, interpersonal skills, flow or perseverance, which may act as buffers against mental disorders.

In summary, there has been increasing interest in developing interventions which have prevention or positive youth development as their core aims, in growing recognition of the need to be proactive in promoting good health rather than waiting to treat disorder. Such an approach has utilised different terminology over time, albeit with substantial conceptual overlap, including primary prevention, wellness enhancement and, more recently, positive psychology (Cowen & Kilmer, 2002).

Definitions of prevention

Mrazek and Haggerty (1994) argued that prevention approaches which differentiated between primary, secondary and tertiary prevention were unhelpful as it led to confusion and blurring of boundaries between the different levels of

prevention. Primary prevention was considered as interventions designed to prevent new cases of depression, secondary prevention as interventions that involved early detection and treatment of cases (and also where the symptom load did not meet diagnostic threshold levels), whereas tertiary prevention consisted of interventions which aimed to reduce negative outcomes from existing depression. They recommended instead that prevention should refer only to interventions which occurred prior to the onset of a clinically diagnosable disorder, which arguably allows for the inclusion of interventions where children and adolescents may show symptoms of depression but do not meet the diagnostic threshold. This may well be important bearing in mind that sub-threshold levels of depression in adolescents pose an increased risk for affective disorders in adulthood (Lewinsohn et al. 2000). Mrazek and Haggerty (1994) recommended that once a disorder has been diagnosed that interventions should be considered treatment whilst maintenance interventions were those designed to prevent relapse.

Gillham et al. (2000) suggested some potential problems with Mrazek and Haggerty's (1994) proposed distinction between prevention, treatment and maintenance, arguing that these distinctions may be largely contingent on time, e.g. querying what length of time had to elapse following an episode of depression before an intervention could be considered preventive rather than a maintenance intervention. Another concern expressed by these particular researchers was the length of time preventive effects must exist before being considered efficacious. Whilst different definitions of prevention are used, Gillham et al.'s (2000) definition of preventive interventions as:

‘interventions that occur prior to the onset of a specified condition (clinical depression, depressive symptom load), are designed to maintain low levels of the condition relative to a control, and include a follow-up period that extends at least through a period of elevated risk for the condition’ (pp. 66-67)

is useful as it allows for prevention to include the goal of reducing symptoms of depression and, as they argue, the possibility of measuring depressive symptoms as an outcome variable to examine whether the intervention was effective in preventing clinically significant levels of depression over a period of elevated risk. This latter

point is of particular importance given that most depression prevention programmes for young people in the literature assess symptoms of depression as an outcome variable and could, therefore be considered treatment. Arguably, for a programme to be preventive it would require to measure outcome variables which are implicated as risk factors for depression, for example, cognitive variables (Abramson et al. 1989) such as explanatory style, self-talk, dysfunctional attitudes and those which are protective, for example, problem solving skills (Petersen, Leffert, Graham, Alwin and Ding (1997), social support (Masten, 2001) and self-esteem (Abela & Payne, 2003).

Mrazek and Haggerty (1994) broadly categorized prevention into three approaches: universal interventions, applied to whole populations regardless of risk; selective interventions aimed at those at risk of a disorder because of some factor within the individual or their environment and indicated interventions, directed at those experiencing mild to moderate symptoms of the disorder.

Prevention of depression / promotion of resilience

Mrazek and Haggerty (1994) separated out prevention from health promotion, although other theorists argue for the importance of incorporating prevention and promotion, especially where children and adolescents are concerned (e.g. Weissberg & Greenberg, 1998). Prevention programmes, using the Gillham et al. (2000) definition of prevention, whilst designed to prevent the onset of symptoms of depression, as noted above, also aim to promote resilience, for example, through the development of social skills and increasing children's awareness of the impact of negative cognitions on well-being. Coie, Watt, West, Hawkins, Asarnow, Markman, Ramey, Shure and Long (1993) also argued that it was important that preventive interventions attempt to influence protective factors, i.e. those which promote resilience, as well as risk factors. These protective factors may include aspects of the individual, such as teaching behavioural or cognitive skills which can act as a buffer in the event of stress, or aspects of the environment, e.g. efforts to increase social support (Coie et al., 1993).

A variety of reviews have explored whether depression in children and adolescents can be prevented, including reviews by Durlak and Wells (1997), Gillham, Shatté and Freres (2000) and Merry, McDowell, Hetrick, Bir and Muller (2006). They argued that the evidence was inconclusive as to whether episodes of depression could be prevented, although noted some evidence that symptoms of depression could be reduced (Gillham et al., 2000). Methodological issues, e.g. failure to evaluate intervention integrity, use of a limited range of outcome measures, small sample sizes and attrition were cited as potential limitations of the research reviewed (Gillham et al., 2000).

Utilising a model that aims to promote resilience as well as prevent symptoms of depression, a number of factors are required before an intervention could be considered a model preventive intervention. These include the rigorous experimental methods recommended for treatment outcome research by Chambless and Hollon (1998), such as random assignment to condition, use of a control group (preferably a placebo control), use of a manual to allow replication, consistent training for those delivering the intervention and checks for programme adherence, using a range of reliable and valid outcome measures (and preferably not just self-report measures) which tap the relevant variables relating to the condition over and above symptom measurement and long-term outcome measures. (Nation, Crusto, Wandersman, Kumpfer, Seybolt, Morrissey-Kane & Davino (2003) suggested also that programmes had to be comprehensive, employ a variety of teaching methods, were of sufficient dosage, had a theoretical base and where positive relationships were developed. Jane-Llopis, Hosman, Jenkins and Anderson (2003), in their meta-analysis of 69 programmes, suggested that interventions which were multi-component, promoted the development of competencies and involved more than eight sessions, each of a length between 60 to 90 minutes were more likely to be effective. Similarly, interventions that tested for mediating and moderating variables and which considered process measures, such as how programme fidelity was promoted and measured, would be required (Weissberg, Kumpfer & Seligman, 2003). Greenberg, Domitrovich and Bumbarger (2001) suggested that interventions should also be aimed at decreasing risk and increasing protective factors, involve the

measurement of multiple outcomes across a variety of contexts and have a longer-term follow-up period. Gillham, Shatté and Reivich (2001) argued that assessment by self-report of symptom level was appropriate as an outcome measure where it was not possible to utilise the preferred diagnostic interviews, but urged researchers to analyse data taking into account whether the participants had high or low scores on measures of depressive symptoms. Furthermore, they reported that an ideal study would use as a control group an alternative intervention to ensure that intervention effects were not caused by non specific factors, e.g. such as increased attention, social support.

School based interventions

A number of school-based interventions aimed at promoting cognitive-behavioural skills have been developed and show promise in reducing depressive symptoms in children and adolescents, including universal interventions (e.g. Cardemil et al., 2002; Chaplin, Gillham, Reivich, Elkan, Samuels, Freres, Winder & Seligman, 2006; Clarke, Hawkins, Murphy & Sheeber, 1993; Merry et al., 2004; Pössel et al., 2004) and indicated interventions (e.g.; Clarke et al., 1995; Gillham & Reivich, 1999; Jaycox, Reivich, Gillham & Seligman, 1994). Although showing promise, considerable variability in programme effectiveness has been noted (Spence et al., 2003) with implementation effects and factors within the child, family and school context likely affecting outcomes (Greenberg et al., 2001). Gillham, Reivich, Freres, Chaplin, Shatté, Samuels, Elkon, Litzinger, Lascher, Gallop and Seligman, (2007) noted that outcomes in their depression prevention intervention differed by school, with no immediately obvious explanation as to why, suggesting that subtle school differences, e.g. in relation to programme endorsement or school climate may have influenced effectiveness.

Universal interventions

The first cognitive behavioural universal depression prevention programme for adolescents was conducted by Clarke et al. (1993). This three session, randomly allocated psycho-educational programme, delivered by teachers, following two hours training, did not lead to any overall intervention effects but when analysed in respect

of adolescents presenting with initially high self-report symptoms of depression a significant intervention effect was found for boys in comparison to controls. This effect, however, was no longer significant at 12-week follow-up. Given Jane-Llopis et al.'s (2003) comments about what makes programmes effective it may be that this programme was simply not of sufficient 'dosage' for results to be sustained.

Pössel et al. (2004) and Pössel, Baldus, Horn, Groen and Hautzinger (2005) found their universal manualised programme, LISA-T, involving ten sessions of 90 minutes length, effective in preventing depressive symptoms with German adolescents aged 13 / 14 years, particularly those low on self efficacy, across six schools. No intervention effects were found in relation to levels of social support. This study used same sex groups and had two trainers (not the children's usual class teacher) teaching each group, which the researchers thought may have contributed to the effectiveness of the programme. Whilst a strength of this programme was the attempt to promote programme integrity, e.g. the trainers each went through the programme as a participant, received weekly supervision and sessions were video recorded to ensure programme adherence, no outcome comments were made about actual level of programme adherence or its impact. Another strength of this study is that the researchers planned to test whether dysfunctional automatic thoughts acted as a mediator but could not complete this analysis as no improvement in dysfunctional automatic thoughts had been obtained. The researcher suggested that it may be that insufficient time had elapsed to allow opportunities to practice and internalize newly learned cognitive techniques. In contrast, they did find that self-efficacy moderated the effects of the programme. This study had some weaknesses: it did not use intent to treat analyses so attrition may have impacted on their results and given that it was a universal intervention it may be that the sample size was too small to provide sufficient power for effects to be observed. The study also relied purely on self-report measures and, as the researchers themselves noted, it may be that intervention effects were caused by non-specific aspects of the programme such as novel adult attention or, the adolescents own awareness of what the programme was trying to achieve.

Shochet, Dadds, Holland, Whitefield, Harnett and Osgorby (2001) similarly found their universal intervention using the manualised Resourceful Adolescent Program effective in reducing self-reported depressive symptoms and hopelessness in Year 9 Australian adolescents aged 12-15 years in a large secondary school post-intervention and at 10 months follow-up. This study involved an eleven session programme with the control cohort comprising children in the preceding Year 9 cohort, which the researchers acknowledged could have resulted in a potential cohort and time confound as the allocation to condition was not, therefore, random. Each class in this study was divided into two or three smaller groups of around 8 to 12 participants, being led by a facilitator from outwith the school who had received around 25 hours of training / supervision. A strength of this study was that it endeavoured to both promote and monitor programme implementation quality through relatively high levels of training / supervision and self and independent observers checking whether the content in the manual had been covered, with high levels of programme integrity being reported. This focus on programme content as a measure of implementation quality, however, whilst useful may not be a sufficient measure of the quality of the implementation. A further strength was that the study followed the young people up over a 10-month period. In this study, however, intervention effects were found when measured by the Children's Depression Inventory (Kovacs, 1992) but not when measured by the Reynolds Adolescent Depression Scale (Reynolds, 1987); the latter measure being described as the more reliable measure. Merry et al. (2006), however, noted that depression rating scales were problematic generally due to the variability of the data generated and standard deviations being almost as large as the means at times. In common with a number of depression prevention programmes a weakness of this study was its reliance on a limited number of measures, all of which were self-report measures. Likewise, the study did not test for mediating or moderating variables.

A universal intervention programme was delivered by teachers in two schools in New Zealand to adolescents aged 13 to 15 years using a manualised cognitive-behavioural programme (RAP-Kiwi – adapted from the Resourceful Adolescent Program) (Merry et al. 2004). The teachers delivering the programme had received

2.5 days training, completed a weekly integrity checklist and also met with a member of the research team weekly. Additional teachers were recruited to enable usual classes to be divided into two groups suggesting that the children were not necessarily being taught by their usual teacher. Outcomes were compared with a placebo programme (a similar programme but with the cognitive components removed). The authors found an immediate significant post-intervention effect on self-reported depression symptoms which was sustained at 18 month follow-up with there being no evidence of any differences in outcomes between schools (Merry et al., 2004). The use of a placebo control was a major strength of this study as was the 18-month follow-up period, whereas the reliance on self-report measures of depression symptoms alone and no assessment of cognitive variables implicated in depression or overall functioning were weaknesses. Similarly, the limited focus on implementation integrity was a relative weakness, for example, in the study the teachers commented that they felt they could have delivered the programme more effectively if they had been allowed to adapt the programme which may indicate that they were not entirely satisfied with programme implementation.

Spence et al. (2003) in a large, randomised controlled trial, evaluated the effectiveness of the eleven session Problem Solving for Life Program delivered to 751 Australian adolescents aged 12 to 14 years by teachers following one day's training. This program consisted of eight sessions lasting around 45 minutes. Sixteen schools were randomly assigned to either the intervention or control group. This study used a range of measures including self-report depression symptoms, social functioning, problem solving and attributional style as well as interview of high risk students. An attempt also made to measure programme integrity through teachers' self-ratings of degree of compliance to the programme, with some indication that time factors affected full implementation of the course. At post-intervention high symptom adolescents showed a significantly greater decrease in depressive symptoms and increase in problem solving skills than high symptom adolescents in the control group. Similarly low symptom adolescents demonstrated a reduction in depression symptoms relative to the controls. At 12-month follow-up no intervention effects remained and this was consistent through follow-up at 2-, 3- and 4- year

follow-up (Spence, Sheffield & Donovan, 2005). This study had a number of strengths including random allocation to condition of a large number of participants, attention being paid to the measurement of implementation integrity, long-term follow-up over 4-years through a period of elevated risk for depression, utilising both self-report and interview assessments and comparing outcomes for high and low symptom adolescents. This study had some weaknesses, however, including the limited 'dosage' offered to the intervention cohort, i.e. eight, 45 minute long sessions, the limited training provided to teachers (six hours), limited attention being paid to the measurement of implementation integrity (relying on teacher self-report only) and the fact that the study did not seek to test for mediating or moderating variables.

Indicated interventions

A further random control study by Clarke et al. (1995) used an indicated depression prevention approach for adolescents with an average age of 15.5 years across three schools, presenting with high levels of symptoms of depression. The intervention was delivered by school psychologists or counsellors, following 40 hours of training. Sessions were audiotaped and examined by independent evaluators to evaluate compliance, which was subsequently rated as very high. This study, using the Coping with Stress Course, a manualised 15 session programme with each session lasting 45 minutes, resulted in a significant prevention of depression disorders for the intervention group than the control group and a significant reduction in depression symptoms post-intervention but not at 6- or 12-month follow-up. A strength of this study was the use of both self-report and interview measures to identify participants and evaluate outcomes as well as utilising parental interviews as part of the evaluation protocol. Likewise, the assessment of programme integrity was an area of strength. Weaknesses included the absence of a placebo control which would have allowed the researchers to control for non-specific group effects and no testing of mediators or moderators.

Another randomly allocated indicated prevention programme by Petersen et al. (1997) for symptomatic middle school adolescents found significantly different

intervention effects by gender with girls reporting significantly less depression symptoms post-intervention than controls. In contrast, boys reported higher levels of depression symptoms post-intervention than controls. No long term intervention effects were observed at 6- or 12- month follow-up either. A strength of this study included the use of a range of pre-and post self-report measures including internalising and externalising symptoms as well as clinical interviews to assess for depressive disorders although again no testing of mediators occurred.

Sheffield, Kowalenko, Davis, Spence, Rapee, Wignall and McLoone (2006) in a large study compared the impact of three approaches to depression prevention, a universal intervention, an indicated intervention and a combined universal plus indicated programme, each using the Problem Solving for Life programme, in Australia. Eighteen schools were randomly assigned to intervention or control group. The universal intervention was delivered by teachers, followed by six hours training, whereas the indicated interventions were delivered by school counsellors or mental health practitioners. A range of self-report measures including symptoms of anxiety, depressive symptoms, hopelessness, substance abuse, and social and adaptive functioning were used as well as diagnostic interviews for high symptom adolescents. Implementation integrity was also assessed by those delivering the intervention, exploring perceptions of usefulness of and adherence to the programme. The authors found no significant intervention effects in relation to symptoms of depression post-intervention or at 12-months follow-up, although there was a significant positive effect of time, irrespective of condition (including control) for all high symptom adolescents. No intervention effects were found in relation to anxiety or externalizing problems either. In speculating why no intervention effects were found Sheffield et al. (2006) queried whether approaches that do not also intervene to tackle risk and protective factors at the environmental level are liable to be unsuccessful, e.g. in terms of the context in which the intervention is being delivered. The study had a variety of strengths, including the large sample size, random allocation to condition and utilising a range of self-report and interview measures. Only six hours training was provided to those delivering the training and there was no independent verification of how the programme was implemented

which may have affected outcomes. A further weakness was the absence of any reported intention to test for mediators or moderators.

In summary, mixed results have been found for the effectiveness of depression prevention programmes, particularly at follow-up, with a range of possible explanations for conflicting results being possible, including inadequate power to detect relatively small changes in universal interventions, the tendency to rely on student self-report measures, cross-contamination between intervention and control group when both occur in the same school and the limited use of a placebo control group (Spence & Shortt, 2007). Considerable differences in the amount of training, supervision and assessment of implementation integrity are evident in the above studies, e.g. high levels of training and supervision in Pössel et al. (2004) compared with six hours training in Sheffield et al. (2006). Similarly, a number of studies relied on reports from those delivering the programme to measure programme fidelity rather than independent verification and it may be that relying only on whether the topics in the manual were covered or not is not necessarily sufficient to make decisions about the quality of the implementation (Spence & Shortt, 2007). It is also unclear what impact, if any, perceptions of effectiveness by teachers delivering the programme has, e.g. in two interventions which were effective immediately post-intervention teachers differed in their level of support for the programme. One group of teachers were somewhat critical of the programme, believing that they could have been more effective if they had been able to adapt the programme to meet the needs of their individual classes and if they had been free to teach the concepts differently (Merry et al, 2004) whereas teachers in Spence et al. (2003) were more positive in their endorsement of the programme. Further exploration of programme endorsement or otherwise and degree of implementation integrity in real world settings of schools may contribute to uncovering subtle differences in programme delivery which affect outcomes. ‘Dosage’ issues may also play a part in the mixed results, with studies varying in the number and length of sessions provided during the interventions. Of note also is that few studies attempt to test for possible mediator and moderator variables and their impact on intervention outcomes.

Interventions using the Penn Resiliency Program

One school-based depression prevention programme which has been developed and evaluated since 1990, the Penn Resiliency Program (Gillham, Jaycox, Reivich, Seligman & Silver, 1990: cited in Gillham et al., 2007), links its intervention components closely to competencies associated with emotional resilience. This cognitive and social problem solving intervention attempts to increase skills in moderating self-talk and explanatory styles, generation and evaluation of alternative beliefs as well as assertiveness, negotiation and coping skills (Reivich et al., 2006).

Indicated interventions

Jaycox et al. (1994), in a selective study targeted at children aged 10-13 years who were at risk of depression, found that the initial version of the Penn Resiliency Program, the Penn Prevention Program, was effective in reducing sub-clinical symptoms of depression post-intervention and at 6-month follow-up. Furthermore, the reduction in depressive symptoms was sustained for up to 2 years post-intervention (Gillham, Reivich, Jaycox & Seligman, 1995). No immediate intervention effects were found in relation to parent reported externalizing behaviour problems although they were found at 6-month follow-up. Teachers, however, reported significant improvements in classroom behaviour post-intervention. No significant intervention effects were observed in relation to overall explanatory style, although children in the intervention group were less likely to attribute negative events to stable, enduring causes post-intervention. A strength of this study was the use of a range of measures such as self-report of depressive symptoms and explanatory style and parent and teacher reports of externalising behaviour. Whilst this early study appears to have been very effective, a major methodological weakness was present given that participants were not randomly assigned to condition. Likewise, no information was reported about promotion or measurement of implementation integrity and no testing of mediators or moderators occurred.

Among a Chinese sample (and adapting the programme to take into account cultural aspects, e.g. related to assertiveness) Yu and Seligman (2002) found

significant intervention effects in reducing depressive symptoms and improving explanatory style in adolescents (mean age of 11.8 years) up to 6-month follow-up. Explanatory style was found to mediate change in depressive symptoms. This indicated intervention, delivered by teachers who did not normally teach the young people and who received 40 hours of training and weekly supervision to ensure adherence to the programme, had methodological strengths including amount of training and supervision, random assignment to condition (albeit not using a placebo control), very limited attrition rates and the use of mediational analyses. Weaknesses, however, included reliance on self-report measures adapted for a Chinese population, the absence of assessment of depressive episodes and the lack of reported information about implementation adherence outcomes.

In contrast, Roberts, Kane, Thomson and Bishop (2003), in their study in rural Australia across 18 schools, of children aged 11 to 13 years (mean age 11.9) found no intervention effects for their indicated programme in terms of depression. They did, however, find a small but significant reduction in anxiety symptoms post-intervention and at 6-month follow-up. Given the young age of the participants a reduction in anxiety symptoms is interesting given that anxiety is often comorbid with depression and may precede symptoms of depression (Cole et al. 1998). Significant intervention effects were also found for parent reported externalizing and internalizing behaviour. Random allocation in this study was by school with the programme being delivered in small groups by two facilitators, school psychologists or nurses, who had received between 30 and 40 hours of training and bi-weekly telephone supervision. All sessions were audiotaped and checklists were completed after each session to check for programme integrity. The researchers noted that with the exception of one facilitator all facilitators achieved a high level of programme adherence, e.g. nine leaders covered 74% of the content and six covered more than 90% of the content, although the independent raters of the audiotapes noted variability in implementation quality, which may have impacted on outcomes. This study had a range of strengths including the use of parent reports of externalising behaviour as well as a range of self-report measures of attributions, anxiety, depressive symptoms and social skills; the amount of training offered to the

programme facilitators, weekly supervision, independent verification of programme adherence (although as the researchers acknowledge this would have been strengthened had an attempt been made to assess the quality of the implementation of the programme) and mediational analysis. Once again, use of a placebo control group would have controlled for non-specific effects of the programme.

As part of a larger universal study, Cutuli, Chaplin, Gillham, Reivich and Seligman, (2006) and Gillham et al. (2007) explored whether the programme was effective with children (mean age 12 years) presenting with conduct problems but not symptoms of depression. The authors found significant intervention effects in the prevention of depressive symptoms over time for children with high levels of behavioral problems. No implementation information was presented in relation to this study.

Universal interventions

The Penn Resiliency Program has also been delivered as a universal depression prevention programme. An Australian universal study involving grade 5 and 6 children using the programme did not find any significant intervention effects (Pattison & Lynd-Stevenson, 2001) although the small sample size ($N = 63$) and lack of random allocation to the no-intervention control group may have limited opportunities to obtain significant results.

Another universal study by Cardemil et al. (2002) in two low-income inner city schools, one of predominately Latino children (mean age 11.5 years) the other predominately African-American children (mean age 10.9 years), found conflicting results. For the Latino sample at post-intervention, 3- and 6-month follow-up, a significantly greater reduction in depression symptoms was found in the intervention cohort than the control cohort. No significant intervention effects were found in relation to explanatory style. For the African-American children no significant intervention effects were found. Various possibilities were noted by the authors to explain the differential effectiveness, including the effectiveness of the delivery of the programme, the children from different ethnic groups displaying symptoms of

depression differently and regression to the mean if the children who responded to the programme had more symptoms and simply improved over time. Another possibility, however, is that school context effects affected outcomes given that the Cardemil et al.(2002) study was conducted in two separate schools. Strengths of this study included the intervention being delivered in small group format with each leader having received at least 20 hours training, bi-weekly supervision and evaluation of audiotapes of the sessions to check for programme adherence. Mediation analyses were also undertaken using residualised change scores to see whether explanatory style mediated changes in depressive symptoms. Weaknesses included the absence of a placebo control to control for active ingredients of the programme and the reliance on self-report measures, although it did use a range of outcome measures including functional measures such as perceptions of self-competence.

Chaplin et al. (2006) considered whether the Penn Resiliency Program as a universal intervention was more effective in reducing symptoms of depressions for girls (aged 11 to 14 years) in all-girl groups than in co-ed groups, again finding a significant intervention effect post-intervention, irrespective of group. The intervention also resulted in significant reductions in hopelessness in the all-girl groups but had no effect on explanatory style post-intervention. At 12- and 24-month follow-up significant intervention effects were found for the all-girl groups in terms of reductions in pessimistic explanatory style (Gillham et al. 1995). This study was conducted in two schools with the programme being delivered in small groups by two group leaders comprising different school personnel and research staff, following a week long training course and receiving one hour supervision weekly. The study, however, had a number of weaknesses including a small sample size, high attrition rates at 12-months, it did not report any outcome data on implementation factors which may have influenced outcomes, and relied on self-report measures.

Gillham et al. (2007) compared the programme across three schools in children whose mean age was 12.13 years, using a variety of group leaders, e.g. teachers, school counsellors, graduate students, with a control programme, the Penn

Enhancement Program (PEP), which considered topics such as peer pressure, ethical dilemmas, goal setting. Once again a high level of training was provided to the group leaders (30 hours) plus bi-weekly supervision with each group session also being audiotaped and intervention adherence being assessed by two independent raters. In this study self-report measures of depressive symptoms were supplemented by diagnostic interviews for those children reporting high levels of symptoms but no other outcome measures were used. Whilst there was no intervention effects in the overall sample, intervention effects differed by school. The intervention significantly reduced depression symptoms in two schools in comparison to the control and PEP, whereas in the third school the PEP significantly reduced symptoms of depression relative to the Penn Resiliency Program. The authors were unable to detect the source of differential effects between schools but noted the possibilities of subtle untested school climate factors or programme endorsement as potentially having an impact.

In summary, interventions using the Penn Resiliency Program have also found mixed results in terms of outcomes. Most of the studies reviewed have utilized high levels of training, ongoing supervision and attempted to control for programme adherence, although not every study reported implementation outcomes. Gillham, Hamilton, Freres, Patton and Gallop (2006) reported implementation integrity in more detail in their study in a primary care setting, finding higher implementation fidelity was associated with greater reductions in depressive symptoms across the follow-up period. They acknowledged, however, that measurement of coverage of the programme material might not be a sufficient indicator of implementation integrity. All of the studies ran in small group format regardless of whether they were a universal or indicated intervention. Some differential outcomes were reported by school, e.g. Gillham et al. (2007) and Cardemil et al. (2002), although the latter study was confounded by one school comprising predominantly Latino children and the other Africa American children.

Effectiveness of interventions

Flay, Biglan, Boruch, Castro, Gottfredson, Kellam, Mościcki, Schinke, Valentine and Ji (2005) noted the importance of distinguishing between efficacy, which refers to programme outcomes under optimal conditions for delivery, e.g. being delivered by the research team, and effectiveness, which refers to programme outcomes under real world conditions. In reviewing the above studies it appears that the introduction of depression prevention programmes within a school setting is not yet at the stage of meeting requirements for effectiveness.

In a meta-analysis of depression prevention programmes Horowitz and Garber (2006) found that selective preventive interventions tended to result in larger preventive effects immediately post-intervention than universal interventions, with both selected and indicated interventions being significantly more effective than universal interventions at follow-up. The authors acknowledged that there was more scope for improvement in depression symptoms in symptomatic samples than in universal samples where low levels of symptoms may be evident. In contrast, Jane-Llopis, et al. (2003) in their meta-analyses of 69 programmes did not find any significant difference in effect sizes between universal, selective or indicated programmes. Universal interventions, however, through skill enhancement may build a child's capacity to cope with stressors in future (Winslow, Sandler & Wolchik, 2000) and small effects in large numbers of young people may result in significant benefits at the population level over time (Offord, 1996).

A meta-analysis of 21 depression prevention studies by Merry et al. (2006) noted methodological difficulties, including possible placebo effects and the validity of the measurement tools used, often relying only on self-report data, as possibly influencing outcomes in a number of the studies. The authors suggested that small sample sizes in many studies may result in inadequate statistical power to detect the relatively low effect sizes that might be expected in universal interventions given that most participants are likely to not present with high levels of depression symptoms. Despite this concern Merry et al. (2006) concluded that continuing research into the implementation of universal depression prevention programmes was justified given

their potential impact on larger numbers of children. In contrast, Spence and Shortt (2007) questioned both the efficacy and effectiveness of current school-based depression prevention programmes and discouraged the widespread implementation of such programmes without attention being paid to ecological aspects of interventions by attending to aspects of the child's environment, to reduce risk factors and promote protective factors.

Alternatively, school-based depression prevention programmes may not provide sufficient 'dosage' to have a real, enduring impact as they are time limited and might, therefore, not be as intensive as required to make a difference (Spence & Shortt, 2007). Likewise, it may be that researchers have yet to understand what particular aspects of programmes do make a difference, e.g. whether it is aspects of the cognitive interventions, social support, or other non-specific factors (Gillham, Shatté & Freres, 2000). Whilst some studies have tested for potential mediators, e.g. Cardemil et al. (2002), this is still an area requiring further development. Few programmes have used placebos as alternatives (see Gillham et al., 2007; Merry et al., 2004, for exceptions).

Another possibility is that depression prevention studies have differential outcomes due to differences between the populations being studied, e.g. in the Cardemil et al. (2006) study the intervention was only effective for the Latino sample and not the African- American sample.

The kind of measures used to determine outcome may also be relevant when considering effectiveness, e.g. Shochet et al. (2004) found significant intervention effects on depression symptoms when measured by the Children's Depression Inventory (Kovacs, 1992) but not when measured by the Reynolds Adolescent Depression Scale (Reynolds, 1987). Kazdin (2000) observed that whilst seeking reductions in symptoms is important, it may not be the most important indicator of longer term well-being, and recommended assessments across a range of domains as possible outcome measures to clarify impact.

Implementation factors

Implementation factors may also influence outcomes, given the challenges involved in implementing programmes in the real world environment of a school (Greenberg, Weissberg, Roger, O'Brien, Zins, Fredericks, Resnik & Elias, 2003). Similarly, Elias, Zins, Graczyk and Weissberg (2003) highlighted the importance of taking account of how outcome measures reflect the mediating components of an intervention in the context of the system in which the intervention is implemented. Domitrovich & Greenberg (2000) noted that there was considerable variability in the literature in terms of whether and how programme integrity is supported and measured, with only seven studies being identified which measured more than one variable, e.g. adherence, dosage, participant responsiveness. They also expressed concern at the limited qualitative data about effectiveness which was reported. Dane and Schneider (1998) drew a distinction between measures to promote programme integrity, e.g. through use of a manual, training, ongoing support / supervision and measures designed to verify programme integrity, e.g. adherence to the protocol, quality of delivery of the intervention. They described five aspects of implementation fidelity reported in the literature including: adherence to the programme, i.e. delivering it as it was designed; frequency and duration of the programme, i.e. 'dosage'; more qualitative aspects of programme delivery, e.g. content; responsiveness of the participants; and programme differentiation, e.g. efforts made to ensure that other similar programmes were not occurring at the same time which might influence outcomes. In their review of 162 school-based prevention studies, Dane and Schneider (1998) reported that 39 programmes explained their approach to ensuring implementation fidelity with only 13 of those reporting how implementation fidelity affected outcomes. Out of the latter studies, lower adherence to a programme's protocol was associated with poorer outcomes.

Chen (1998) focused on the implementation process (e.g. training, support), characteristics of who is delivering the intervention and aspects of the implementation system (e.g. school climate) all of which may affect outcomes. Kam, Greenberg and Walls (2003) similarly identified the importance of support from the school principal or head teacher for the programme and a high level of classroom

implementation as being required for programmes to be effective. The above highlights the importance of carefully planned programme implementation, ongoing monitoring and support for the implementation. For example, Gillham et al. (2006) in reviewing studies using the Penn Resiliency Program noted that their programme appears to be less effective when their own research team is not involved in the delivery of the programme, with Sutton (2007) also suggesting that moving from efficacy to effectiveness remained an important challenge for depression prevention researchers. Who delivers the programme may also conceivably affect outcomes, e.g. the Penn Resiliency Program has been delivered by trained facilitators, with no significant intervention effects being found (Pattison & Lynd-Stevenson, 2001), clinical psychology students, with mixed intervention effects (Quayle, Dziurawiec, Roberts, Kane & Ebsworthy, 2001), and by teachers, with significant intervention effects being found (Shatté, 1997: cited in Gillham et al., 2007). This might suggest that the profession of the implementer may be less important than factors related to their level of skill or commitment to the programme or other aspects of the system in which the programme is being delivered.

Keeping in mind Dane and Schneider's (1998) distinction between promotion of integrity and verification of integrity, the amount of training and supervision provided to those delivering the programme may also affect outcomes (Sutton, 2007). A few studies have looked systematically at implementation integrity when delivering preventive interventions in schools (e.g. Roberts et al. 2003; Harnett & Dadds, 2004) and in a primary care setting (Gillham et al., 2006), with Gillham et al. (2006) reporting an association between higher levels of implementation integrity and greater reductions in depressive symptoms. Most attempts to verify implementation integrity have, however, relied largely on considering whether the material in the programmes was delivered. Whilst this is important, there has been much less focus on examining the quality of the teaching and level of engagement of the children and adolescents during the programme. Likewise, whilst there are some indications of different outcomes being obtained in different schools (e.g. Gillham et al., 2007) no research appears to have considered potential effects relating to school or classroom climate.

Rationale for the study

School-based interventions to promote resilience and prevent symptoms of depression by teaching children cognitive behavioural skills show promise despite some mixed results having been reported in the literature. Factors related to whether the intervention is provided to a universal or targeted population, which variables are used as outcome measures and how they are measured, degree of 'dosage' of the intervention and how the intervention is implemented may all influence outcomes. It is also not clear which aspects of an intervention are critical for effectiveness, for example, which variables mediate and moderate outcomes. Cognitive models of depression suggest that dysfunctional attitudes and a pessimistic attribution style predict depression in children (Abela & Sullivan (2003); Nolen-Hoeksema et al. 1991) in the presence of stressful life events. High self-esteem, however, may act as a buffer for those individuals whose cognitive style renders them vulnerable to depression (Abela & Payne, 2003). In reviewing research in relation to the effects of classroom climate on well-being it is clear that the kind of climate created by teachers (Sammons et al. 1994) through enhancement of a sense of belonging (Baumeister & Leary, 1995), autonomy (Deci et al. 1991) and the types of feedback they offer to children (Burnett, 1994, Cole et al., 1991) can have an impact on children's well-being. In particular, teacher feedback is strongly related to children's own perceptions of competence and the development of self-talk, both of which are implicated in contributing towards symptoms of depression in children.

This research, therefore, has two main aims: the first aim is to evaluate whether teaching children cognitive-behavioural skills, such as how to moderate self-talk and explanatory style alongside assertiveness and negotiation skills, using the Penn Resiliency Program, leads to a reduction in dysfunctional attitudes and negative self-talk (negative explanatory style) and associated symptoms of depression, whilst enhancing positive self-talk (positive explanatory style), self-esteem and more competent interpersonal problem solving skills. Delivered by teachers to their whole class as a universal intervention, the intention is to promote emotional resilience in order to reduce subsequent symptoms of depression in primary school aged children

in the Scottish context. It is anticipated that participation in the Penn Resiliency Program, as a whole class will have a positive impact on classroom climate.

The second aim is to broaden the literature on school based preventive interventions by assessing the impact of classroom climate variables on symptoms of depression and variables associated with resilience. It is anticipated that a positive class climate will predict a more positive explanatory style, higher self-esteem and fewer symptoms of depression, with the effects of classroom climate on depression being mediated by self-talk and self-esteem.

Finally, it is anticipated that the effectiveness of the programme will be moderated by implementation integrity factors, i.e. whether degree of teacher adherence to the programme and quality of delivery of the programme, results in a more positive class climate and lower levels of depression symptoms.

Hypotheses

The following hypotheses, illustrated by Figure 1 below, relate to the first main aim of this study, i.e. to evaluate the effectiveness of the Penn Resiliency Program

- The Penn Resiliency Program will result in children showing more positive explanatory styles, more positive interpersonal problem solving skills and fewer symptoms of depression, both immediately post-intervention and at 2-month follow-up. It is anticipated that the effect of the Penn Resiliency Program on symptoms of depression will be mediated by explanatory style and interpersonal problem solving skills
- The Penn Resiliency Program will result in a more positive class climate both immediately post-intervention and at 2-month follow-up

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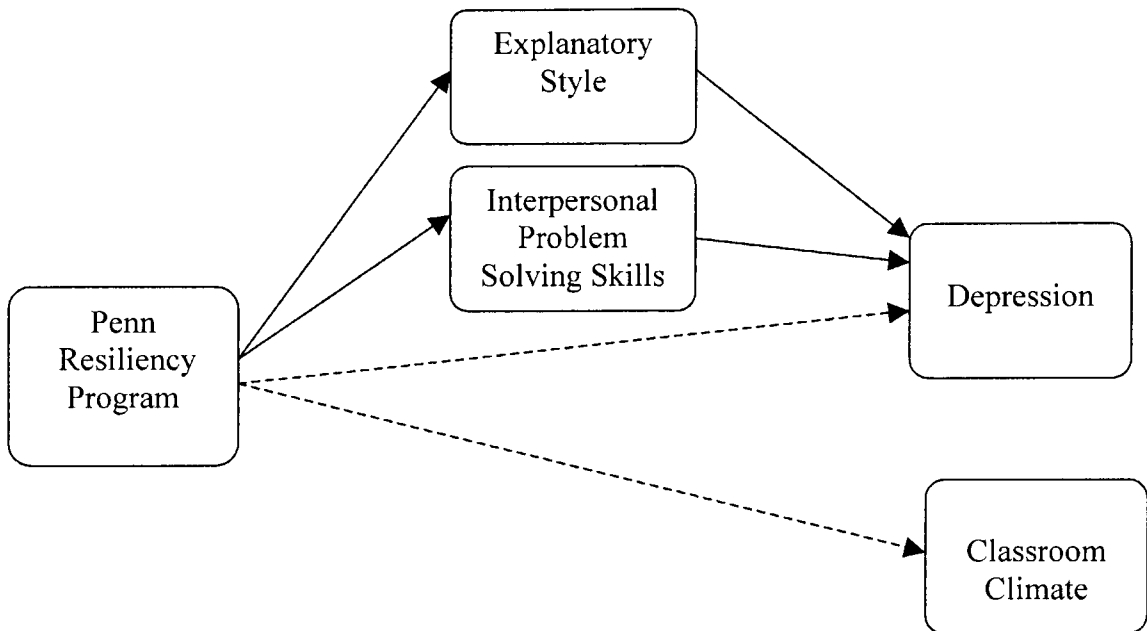
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- The Penn Resiliency Program will result in a more positive class climate both immediately post-intervention and at 2-month follow-up

Figure 1: Relationship between the Penn Resiliency Program, explanatory style, interpersonal problem solving skills, depression and class climate

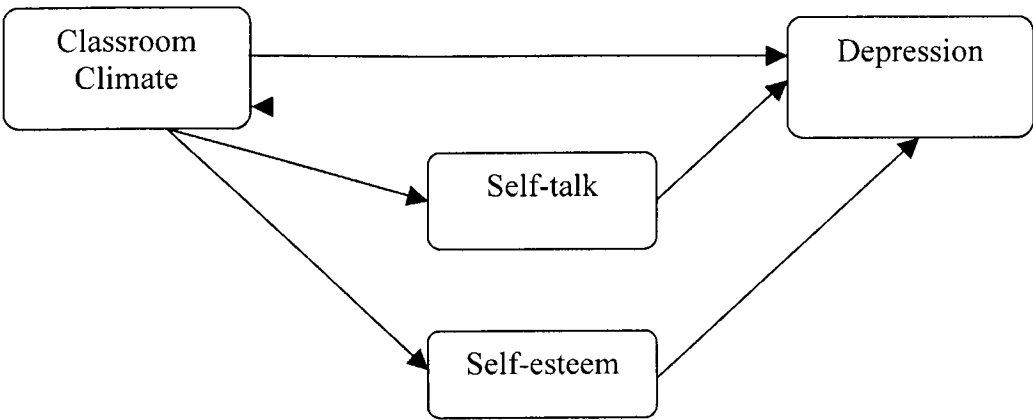


N.B. Dashed lines (----) represent paths hypothesized to be moderated by implementation integrity.

The following hypothesis, illustrated by Figure 2 below, relates to the second main aim of this study, i.e. to assess the impact of class climate variables on depression and resilience

- A positive class climate will predict a more positive explanatory style (positive self-talk), a less negative explanatory style (negative self-talk, dysfunctional attitudes) higher self-esteem and fewer symptoms of depression in children. Self-talk and self-esteem will also predict symptoms of depression and it is anticipated that the effect of class climate on symptoms of depression will be mediated by self-talk and self-esteem.

Figure 2: Class climate, self-talk, self-esteem and depression



The following hypothesis, illustrated by the dashed lines in Figure 1, relates to the final aim of the study, i.e. to assess the impact of implementation integrity on outcomes

- The effectiveness of the Penn Resiliency Program will be moderated by the degree of adherence to the programme. Higher levels of adherence will be reflected in lower levels of depression symptoms and a more positive class climate

Chapter 5

Methodology

Access to schools

Permission to conduct the research in mainstream primary schools in a local authority council area in Scotland was sought via completion of a standard proforma used by the Education Service for access to schools for research purposes.

Permission was obtained in writing from the Education Service (Appendix 1). Five primary schools expressed an interest in becoming involved, and following preliminary discussions with Head teachers, the class teachers of ten classes within the five schools agreed to be involved in the research.

Ethics approval

Ethical approval for this study was obtained from the University of Strathclyde Departmental Ethics Committee (Appendix 2). The British Psychological Society's Code of Conduct and Strathclyde University's ethical standards were adhered to throughout this research.

Parental information and consent

Children in primary 6 and 7 were chosen for involvement in this preventative study bearing in mind that symptoms of depression tend to increase after puberty (Angold, Costello & Worthman, 1998) in anticipation that intervening prior to adolescence may help promote resilience. Information was given to the children in each class by their class teachers and a letter was sent to the parents / carers of children in the ten classes, providing information about the research and seeking written consent for the children's involvement (Appendix 3). The author also offered to meet with any parents who wished additional information about the programme or the research. Two parents subsequently contacted the author and after discussion were content for their children to be involved in the programme but did not wish them to be involved in the research. A total of 221 children participated in the research, following signed consent having been obtained from their parents.

Participating teachers discussed the programme with the children in their classes in the context of this programme being part of their school's personal and social development programme for the session and encouraged their involvement. One child did not wish to participate either in the programme or in the research and after discussion between the teacher and child's parent it was agreed that the child would not participate.

Randomisation to condition procedure

Prior to random assignment by school to Intervention and Wait-list control, a preliminary procedure was used to stratify schools based on deprivation figures, indicated by free school meal and footwear and clothing grant statistics (see Table 1). School A and school D were identified as having higher deprivation figures than the remaining schools so were randomly allocated to different conditions to minimize impact of deprivation on outcomes. The remaining schools were then randomly allocated to condition.

Immediately prior to the training on the Penn Resiliency Program prior to intervention, school E which had been allocated to the Intervention cohort, requested that one of their teachers join the Wait-list control cohort as they required one of those teachers to undertake an alternative unrelated piece of work. This was unfortunate but was agreed and the teachers involved undertook not to discuss the intervention with one another and to discourage their pupils from discussing the intervention with pupils from the other class to try and minimize any influence of the intervention on the Wait-list control class.

Table 1*Deprivation data for schools involved in the research at the start of the research*

School	School roll	Number of pupils receiving free school meals	Percentage of school receiving free school meals	Number of pupils receiving footwear and clothing grants	Percentage of pupils receiving footwear and clothing grants
A	138	44	31.9%	70	50.7%
B	229	12	5.2%	22	9.6%
C	366	22	6.0%	39	10.7%
D	154	26	16.9%	58	37.7%
E	308	32	10.4%	62	20.0%

*Source: X Council Footwear and Clothing / Free Meal Statistics for 2006***Participants**

Six primary 7 classes, 3 primary 6 classes and 1 composite P6 / 7 class were involved in the research. Participants were mainly white Caucasian (97.3%), with the remainder being Asian or African.

Table 2 provides information about the school, class, numbers of participants in the study and allocation to cohort. As can be seen from Table 2, the Intervention cohort comprised 94 children with 127 children being allocated to the Wait-list control cohort. Two parents whose children attended one school specifically requested that their children were not involved in the research, otherwise, number of participants reflects the number of signed consents received.

Table 2
Information about School, Class, Participants and Cohort

School	Class	Total number of children in class	Number of participants (% of class in brackets)	Cohort (Intervention or Wait-list control)
A	P7	21	20 (95%)	Intervention
	P6	19	19 (100%)	Intervention
B	P7	32	30 (94%)	Intervention
C	P6	28	20 (71%)	Wait-list control
	P6	29	23 (79%)	Wait-list control
	P7	24	24 (100%)	Wait-list control
	P7	25	24 (96%)	Wait-list control
D	P6/7	22	11 (50%)	Wait-list control
E	P7	26	25 (96%)	Intervention
	P7	26	25 (96%)	Wait-list control

Table 3 provides descriptive information about the age and gender composition of each cohort.

Table 3
Descriptive Statistics of Intervention and Wait-list Control Cohort

Intervention Cohort				Wait-list Control Cohort			
Males (N =50)		Females (N = 55)		Males (N = 56)		Females (N = 60)	
Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age (months)		Age (months)		Age (months)		Age (months)	
130.68	5.66	131.36	5.85	129.43	7.59	128.65	7.23

Gender balance

Of the 221 participants, 106 were male (47.7%) and 115 (51.8%) were female. In checking for any cohort differences an Independent t - test indicated that there were no significant gender differences between cohort 1 and 2, $t = .097$, $df = .219$, $p = .923$ (two-tailed).

Age

At the start of the study children's mean age was 129.98 months (range = 113 to 142, $SD = 6.7$). An Independent samples t -test indicated that there was a significant difference in age between the Intervention and Wait-list cohort, with the Wait-list cohort children being significantly younger, $t = 2.27$, $df = 214.24$, $p = .024$ (two-tailed). Levene's test was significant ($p < .05$) so equality of variances was not assumed.

Penn Resiliency Program (Gillham, Jaycox, Reivich, Seligman & Silver, 2004)

Access to and permission to use the Penn Resiliency Program (PRP) was obtained from the programme's authors (Appendix 4). The Penn Resiliency Program is a life skills and depression prevention programme which combines cognitive-behavioural skills and social problem solving skills. It aims to teach children practical skills which they can use to handle difficult situations, feel good about themselves and increase resilience in the face of adversity.

The Penn Resiliency Program comprises 12 x 90 minute lessons delivered once weekly, includes workbooks for children and a manual and resource material for teachers.

Lesson 1: Introduction and Link between Thoughts and Feelings

This introductory session introduces children to the programme and explores common problems, thoughts and feelings they experience. It introduces the concept of self-talk and explains that they can learn to monitor their self-talk. The lesson also teaches children to identify the link between their self-talk, feelings and action.

Lesson 2: Thinking Styles

This session provides the children with practice in making the link between their thoughts and feelings, teaches them about different thinking styles and the kinds of thoughts that can make them feel bad and inclined to give up. The lesson also provides opportunities to practice more optimistic and realistic thinking.

Lesson 3: Alternatives and Evidence

This lesson teaches children to generate alternative thoughts and to use evidence to test the accuracy of their thoughts.

Lesson 4: Evaluating Thoughts and Putting it into Perspective

During this session children are encouraged to put the implications of problems in perspective by thinking about the best, worst and most likely outcomes.

Lesson 5: Discussion of Conflict and Review of Lessons 1-4

This lesson discusses conflict arising at home and teaches children to apply techniques such as generating multiple possible causes for the conflict, evaluating and disputing possible thoughts, as mechanisms for coping with conflict. The session also reviews and reinforces concepts taught in the first four lessons.

Lesson 6: Assertiveness and Negotiation

During this lesson different styles of interaction are introduced, i.e. passivity, aggression and assertiveness, whilst teaching children basic assertiveness skills. It also introduces and provides practice in concepts such as negotiation and compromise.

Lesson 7: Coping Strategies

Lesson 7 helps children think about what they can do if their parents or friends are fighting, such as using relaxation, distancing and assertiveness techniques. It also teaches children how to manage angry and sad feelings in social situations.

Lesson 8: Overcoming Procrastination and Social Skills Training

This lesson introduces two techniques: overcoming procrastination through breaking large problems down into small steps and training in social skills to promote confidence in initiating friendships.

Lesson 9: Decision Making and Review of Lessons 6-8

In this session the three previous sessions are reviewed and a technique for effective decision making is introduced, i.e. looking at the pros and cons of different choices in the short and longer term before making a decision.

Lesson 10: Problem-Solving

This lesson teaches children to use a problem solving approach to social interaction situations, e.g. listing possible actions and their likely consequences, evaluating situations from different perspectives. The lesson also encourages goal setting and taking other people's perspective into account to aid understanding of problematic situations.

Lesson 11: Problem Solving and Review

This lesson reviews and provides practice in problem solving and effective decision making.

Lesson 12: Review and Party

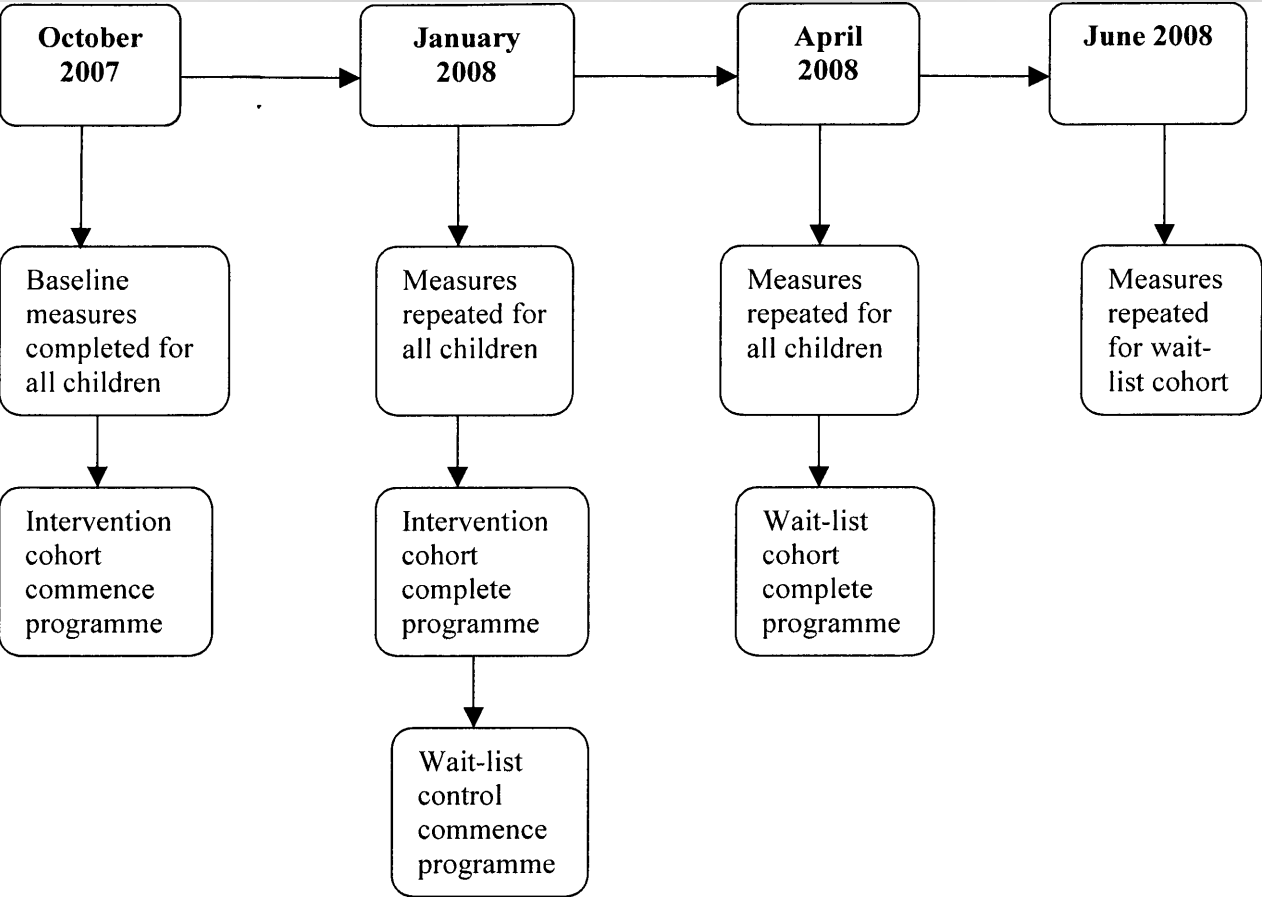
This final lesson reviews all the concepts taught during the programme, encourages ongoing practice of the concepts and involves a party to celebrate completion of the programme.

Implementation

Staff training

Training on the Penn Resiliency Program was provided by the author to each cohort of teachers in turn, immediately prior to their delivering the Penn Resiliency Program. Training was limited as the Education Service had been reluctant for class teachers to be involved in training during the school day as this had implications for

Figure 4: Data collection framework



Instrumentation

All children completed a set of self-report questionnaires measuring a variety of perceptions about themselves and their classroom. Parent and teacher questionnaires measuring perceptions of children’s behaviour were also completed. Information about the Alpha coefficients obtained for each of the instruments used in this study at Time 1 is reported in the results section.

Information from children relating to their classroom:

My Classroom Scale (MCS) Burnett (2002)

This 10 item scale consisting of 5 self-report statements graded to measure degree of satisfaction measures children’s satisfaction with their classroom and

relationship with their teacher, including statements such as 'I am really satisfied with my classroom'. The teacher-pupil relationship items had an alpha coefficient of 0.85 and the classroom environment items had an alpha coefficient of 0.82 (Burnett, 2002).

Students' Sense of the School as a Community (SSSC) (Roberts, Hom & Battistich, 1995)

This is a 38 item scale using a 5-point Likert format to assess pupil's perceptions of their autonomy, participation and influence in the classroom as well as interpersonal relationships, e.g. 'in my class the teacher and students decide together what the rules will be'. The scale had an alpha coefficient of 0.91 (Roberts et al. 1995).

Information from children related to themselves

Self-Talk Inventory (STI) (Burnett, 1996)

This consists of 5 hypothetical situations with 7 or 8 possible responses, e.g. 'this is going to be awful' and 'just stay calm' to explore children's positive and negative self-talk. It had an alpha coefficient of 0.89 (Burnett, 1996).

Self-Esteem Questionnaire (SEQ) (DuBois, Felner, Brand, Phillips & Lease, 1996)

The SEQ includes 42 items rated on a 4-point scale, designed to assess self-esteem across 5 dimensions, e.g. peer relationships and school, as well as global self-worth. Items include, e.g. 'I like being the way I am' and 'I am as good a student as I want to be'. For this scale coefficient alphas ranged from 0.81-0.91 (DuBois, et al., 1996).

The Children's Dysfunctional Attributions Scale (CDAS) (Abela & Sullivan, 2003)

This 40 item self-report questionnaire assesses dysfunctional attitudes in children by asking them to read a list of statements and then indicate how much they agree with each statement using a 4-point scale ranging from 'always true' to 'never true'. Items include, e.g. 'what other people think about me is very important'.

Higher scores indicate higher levels of dysfunctional attitudes. Abela and Sullivan (2003) obtained a coefficient alpha of .91.

Children's Depression Inventory (CDI) (Kovacs, 1992)

This questionnaire has 27 items consisting of 3 self-report statements graded in severity to assess depressive symptoms, e.g. 'I am sad once in a while'. The CDI has a coefficient alpha of 0.90 (Nolen-Hoeksema et al., 1991).

Information from teachers

Strengths and Difficulties Questionnaire (SDQ) – teachers' version (Goodman, 1997)

This questionnaire has 25 items scored on a 3-point Likert scale, to assess the psychological adjustment of children, including emotional, conduct, hyperactivity and peer problems, as well as prosocial behaviour, e.g. 'easily distracted, concentration wanders' and 'kind to younger children'. It has a mean coefficient alpha of 0.73 (Goodman, 2001).

Information from parents

Strengths and Difficulties Questionnaire (SDQ) – parents' version (Goodman, 1997)

This is very similar to the teachers' version and when completed by parents as well as by teachers heighten the sensitivity of the tool (Goodman, Ford, Simmons, Gatward & Meltzer, 2003). It has a mean coefficient alpha of 0.73 (Goodman, 2001).

Missing data

Whilst collecting the baseline data at Time 1, one class, through a photocopying error, only completed half the questions in My Classroom Scale, Students' Sense of School as a Community, the Self-Talk Inventory and the Self-Esteem Questionnaire. Sufficient questions were answered to allow a subscale each from My Classroom Scale and from the Students' Sense of School as a Community to be used in data analysis, otherwise data from this class was not used in any analysis involving these questionnaires given that the data was not missing at random (Tabachnick & Fidell, 2007).

Implementation integrity

To test for implementation integrity the author used two approaches, a direct observation of a lesson and a teacher evaluation sheet, the results of which were combined to give an overall implementation integrity score, referred to as a programme adherence score. The author randomly observed each class during one Penn Resiliency Program lesson using a simple observation schedule (Appendix 6). The observation schedule covered four areas, each of which the author scored on a 10 point scale, with 1 being poor and 10 being excellent. The four areas considered were: the teacher's delivery of the programme, whether the children appeared to understand the concepts being discussed, whether the children appeared engaged during the lesson and the teacher's overall adherence to the material in the lesson. Scores from each area were then combined and an overall mean calculated to indicate degree of adherence to the programme. A planned second observation had to be abandoned due to difficulties co-coordinating the author's diary with the teachers' lesson delivery.

Teachers' perceptions of their own efficacy is related to their capacity to facilitate in turn pupils own perceptions of efficacy and attainment (e.g. Midgley, Feldlaufer & Eccles, 1989) and to successful implementation of innovative programmes (Stein & Wang, 1988). Accordingly, class teachers were asked to record details of any child who was absent during a lesson, details of homework completed, and an evaluation sheet after each lesson about their perceptions of how effective their delivery of the programme had been, to gather qualitative data about adherence to the programme. Teachers did not consistently complete these sheets so instead were asked to complete an evaluation sheet (Appendix 7) at the end of the intervention to indicate their perceptions about how effective they believed their delivery of the programme had been and to obtain any comments they had in relation to the programme. This evaluation sheet asked the teachers to rate on a 10 point scale, with 1 being low and 10 being high, how satisfied they were that the children understood the concepts being delivered, how relevant they thought the programme was for children in their class, how interesting they thought the children found the programme, whether they considered that the children had benefited from the

programme and how interesting they found teaching the programme. Again scores for each area were combined and an overall mean calculated to indicate degree of implementation integrity. This score was combined with the score from the observation schedule to provide an overall mean implementation integrity score.

Statistical procedures

The sample size of 221 children was sufficient to enable data analysis using multiple regression as recommended by Tabachnick and Fidell (2007), i.e. $N \geq 104 + m$ (where m is the number of independent variables) for testing individual predictors.

Hierarchical multiple regression analyses was used to examine whether a positive class climate (MCS, SSSC) predicted more positive self-talk (STI), less negative self-talk (STI), higher self-esteem (SEQ) and fewer symptoms of depression (CDI) in children.

In order to investigate intervention effects on positive explanatory styles (CDAS), problem solving skills (SDQ – parent / teacher versions) and symptoms of depression (CDI) residualized change scores were used in hierarchical multiple regression analyses. To test for any delayed intervention effects one-way within-subjects repeated-measures analyses of variance (ANOVA) were conducted.

Finally, hierarchical multiple regression analyses were undertaken to test for any effects of programme adherence.

Chapter 6

Results

Alpha coefficients for the instruments used

Alpha coefficients were obtained for each of the instruments used at Time 1 (T1), as shown in Tables 4(a) and 4(b).

Table 4(a)

Internal consistency coefficients at T1

Scale	Cronbach's α
My Classroom Scale	.89
Satisfaction with Teacher subscale	.86
Satisfaction with Classroom environment subscale	.83
Student's Sense of School as a Community	.87
Autonomy subscale	.79
Supportiveness subscale	.81
Children's Depression Inventory	.85
Negative mood subscale	.62
Interpersonal problems subscale	.51
Ineffectiveness subscale	.52
Anhedonia subscale	.66
Negative self-esteem subscale	.65
Children's Dysfunctional Attitudes Scale	.82
Self-Talk Inventory – Positive Self-Talk Scale	.89
Self-Talk Inventory – Negative Self-Talk Scale	.86

Table 4(b)*Internal consistency coefficients at T1, continued*

Self-Esteem Scale	.93
Peers subscale	.81
School subscale	.81
Family subscale	.74
Sports / athletics subscale	.79
Body image subscale	.47
Global subscale	.72
Strengths and Difficulties Questionnaire (teachers' version) – Total Difficulties Score	.86
Emotional symptoms subscale	.83
Conduct problems	.78
Hyperactivity subscale	.88
Peer problems subscale	.59
Prosocial subscale	.81
Strength and Difficulties Questionnaire (parents' version) – Total Difficulties Score	.80
Emotional symptoms subscale	.60
Conduct problems	.43
Hyperactivity subscale	.79
Peer problems subscale	.66
Prosocial subscale	.67

Cohort differences in Time 1 scores

Scores at Time 1 for Cohort 1 (intervention cohort) and Cohort 2 (wait-list control cohort) were obtained for each of the instruments used (see table 5).

Independent *t*-test analyses were carried out to test for any significant differences between the cohorts on the instruments at T1. Cohort differences were observed in teacher reported behaviour problems, with cohort 1 showing significantly more

behaviour problems (mean = 9.37, SD = 7.08) than cohort 2 (mean = 5.28, SD = 4.51), $t = 5.17$, $df = 219$, $p < .001$ (two-tailed). Cohort differences were also observed in perceptions of classroom climate (measured by SSSC) with cohort 1 indicating significantly lower satisfaction (mean = 3.04, SD = .62) than cohort 2 (mean = 3.35, SD = .49) respectively, $t = -3.90$, $df = 192$, $p < .001$ (two-tailed).

Table 5
Scores at T1 for Cohort 1 and Cohort 2 on each of the instruments used

Measurement Scale	Cohort 1				Cohort 2			
	Male		Female		Male		Female	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CDI ^b	10.68	7.49	7.51	5.7	9.27	7.19	8.41	5.69
CDAS	39.68	12.99	36.56	12.17	36.82	14.27	35.32	13.83
SEQ	130	17.60	128.82	22.85	133.84	18.55	132.75	13.72
Teacher reported SDQ ^{ab}	12.02	6.83	6.96	6.46	5.91	.38	3.76	.37
Parent reported SDQ	12.13	5.10	8.11	3.79	8.05	4.06	9.64	6.30
Positive self-talk	42.29	8.31	41.53	8.69	43.56	6.86	43.31	7.39
Negative self-talk ^b	30.39	7.28	31.84	9.28	29.38	7.47	32.19	7.11
MCS	3.61	.67	3.75	.55	3.64	.38	3.76	.37
SSSC ^{ab}	2.96	.61	3.16	.58	3.26	.48	3.42	.49

^a = significant cohort differences; ^b = significant gender differences

Independent *t*-test analyses of gender effects on instruments at Time 1

Independent *t*-test analyses were undertaken to determine whether there were any gender differences in measurement scale results and their subscales at Time 1 (T1). Two-tailed tests were used for all pre-intervention analyses whenever there was no a priori prediction of the direction of the relationship (any one-tailed tests are highlighted).

Depression scores (measured by Children's Depression Inventory)

Gender differences were observed in total depression scores at T1 with boys' scores significantly higher indicating more symptoms of depression (mean = 9.92, SD = 7.33) than girls' (mean = 7.99, SD = 5.68), $t = 2.15$, $df = 210$, $p < .05$

Interpersonal problems subscale

Gender differences were also observed in total interpersonal problem scores at T1 with boys' scores significantly higher (mean = 1.02, SD = 1.26) than girls' (mean = .50, SD = .82), $t = 3.57$, $df = 168.88$, $p < .001$. For this analysis equality of variances was not assumed as Levene's test was significant, $p < .001$.

Ineffectiveness subscale

Gender differences were observed again in total ineffectiveness scores at T1 with boys' scores significantly higher (mean = 1.73, SD = 1.71) than girls' (mean = .99, SD = 1.25), $t = 3.58$, $df = 184.40$, $p < .001$. Once again equality of variances was not assumed as Levene's test was significant, $p < .001$.

No gender differences were noted for the following subscales at T1: negative mood, $t = 0.01$, $df = 210$, $p = .992$; anhedonia, $t = 1.04$, $df = 210$, $p = .299$; and negative self-esteem, $t = 1.32$, $df = 210$, $p = .190$.

Dysfunctional attitudes (measured by Children's Dysfunctional Attitudes Scale)

No significant gender differences were observed in total dysfunctional attitude scores at T1, $t = 1.26$, $df = 219$, $p = .210$.

Self-esteem (measured by the Self-Esteem Questionnaire)

No significant gender differences were observed in total self-esteem scores at T1, $t = 0.39$, $df = 192$, $p = .696$.

Body image subscale

Gender differences were observed in total body image scores at T1 with boys' scores indicating more positive perceptions (mean = 12.39, SD = 2.53) than girls' (mean = 11.45, SD = 2.33), $t = 0.94$, $df = 192$, $p < .01$.

No gender differences were observed in the following subscales at T1: peer relationships, $t = 0.33$, $df = 192$, $p = .740$; school, $t = 0.95$, $df = 192$, $p = .344$; family, $t = -1.16$, $df = 192$, $p = .245$; sports / athletics, $t = 1.09$, $df = 192$, $p = .278$; and global, $t = 0.94$, $df = 192$, $p = .350$.

Positive self-talk (measured by the Self-Talk Inventory)

No significant gender differences were observed in total positive self-talk scores at T1, $t = 0.37$, $df = 191$, $p = .711$.

Negative self-talk (measured by the Self-Talk Inventory)

Gender differences were observed in negative self-talk scores at T1 with boys' scores being significantly lower, indicating less negative self-talk (mean = 29.81, SD = 7.37) than girls' (mean = 32.85, SD = 7.99), $t = 2.02$, $df = 191$, $p < .05$.

Behaviour (measured by the Strengths and Difficulties Questionnaire)

Gender differences were observed in teacher reported SDQ total difficulties scores at T1 with boys' scores significantly higher, indicating greater perception of difficulties (mean = 8.79, SD = 6.44) than girls' (mean = 5.78, SD = 5.63), $t = 3.71$, $df = 219$, $p < .001$. No significant gender differences were observed in equivalent parent reports, $t = -0.09$, $df = 125$, $p = .930$.

Emotional symptoms subscale

No significant gender differences were observed in teacher reports of total emotional symptoms scores at T1, $t = -1.85$, $df = 216.76$, $p = .065$. Equality of variances was not assumed as Levene's test was significant, $p < .01$. Gender differences were, however, observed in parent reports, with boys' scores significantly lower, indicating boys were perceived as showing fewer emotional symptoms (mean = 1.46, SD = 1.75) than girls' (mean = 2.44, SD = 2.43), $t = -2.64$, $df = 120.90$, $p < .01$. Again, equality of variances was not assumed as Levene's test was significant, $p < .01$.

Peer problems subscale

No significant gender differences were observed in teacher reported total peer problems scores, $t = 0.61$, $df = 219$, $p = .542$ or parent reported peer problem scores, $t = -1.00$, $df = 125$, $p = .318$ at T1.

Conduct problems subscale

Gender differences were observed in teacher reported total conduct problems scores at T1 with boys' scores significantly higher, indicating greater problems (mean = 1.60, SD = 2.08) than girls' (mean = .70, SD = 1.31), $t = 3.84$, $df = 174.97$, $p < .001$. Equality of variances was not assumed as Levene's test was significant, $p < .001$. Likewise, gender differences were observed in parent reports, with boys' scores significantly higher (mean = 1.23, SD = 1.38) than girls' scores (mean = 2.59, SD = 1.13), $t = 1.98$, $df = 136$, $p < .05$.

Hyperactivity subscale

Gender differences were observed in teacher reported total hyperactivity scores at T1 with boys' scores significantly higher (mean = 4.42, SD = 3.11) than girls' (mean = 1.90, SD = 2.27), $t = 6.91$, $df = 190.94$, $p < .001$. Equality of variances was not assumed as Levene's test was not significant, $p < .001$. Gender differences were also observed in parent reports with boys' scores significantly higher (mean = 3.73, SD = 2.63) than girls' (mean = 2.59, SD = 2.36), $t = 2.57$, $df = 125$, $p < .01$.

Prosocial subscale

Gender differences were observed in teacher reported total prosocial scores at T1 with boys' scores significantly lower (mean = 7.60, SD = 2.28) than girls' (mean = 8.75, SD = 1.76), $t = -4.15$, $df = 197$, $p < .001$. No significant gender differences were observed in parent reports, $t = .61$, $df = 219$, $p = .542$.

Classroom Climate (measured by My Classroom Scale)

No significant gender differences were observed in mean MCS scores at T1, $t = -1.89$, $df = 211$, $p = .060$.

Satisfaction with teacher subscale

Gender differences were observed in mean satisfaction with teacher scores at T1 with boys' scores significantly lower, indicating less satisfaction (mean = 3.94, SD = .80) than girls' (mean = 4.23, SD = .60), $t = -2.63$, $df = 172$, $p < .01$.

Satisfaction with classroom environment subscale

No significant gender differences were observed in mean satisfaction with classroom environment scores at T1, $t = -0.59$, $df = 211$, $p = .556$.

Classroom Climate (measured by Students' Sense of School as a Community)

Gender differences were observed in mean SSSC scores at T1 with boys' scores significantly lower, indicating lower satisfaction (mean = 3.12, SD = .56) than girls' (mean = 3.30, SD = .55), $t = -2.31$, $df = 212$, $p = .022$.

Autonomy subscale

No significant gender differences were observed in mean autonomy scores at T1, $t = -1.72$, $df = 211$, $p = .088$.

Supportiveness subscale

Gender differences were observed in mean supportiveness scores at T1 with boys' scores significantly lower (mean = 3.39, SD = .63) than girls' (mean = 3.63, SD = .65), $t = -2.74$, $df = 189$, $p < .01$.

Bivariate correlations between age and measurement scales

Pearson's bivariate correlations were used to determine to what extent the different scales used were correlated. Each scale was initially considered in its entirety and if no significant correlations were found, subscales were then considered. Two-tailed tests were used for all correlations where there was no a priori prediction of the direction of the correlations and one-tailed when clear assumptions had been made about the direction of the correlation (any one-tailed tests are highlighted).

A significant negative correlation was observed between age and overall teacher reports of problematic behaviour, $r = -.15$, $N = 201$, $p < .05$. The emotional subscale of the teacher reported SDQ was also significantly negatively correlated with age, $r = -.32$, $N = 201$, $p < .001$.

Significant negative correlations also existed between age and satisfaction with classroom, when measured by MCS, $r = -.21$, $N = 193$, $p = .003$ and by SSSC, $r = -.31$, $N = 194$, $p < .001$. The satisfaction with teacher subscale of the MCS showed a significant negative correlation with age, $r = -.17$, $N = 174$, $p < .05$ as did the two subscales of the SSSC, autonomy, $r = -.35$, $N = 174$, $p = .000$ and supportiveness, $r = -.22$, $N = 191$, $p < .01$.

Age was not significantly correlated with depression scores (measured by the CDI), $r = -.09$, $N = 196$, $p = .219$, with self-esteem (measured by the SEQ), $r = .03$, $N = 194$, $p = .658$, positive self-talk (measured by the STI), $r = .10$, $N = 193$, $p = .181$, negative self-talk (measured by the STI), $r = -.07$, $N = 193$, $p = .329$ or with parent reported problematic behaviour (measured by the SDQ), $r = -.026$, $N = 127$, $p = .776$.

Correlations between the Children's Depression Inventory and other measurement scales

As expected, there were significant positive correlations at T1 between the CDI and the CDAS, $r = .38$, $N = 196$, $p < .001$ (one-tailed), negative self-talk, $r =$

.40, $N = 192$, $p < .001$ (one-tailed), the parent reported SDQ, $r = .24$, $N = 125$, $p < .01$ (one-tailed) and the teacher reported SDQ, $r = .22$, $N = 196$, $p < .01$ (one-tailed). Significant negative correlations were reported between CDI and self-esteem, $r = -.53$, $N = 193$, $p < .001$ (one-tailed), positive self-talk, $r = -.33$, $N = 192$, $p < .001$ (one-tailed), MCS, $r = -.27$, $N = 192$, $p < .001$ (one-tailed) and SSSC, $r = -.32$, $N = 193$, $p < .001$ (one-tailed).

Correlations between the Children's Dysfunctional Attitudes Scale and other measurement scales

There were also, as expected, significant positive correlations at T1 between the CDAS and parent reported SDQ, $r = .17$, $N = 127$, $p < .05$ (one-tailed), teacher reported SDQ, $r = .22$, $N = 201$, $p < .01$ (one-tailed) and negative self-talk, $r = .23$, $N = 193$, $p < .001$ (one-tailed). Significant negative correlations were found between the CDAS and positive self-talk, $r = -.17$, $N = 193$, $p < .05$ (one-tailed) and SSSC, $r = -.32$, $N = 194$, $p < .001$ (one-tailed). Significant correlations were not found between the CDAS and total MCS, $r = -.10$, $N = 193$, $p = .094$ (one-tailed), although a significant negative correlation was found with the satisfaction with teacher subscale, $r = -.17$, $N = 174$, $p < .05$ (one-tailed).

Correlations between the Self-esteem Questionnaire and other measurement scales

Significant positive correlations were found at T1 between the SEQ and positive self-talk, $r = .37$, $N = 193$, $p < .001$ (one-tailed), MCS, $r = .15$, $N = 193$, $p < .05$ (one-tailed) and SSSC, $r = .43$, $N = 194$, $p < .001$ (one-tailed). Significant negative correlations were found between the SEQ and negative self-talk, $r = -.32$, $N = 193$, $p < .001$ (one-tailed). There were no significant correlations between the SEQ and either parent reported overall SDQ, $r = -.14$, $N = 125$, $p = .061$ (one-tailed) or teacher reported overall SDQ, $r = .07$, $N = 194$, $p = .167$ (one-tailed). A significant positive correlation was found, however, with the parent reported prosocial subscale, $r = .26$, $N = 125$, $p < .01$ (one-tailed) and a significant negative correlation was found with the parent reported peer problem subscale, $r = -.19$, $N = 125$, $p < .05$ (one-tailed).

Correlations between the My Classroom Scale and other measurement scales

The MCS was significantly positively correlated at T1 with positive self-talk, $r = .36$, $N = 193$, $p < .001$ (one-tailed) and the SSSC, $r = .49$, $N = 193$, $p < .001$ (one-tailed). It was significantly negatively correlated with negative self-talk, $r = -.12$, $N = 193$, $p < .05$ (one-tailed). No significant correlations were found with either teacher reported overall SDQ, $r = .00$, $N = 193$, $p = .479$ (one-tailed) or parent reported overall SDQ, $r = -.08$, $N = 125$, $p = .195$ (one-tailed) although positive significant correlations were noted with parent and teacher reported prosocial subscales $r = .15$, $N = 125$, $p < .05$ (one-tailed) and $r = .21$, $N = 193$, $p < .01$ (one-tailed) respectively and the teacher reported emotional subscale, $r = .13$, $N = 193$, $p < .05$ (one-tailed).

Correlations between Students' Sense of the School as a Community and other measurement scales

The SSSC was significantly positively correlated at T1 with positive self-talk, $r = .36$, $N = 193$, $p < .001$ (one-tailed), teacher and parent reported SDQ prosocial subscales, $r = .22$, $N = 194$, $p < .001$ (one-tailed) and $r = .21$, $N = 125$, $p < .01$ (one-tailed), respectively, and teacher reported SDQ emotional subscale, $r = .17$, $N = 194$, $p < .01$ (one-tailed). Significant negative correlations were noted between the SSSC and negative self-talk, $r = -.18$, $N = 193$, $p < .001$ (one-tailed), parent reported overall SDQ, $r = -.19$, $N = 125$, $p < .05$ (one-tailed) and teacher reported SDQ peer problem subscale, $r = -.12$, $N = 194$, $p < .05$ (one-tailed).

Multivariate analyses

A series of hierarchical multiple regression analyses was conducted to answer the questions arising from the first main aim of the study.

Hypothesis

The Penn Resiliency Program will result in children showing

- a) more positive explanatory styles**
- b) more interpersonal problem solving skills, which in turn will result in children showing**
- c) fewer symptoms of depression both immediately post-intervention and at 2-month follow-up**

d) the effect of the Penn Resiliency Program on symptoms of depression will be mediated by explanatory style and interpersonal problem solving skills

Residualised change scores

Residualised change scores were calculated for each variable of interest, i.e. positive and negative self-talk (measured by the Self-Talk Inventory), dysfunctional attitudes (measured by the CDAS), interpersonal problem solving skills (measured by the parent and teacher reported Strengths and Difficulties Questionnaire, including subscales) and depression symptoms (measured by the CDI, including subscales) from T1 to T2 for both the intervention group (cohort 1) and the wait list control group (cohort 2). Residualised change scores, the difference between the actual T2 scores and the predicted T2 scores, were created by undertaking a preliminary multiple regression analysis in which the T2 scores were predicted from the T1 outcome and were, therefore, independent of the T1 outcome (Fleeson, 2007). This method also avoids the potential problem of regression to the mean.

Multivariate analyses

Question 1: Did the PRP result in children showing more positive explanatory styles?

To check whether the Penn Resiliency Program (PRP) resulted in children showing more positive explanatory styles (measured by the Self-Talk Inventory and Children's Dysfunctional Attitudes Scale hierarchical multiple regression was used.

For the first regression, age and gender were controlled for by entering them at the first step of the regression with residualised change scores T1 to T2 for positive self-talk as the criterion variable, $F(2,185) = .05, p = .954, R^2 \text{ change} = .001$. Cohort (1 = intervention group, 2 = wait list control) was entered at the second step of the regression. At step 2 cohort did not account for a significant portion of the variance in the residualised positive self-talk scores, $F_{\text{change}}(3,184) = .13, p = .723, R^2 \text{ change} = .001$.

A second hierarchical multiple regression was conducted exactly as above but using residualised change scores T1 to T2 for negative self-talk as the criterion variable, $F(2,183) = .42, p = .659, R^2 \text{ change} = .005$. At step 2 cohort did not account for a significant portion of the variance in the residualised negative self-talk scores, $F_{\text{change}}(3,182) = 1.02, p = .318, R^2 \text{ change} = .006$.

A third regression was conducted as above but using residualised change scores T1 to T2 for dysfunctional attitudes as the criterion variable, $F(2,211) = 1.23, p = .293, R^2 \text{ change} = .012$. Once again, at step 2 cohort did not account for a significant portion of the variance in the residualised dysfunctional attitudes scores, $F_{\text{change}}(3,210) = .46, p = .498, R^2 \text{ change} = .002$.

Question 2: Did the PRP result in children showing more interpersonal problem solving skills?

Teacher reports

To check whether the Penn Resiliency Program (PRP) resulted in children showing more interpersonal problem solving skills (measured by teacher reported Strengths and Difficulties Questionnaire) hierarchical multiple regression was used. For the first regression, age and gender were controlled for by entering them at the first step of the regression, with residualised change scores T1 to T2 for teacher reported SDQ scores as the criterion variable, $F(2,217) = 4.38, p = .014, R^2 \text{ change} = .039$. Gender at T1 was the only significant predictor of SDQ scores at T2 ($\beta = -.18, p < .01$). Cohort (1 = intervention group, 2 = wait list control) was entered at the second step of the regression. At the second step of the regression cohort did not account for a significant portion of the variance in residualised SDQ scores, $F_{\text{change}}(3,216) = 3.50, p = .063, R^2 \text{ change} = .015$.

Prosocial subscale

A further regression was conducted exactly as above but using residualised change scores T1 to T2 for teacher reported prosocial behaviour as the criterion variable, $F(2,217) = 2.22, p = .111, R^2 \text{ change} = .020$. At step 2 cohort did not

account for a significant portion of the variance in residualised prosocial behaviour scores, $F_{\text{change}}(3,216) = .63, p = .429, R^2 \text{ change} = .003$.

Emotional symptoms subscale

Another regression was conducted but using residualised change scores T1 to T2 for teacher reported emotional symptoms as the criterion variable, $F(2,217) = 3.64, p < .05, R^2 \text{ change} = .032$. Gender at T1 was the only significant predictor of emotional symptoms at T2 ($\beta = -.17, p < .01$). At step 2 cohort did not account for a significant portion of the variance in residualised emotional symptoms scores, $F_{\text{change}}(3,216) = .51, p = .477, R^2 \text{ change} = .002$.

Peer problems subscale

Another regression was conducted using residualised change scores T1 to T2 for teacher reported peer problems as the criterion variable, $F(2,160) = .02, p = .976, R^2 \text{ change} = .000$. At step 2 cohort did not account for a significant portion of the variance in residualised peer problem scores, $F_{\text{change}}(3,159) = 2.09, p > .05, R^2 \text{ change} = .013$.

Conduct problems subscale

A regression was conducted using residualised change scores T1 to T2 for teacher reported conduct problems as the criterion variable. At step 2 cohort accounted for a significant portion of the variance in residualised conduct problem scores (2.7%, see Table 6).

Table 6

Regression Analysis Predicting Effects of Cohort on Teacher Reported Conduct Problems (residualised change score T1 to T2), Age and Gender

Step	Predictors	Step1 β	Step 2 β
1	Gender ^a	.118	.120
	Age	.055	.030
$F(2,217) = 1.86, p = .158, R^2 \text{ change} = .017$			
2	Cohort ^b		-.165*
$F_{\text{change}}(3,216) = 6.04, p < .05, R^2 \text{ change} = .027$			

^aGender coded (1=male; 2=female); ^bCohort coded (1=intervention, 2=wait-list control) * $p < 0.05$

This indicated that, when controlling for age and gender, the intervention predicted a reduction in teacher reported conduct problems.

Hyperactivity subscale

A regression was conducted using residualised change scores T1 to T2 for teacher reported hyperactivity at the first step of the regression. At step 2 cohort accounted for a significant portion of the variance in residualised hyperactivity scores (3%, see Table 7).

Table 7

Regression Analysis Predicting Effects of Cohort on Teacher Reported Hyperactivity (residualised change score T1 to T2), Age and Gender

Step	Predictors	Step1 β	Step 2 β
1	Gender ^a	-.100	-.102
	Age	-.149*	-.175**
$F(2,217) = 3.61, p < .05, R^2 \text{ change} = .032$			
2	Cohort ^b		-.174**
$F_{\text{change}}(3,216) = 6.86, p < .01, R^2 \text{ change} = .030$			

^aGender coded (1=male; 2=female); ^bCohort coded (1=intervention, 2=wait-list control) * $p < 0.05$; ** $p < 0.01$

This indicated that, when controlling for age and gender, the intervention predicted a reduction in teacher reported hyperactivity.

Parent reports

To check whether the Penn Resiliency Program (PRP) resulted in children showing more interpersonal problem solving skills (measured by parent reported Strengths and Difficulties Questionnaire) hierarchical multiple regression was used. For the first regression, age and gender were controlled for by entering them at the first step of the regression and residualised change scores T1 to T2 for parent reported SDQ scores as the criterion variable, $F(2,102) = .23, p = .792, R^2 \text{ change} = .005$. Cohort (1 = intervention group, 2 = wait list control) was entered at the second step of the regression. At step 2 of the regression cohort did not account for a significant portion of the variance in residualised SDQ scores, $F_{\text{change}}(3,101) = .04, p = .850, R^2 \text{ change} = .000$.

Prosocial subscale

Another regression was conducted exactly as above but using residualised change scores T1 to T2 for parent reported prosocial behaviour as the criterion

variable, $F(2,102) = 3.34, p = .039, R^2 \text{ change} = .062$. Gender at T1 was the only significant predictor of prosocial scores at T2 ($\beta = .23, p < .05$). At step 2 cohort did not account for a significant portion of the variance in residualised prosocial behaviour scores, $F_{\text{change}}(3,101) = .53, p = .473, R^2 \text{ change} = .005$.

Emotional symptoms subscale

A regression was carried out using residualised change scores T1 to T2 for parent reported emotional symptoms as the criterion variable, $F(2,102) = .03, p = .973, R^2 \text{ change} = .001$. At step 2 cohort did not account for a significant portion of the variance in residualised emotional symptom scores, $F_{\text{change}}(3,101) = .02, p = .878, R^2 \text{ change} = .000$.

Peer problems subscale

Another regression was conducted but using residualised change scores T1 to T2 for parent reported peer problems as the criterion variable, $F(2,102) = 1.68, p = .192, R^2 \text{ change} = .032$. At step 2 cohort did not account for a significant portion of the variance in residualised peer problem scores, $F_{\text{change}}(3,101) = .07, p = .787, R^2 \text{ change} = .001$.

Conduct problems subscale

A regression was conducted but using residualised change scores T1 to T2 for parent reported conduct problems as the criterion variable, $F(2,102) = .69, p = .503, R^2 \text{ change} = .013$. At step 2 cohort did not account for a significant portion of the variance in residualised conduct problem scores, $F_{\text{change}}(3,101) = 1.77, p = .186, R^2 \text{ change} = .017$.

Hyperactivity subscale

A further simultaneous multiple regression was conducted, again exactly as above, but using residualised change scores T1 to T2 for parent reported hyperactivity as the criterion variable, $F(2,102) = .83, p = .439, R^2 \text{ change} = .016$. At step 2 cohort did not account for a significant portion of the variance in residualised hyperactivity scores, $F_{\text{change}}(3,101) = .07, p = .798, R^2 \text{ change} = .001$.

Question 3: Did the PRP result in children showing fewer depression symptoms?

To check whether the Penn Resiliency Program (PRP) resulted in children showing fewer depression symptoms (measured by the Children's Depression Inventory) hierarchical multiple regression was used. For the first regression, age and gender were controlled for by entering them at the first step of the regression, with residualised change scores T1 to T2 for depression symptoms as the criterion variable, $F(2,201) = .31, p = .737, R^2 \text{ change} = .003$. Cohort (1 = intervention group, 2 = wait list control) was entered at the second step of the regression. Cohort did not account for a significant portion of the variance in residualised depression symptom scores, $F_{\text{change}}(3,200) = 1.27, p = .261, R^2 \text{ change} = .006$.

Negative mood subscale

A further regression was conducted, again exactly as above, but using residualised change scores T1 to T2 for negative mood as the criterion variable, $F(2,201) = .31, p = .737, R^2 \text{ change} = .003$. At step 2 cohort did not account for a significant portion of the variance in residualised negative mood scores, $F_{\text{change}}(3,200) = .31, p = .580, R^2 \text{ change} = .002$.

Interpersonal problems subscale

Another regression was conducted, again as above, but using residualised change scores T1 to T2 for interpersonal problems as the criterion variable, $F(2,201) = 1.25, p = .288, R^2 \text{ change} = .012$. At step 2 cohort did not account for a significant portion of the variance in residualised interpersonal problem scores, $F_{\text{change}}(3,200) = 2.33, p = .129, R^2 \text{ change} = .011$.

Ineffectiveness subscale

A further regression was conducted, but using residualised change scores T1 to T2 for ineffectiveness as the criterion variable, $F(2,201) = .39, p = .675, R^2 \text{ change} = .004$. At step 2 cohort did not account for a significant portion of the variance in residualised ineffectiveness scores, $F_{\text{change}}(3,200) = 2.98, p = .086, R^2 \text{ change} = .015$.

Anhedonia subscale

Another regression was conducted, but using residualised change scores T1 to T2 for anhedonia as the criterion variable, $F(2,201) = 2.33, p = .100, R^2 \text{ change} = .023$. At step 2 cohort did not account for a significant portion of the variance in residualised anhedonia scores, $F_{\text{change}}(3,200) = 1.4, p = .239, R^2 \text{ change} = .007$.

Negative self-esteem subscale

A regression was conducted, again as above, but using residualised change scores T1 to T2 for negative self-esteem as the criterion variable, $F(2,202) = .12, p = .886, R^2 \text{ change} = .001$. At step 2 cohort did not account for a significant portion of the variance in residualised negative self-esteem scores, $F_{\text{change}}(3,201) = 1.87, p = .173, R^2 \text{ change} = .009$.

Question 4: Were there any delayed intervention effects on symptoms of depression at 2-month follow-up?

Univariate Analyses

Depressive symptoms (measured using CDI scores)

To test for any delayed intervention effects one-way within-subjects ANOVA were conducted, initially with the intervention group (cohort 1) and then subsequently with the wait-list control group (cohort 2). T1 was immediately pre-intervention, T2 was immediately post-intervention and T3 was at follow-up approximately 8 weeks later for both cohorts. Results from each cohort at equivalent time points were compared to test for any similar outcome patterns that might indicate a delayed effect, for example, consistency between cohorts of a reduction in depression scores immediately post-intervention or at follow-up.

In the first ANOVA, total CDI scores for cohort 1 at T1, T2 and T3 were used to test for any effects of time. A significant effect of time was found in relation to depression symptoms, with mean depression symptoms decreasing over time, for cohort 1: $F(2,160) = 6.95, p < .001; \eta = .08$. Pairwise comparisons indicated that T1 was significantly higher than T2 (means = 9.20 and 7.48 respectively; $p < .05$) and

that T1 was significantly higher than T3 (means = 9.20 and 6.44 respectively; $p < .01$). There were no significant effects of time from T2 to T3.

An ANOVA was repeated as above using cohort 2. Again a significant time effect was observed with mean depression symptoms increasing slightly from T1 to T2 then decreasing at T3: $F(2,122) = 3.55, p < .05; \eta = .055$. In contrast to results for cohort 1, pairwise comparisons indicated that T2 was significantly higher than T3 (means 7.66 and 5.69 respectively; $p < .05$). There were no significant effects of time from T1 to T2 or T1 to T3.

In comparing the pattern of results for each cohort contradictory significant differences were noted, i.e. in cohort 1 a significant effect of time was found from T1 to T2 and T1 to T3 whereas for cohort 2 the only significant effect of time was between T2 to T3. The absence of a consistent pattern of results for each cohort suggests that there were no consistent delayed intervention effects.

Question 5: Did explanatory style and interpersonal problem solving skills mediate effects of the PRP on symptoms of depression?

Mediational analyses were not conducted as the PRP had no significant impact on symptoms of depression.

Question 6: Did the PRP result in a more positive class climate?

Multivariate analyses

To check whether the Penn Resiliency Program (PRP) resulted in children perceiving their classroom climate as more positive (measured by the My Classroom Scale, the Students' Sense of School as a Community scale and each of their two subscales) hierarchical multiple regression was used.

For the first regression, age and gender were controlled for by entering them at the first step of the regression, with residualised change scores T1 to T2 for MCS

as the criterion variable. Cohort (1 = intervention group and 2 = wait list control group) was entered at step two of the regression. At step 2 cohort accounted for a significant portion of the variance in residualised MCS scores (8.3%, see Table 8)

Table 8

Regression Analysis Predicting Effects of Cohort on Classroom Climate (measured by MCS) (residualised change score T1 to T2), Age and Gender

Step	Predictors	Step1 β	Step 2 β
1	Gender ^a	.237*	.241**
	Age	-.134	-.094
$F(2,205) = 8.25, p < .001, R^2 \text{ change} = .075$			
2	Cohort ^b		.291**
$F_{\text{change}}(3,204) = 20.19, p < .001, R^2 \text{ change} = .083$			

^aGender coded (1=male; 2=female); ^bCohort coded (1=intervention, 2=wait list control) * $p < 0.01$; ** $p < 0.001$

This indicates that, when controlling for age and gender, the intervention resulted in significantly more positive perceptions of classroom climate at T2 as measured by MCS.

A second regression was undertaken as above but with residualised change scores T1 to T2 for the MCS subscale, Satisfaction with Teacher, as the criterion variable. Cohort was again entered at step two of the regression. At step two cohort accounted for a significant portion of the variance in residualised satisfaction with teacher scores (12.7%, see Table 9).

Table 9

Regression Analysis Predicting Effects of Cohort on Classroom Climate (measured by Satisfaction with Teacher Subscale) (residualised change score T1 to T2), Age and Gender

Step	Predictors	Step 1 β	Step 2 β
1	Gender ^a	.259*	.249**
	Age	-.094	-.002
$F(2,166) = 7.069, p < .01, R^2 \text{ change} = .078$			
2	Cohort ^b		.369**
$F_{\text{change}}(3,165) = 26.42, p < .001, R^2 \text{ change} = .127$			

^aGender coded (1=male; 2=female); ^bCohort coded (1=intervention, 2=wait-list control) * $p < 0.01$; ** $p < 0.001$

This indicated that, when controlling for age and gender, the intervention resulted in significantly higher levels of satisfaction with teachers (measured by the Satisfaction with Teacher subscale of MCS).

A third regression was undertaken as above but using residualised change scores T1 to T2 for the MCS subscale, Satisfaction with Classroom Environment as the criterion variable. At step two cohort accounted for a significant portion of the variance in residualised Satisfaction with Classroom Environment scores (7.6%, see Table 10).

Table 10
Regression Analysis Predicting Effects of Cohort on Classroom Climate (measured by Satisfaction with Classroom Environment Subscale) (residualised change scores T1 to T2), Age and Gender

Step	Predictors	Step 1 β	Step 2 β
1	Gender ^a	.232*	.236**
	Age	-.127	-.090
$F(2,205) = 7.785, p < .01, R^2 \text{ change} = .071$			
2	Cohort ^b		.278**
$F_{\text{change}}(3,204) = 18.15, p < .001, R^2 \text{ change} = .076$			

^aGender coded (1=male; 2=female); ^bCohort coded (1=intervention, 2=wait-list control) * $p < 0.01$; ** $p < 0.001$

This indicted that, when controlling for age and gender, the intervention resulted in significantly higher levels of satisfaction with the classroom environment (measured by the Satisfaction with Classroom Environment subscale of MCS).

A fourth regression was conducted as above but with residualised change scores T1 to T2 for SSSC as the criterion variable. At step two of the regression cohort did not account for a significant portion of the variance in residualised SSSC scores, $F_{\text{change}}(3,204) = .33, p = .569, R^2 \text{ change} = .002$.

A fifth regression was undertaken, as above but with residualised change scores T1 to T2 for Autonomy subscale of SSSC as the criterion variable. At step two of the regression cohort accounted for a significant portion of the variance in residualised autonomy scores, (3.5% - see Table 11)

Table 11
Regression Analysis Predicting Effects of Cohort on Classroom Climate (measured by Autonomy Subscale) (residualised change scores T1 to T2), Age and Gender

Step	Predictors	Step 1 β	Step 2 β
1	Gender ^a	.016	.014
	Age	-.023	-.050
$F(2,205) = .08, p > .05, R^2 \text{ change} = .022$			
2	Cohort ^b		-.189*
$F_{\text{change}}(3,204) = 7.40, p < .01, R^2 \text{ change} = .035$			

^aGender coded (1=male; 2=female); ^bCohort coded (1=intervention, 2=wait-list control) * $p < 0.01$

This indicated that, when controlling for age and gender, the intervention resulted in significantly higher levels of satisfaction with the classroom environment (measured by the Autonomy subscale of SSSC).

A sixth regression was conducted, with residualised change scores T1 to T2 for Supportiveness subscale of SSSC as the criterion variable. At step two of the regression cohort did not account for a significant portion of the variance in residualised supportiveness scores, $F_{\text{change}}(3,181) = 3.52, p = .062, R^2 \text{ change} = .019$.

Supplementary analyses related to the first main aim of the study

Question 7: Did the intervention have any effect on those children who scored above the clinical cut-off point for depression on the Children’s Depression Inventory at T1?

Whilst cut-off scores may be considered somewhat arbitrary, raw scores at or above the 85th percentile in the normal population may be considered of clinical significance, with scores above 20 on the CDI meeting this criterion (Kovacs, 1992).

A logistic regression analysis was carried out to test whether the intervention had any effect on those children whose scores on the CDI were clinically significant.

Depression scores at T1, age and gender, were controlled for by entering them at step one of the regression. Cohort was entered at step two. At step two these variables accounted for between 15.2% and 42.2% of the variance in depression scores. As shown in Table 12 below, depression scores at T1 was the only significant predictor of who would have clinically significant scores on the CDI at T2.

Table 12
Summary of logistic regression analysis showing odds ratios of predictor variables with 95% confidence intervals for children scoring clinically significant levels on the CDI at T2

Predictors	Exp (B)	95% Confidence Intervals for Exp(B)	
		lower	upper
Depression scores at T1	1.25*	1.14	1.38
Gender ^a	1.22	.28	5.26
Age	.99	.89	1.09
Cohort ^b	.68	.15	3.10

^aGender coded (1=male; 2=female); ^bCohort coded (1=intervention, 2=wait-list control) * $p < 0.001$

This indicted that for each unit increase in depression scores the likelihood of an individual’s depression score reaching clinical significance increased by a factor of 1.25. Cohort did not act as a significant predictor of clinically significant depression scores.

Question 8: Which cognitive variables predict depression scores?

To explore which cognitive variables predicted change in depression scores (as measured by the CDI), hierarchical multiple regression was used. Age and gender

were controlled for by entering them at the first step of the regression with residualised change scores T1 to T2 for depression symptoms as the criterion variable. Residualised change scores T1 to T2 for dysfunctional attitudes (as measured by CDAS), self-esteem (as measured by SEQ), positive self-talk and negative self-talk (as measured by the STI) were entered at the second step of the regression. Dysfunctional attitudes, self-esteem and negative self-talk were all significantly correlated with depression scores, whereas positive self-talk was not significantly correlated. At step two these variables accounted for a significant portion of the variance (19.4%, see Table 13). Of these variables, dysfunctional attitudes, self-esteem and negative self-talk, but not positive self-talk, were all significant individual predictors of the variance in depression scores as shown in Table 13 below.

Table 13
Regression Analysis Predicting Depression Symptoms at T2 from Age, Gender, Dysfunctional Attitudes, Self-esteem, Positive and Negative Self-Talk

Step	Predictors	Step1 β	Step 2 β
1	Gender	.088	.122
	Age	-.030	-.021
$F(2,180) = .813, p = .445, R^2 \text{ change} = .009$			
2	Dysfunctional attitudes		.239*
	Self-esteem		-.214*
	Positive self-talk		.025
	Negative self-talk		.199*
$F(6,176) = 10.74, p < .001, R^2 \text{ change} = .194$			

^aGender coded (1=male; 2=female); * $p < 0.01$

This showed that higher initial levels of negative self-talk and higher initial levels of dysfunctional attitudes each predicted worsening depression. Higher initial levels of self-esteem in contrast predicted reduced levels of depression.

The next stage of the data analysis was to answer questions relating to the second main aim of the study.

Hypothesis

A positive class climate will predict more positive self-talk, less negative self-talk, higher self-esteem and fewer symptoms of depression in children. Self-talk and self-esteem will also predict symptoms of depression and it is anticipated that the effect of class climate on symptoms of depression will be mediated by self-talk and self-esteem.

Question 9: Does a positive class climate at Time 1 predict positive self-talk at Time 2?

To check whether a positive classroom climate predicted positive self-talk (as measured by the STI) at T2, hierarchical multiple regression was used. Age, gender and positive self-talk at T1 were controlled for by entering them at the first step of the regression, $F(3,184) = 26.82, p < .001, R^2 \text{ change} = .304$. Positive self-talk at T1 was the only significant predictor of self-talk at T2 ($\beta = .55, p < .001$). Classroom climate variables (mean overall MCS at T1 and mean overall SSSC at T1) were entered at the second step. At the second step in the regression classroom climate variables did not account for a significant portion of the variance in positive self-talk at T2, $F_{\text{change}}(5,182) = .84, p = .436, R^2 \text{ change} = .006$.

Question 10: Does a positive class climate at Time 1 predict negative self-talk at Time 2?

The extent to which a positive classroom climate predicted negative self-talk at T2 was then assessed. Age, gender and negative self-talk at T1 were controlled for by entering them at the first step of the regression. Classroom climate variables (mean overall MCS at T1 and mean overall SSSC at T1) were entered at the second step and accounted for a significant portion of the variance in negative self-talk at T2 (2.9%, see Table 14). Of the two classroom climate variables added, MCS was not a significant individual predictor whilst SSSC was, as shown in Table 14.

Table 14

Regression Analysis Predicting Negative Self-Talk at T2 from Age, Gender, Negative Self-Talk T1, My Classroom Scale, Students' Sense of School as a Community

Step	Predictors	Step1 β	Step 2 β
1	Gender	.008	.044
	Age	.017	-.079
	Negative Self-Talk at T1	.592**	.548**
$F(3,182) = 32.29, p < .001, R^2 \text{ change} = .354$			
2	My Classroom Scale		-.063
	Students' Sense of School as a Community		-.150*
$F_{\text{change}}(5,180) = 4.28, p < .05, R^2 \text{ change} = .029$			

^aGender coded (1=male; 2=female); * $p < 0.05$; ** $p < 0.01$

This indicates that, when controlling for age, gender, and earlier levels of negative self-talk, higher SSSC at T1 predicted lower levels of negative self-talk at T2.

Question 11: Does a positive class climate at Time 1 predict self-esteem at Time 2?

To explore whether positive class climate predicted higher self-esteem (as measured by the SEQ) at T2, hierarchical multiple regression was used. Age, gender and T1 self-esteem scores were controlled for by entering them at step one of the regression, $F(3,185) = 31.03, p < .001, R^2 \text{ change} = .335$. Self-esteem at T1 was the only significant predictor of self-esteem at T2 ($\beta = .57, p < .001$). Classroom climate variables (mean overall MCS at T1 and mean overall SSSC at T1) were entered at step two. At step two of the regression neither classroom climate variables accounted for a significant portion of the variance in self-esteem at T2, $F_{\text{change}}(5,183) = 1.10, p = .139, R^2 \text{ change} = .014$.

Regression analyses were then carried out in turn to check whether a positive classroom climate predicted any of the six subscales of the SEQ (i.e., peer relationships, school, family, sports / athletic, body image and global subscales) at T2. For each regression, age, gender and subscale score at T1 were controlled for by entering them into the regression at step one. The mean overall MCS and mean overall SSSC were entered at step two. The results for each of the subscales follow:

School subscale

Results for the School subscale analysis at step 1 were $F(3,185) = 32.12, p < .001, R^2 \text{ change} = .342$. Only the school subscale scores at T1 were a significant predictor of school scores at T2 ($\beta = .55, p < .001$). At the second step in the regression classroom climate variables did not account for a significant portion of the variance in school subscale scores at T2, $F_{\text{change}}(5,183) = .89, p = .411, R^2 \text{ change} = .006$.

Family subscale

Results for the family subscale at step 1 were $F(3,185) = 11.61, p < .001, R^2 \text{ change} = .158$. Family subscale scores at T1 were a significant predictor of family scores at T2 ($\beta = .35, p < .001$), as was gender ($\beta = .15, p < .05$). At the second step of the regression neither classroom climate variables accounted for a significant portion of the variance in family subscale scores at T2, $F_{\text{change}}(5,183) = 1.56, p = .214, R^2 \text{ change} = .014$.

Sports / Athletics subscale

Results for this scale at step 1 were $F(3,185) = 37.01, p < .001, R^2 \text{ change} = .375$. Only the sports / athletics scores at T1 were a significant predictor of sports / athletics scores at T2 ($\beta = .60, p < .001$). At the second step of the regression classroom climate variables did not account for a significant portion of the variance in sports / athletics scores at T2, $F_{\text{change}}(5,183) = .88, p = .418, R^2 \text{ change} = .006$.

Body image subscale

Results for this scale at step 1 were $F(3,185) = 38.65, p < .001, R^2 \text{ change} = .385$. Only body image scores at T1 were significant predictors of body image scores at T2 ($\beta = .62, p < .001$). At the second step of the regression neither classroom climate variables accounted for a significant portion of the variance in body image scores at T2, $F_{\text{change}}(5,183) = .82, p = .444, R^2 \text{ change} = .005$.

Peer relationships subscale

Where the peer relationships subscale was concerned, at the second step of the regression the MCS and SSSC accounted for a significant portion of the variance in peer relationships at T2 (2.6%, see Table 15). Of the two classroom climate variables added, SSSC was not a significant individual predictor whilst MCS was (see Table15).

Table 15
Regression Analysis Predicting Peer Relationships at T2 from Age, Gender, Peer Relationships at T1, My Classroom Scale, Students’ Sense of School as a Community

Step	Predictors	Step1 β	Step 2 β
1	Gender	.084	.058
	Age	-.023	.023
	Peer Relationships at T1	.560**	.512**
$F(3,185) = 29.41, p < .001, R^2 \text{ change} = .323$			
2	My Classroom Scale		.139**
	Students’ Sense of School as a Community		.062
$F_{\text{change}}(5,183) = 3.70, p < .01, R^2 \text{ change} = .026$			

^aGender coded (1=male; 2=female); ** $p < 0.01$

This indicates that, when controlling for age, gender, and earlier levels of peer relationships, higher levels of MCS at T1 predicted better peer relationships at T2.

Global subscale

Where the global self-esteem subscale was concerned, at the second step of the regression the MCS and SSSC accounted for a significant portion of the variance at T2 (3.3% - see Table 16). Neither of the classroom climate scales were, however, significant individual predictors on their own.

Table 16

Regression Analysis Predicting Global Self-Esteem at T2 from Age, Gender, Global Self-Esteem at T1, My Classroom Scale, Students' Sense of School as a Community

Step	Predictors	Step1 β	Step 2 β
1	Gender	.105	.071
	Age	-.022	.037
	Global self-esteem at T1	.480*	.434*
$F(3,185) = 19.21, p < .001, R^2 \text{ change} = .238$			
2	My Classroom Scale		.111
	Students' Sense of School as a Community		.118
$F_{\text{change}}(5,183) = 4.08, p < .05, R^2 \text{ change} = .033$			

^aGender coded (1=male; 2=female); * $p < 0.001$

This indicates that, when controlling for age, gender, and earlier levels of global self-esteem, higher levels of satisfaction with classroom climate at T1 predicted higher levels of global self-esteem at T2 although both classroom climate variables were required to influence outcomes.

Question 12: Does a positive class climate at Time 1 predict less dysfunctional attitudes at Time 2?

To check whether a positive classroom climate predicted dysfunctional attitudes (as measured by the CDAS) at T2, hierarchical multiple regression was used. Age, gender and dysfunctional attitudes at T1 were controlled for by entering them at the first step of the regression. Classroom climate variables (mean overall MCS and mean overall SSSC at T1) were entered at the second step. Both classroom climate variables accounted for a significant portion of the variance in dysfunctional attitudes at T2 (3.8%, see Table 17). Of the two classroom climate variables added, SSSC was not a significant individual predictor whilst MCS was, as shown in Table 17.

Table 17
Regression Analysis Predicting Dysfunctional Attitudes at T2 from Age, Gender, Dysfunctional Attitudes at T1, My Classroom Scale, Students’ Sense of School as a Community

Step	Predictors	Step1 β	Step 2 β
1	Gender	-.077	-.049
	Age	-.047	-.103
	Dysfunctional Attitudes at T1	.639**	.602**
	$F(3,184) = 45.22, p < .001, R^2 \text{ change} = .424$		
2	My Classroom Scale		-.088*
	Students’ Sense of School as a Community		-.153
$F_{\text{change}}(5,182) = 6.51, p < .001, R^2 \text{ change} = .038$			

^aGender coded (1=male; 2=female); * $p < 0.05$; ** $p < 0.01$

This indicates that, when controlling for age, gender, and earlier levels of dysfunctional attitudes, higher levels of MCS at T1 predicted lower levels of dysfunctional attitudes at T2.

Question 13: Does a positive class climate at Time 1 predict depression symptoms at Time 2?

To check whether a positive classroom climate predicted depression symptoms (as measured by the CDI at T2, hierarchical multiple regression was used. Age, gender and depression symptoms at T1 were controlled for by entering them at the first step of the regression. Classroom climate variables (mean overall MCS and mean overall SSSC at T1) were entered at the second step. Classroom climate variables accounted for a significant portion of the variance in depression symptoms at T2 (3.6%, see Table 18). Of the two classroom climate variables added, SSSC was not a significant individual predictor whilst MCS was, as shown in Table 18.

Table 18

Regression Analysis Predicting Depression Symptoms at T2 from Age, Gender, Depression Symptoms at T1, My Classroom Scale, Students' Sense of School as a Community

Step	Predictors	Step1 β	Step 2 β
1	Gender	.075	.099
	Age	-.012	-.075
	Depression symptoms at T1	.632**	.559**
	$F(3,182) = 40.08, p < .001, R^2 \text{ change} = .397$		
2	My Classroom Scale		-.172**
	Students' Sense of School as a Community		-.068
$F_{\text{change}}(5,180) = 5.74, p < .01, R^2 \text{ change} = .036$			

^aGender coded (1=male; 2=female); ** $p < .001$

This indicates that, when controlling for age, gender, and earlier levels of depression symptoms, higher levels of MCS at T1 predicted lower levels of depression symptoms at T2.

A series of regression analyses were carried out in turn to check whether a positive classroom climate predicted any of the five subscales of the CDI (i.e., negative mood, interpersonal problems, ineffectiveness, anhedonia and negative self-esteem subscales) at T2. For each regression, age, gender and subscale score at T1 were controlled for by entering them into the regression at step one. The mean overall MCS at T1 and mean overall SSSC at T1 were entered at step two. The results for each of the subscales follow:

Negative Mood subscale

Where the negative mood subscale was concerned, at step two of the regression the MCS and SSSC accounted for a significant portion of the variance in negative mood at T2 (6.6%, see Table 19). Of the two classroom climate variables added, SSSC was not a significant individual predictor whilst MCS was, as shown in Table 19.

Table 19
Regression Analysis Predicting Negative Mood at T2 from Age, Gender, Negative Mood at T1, My Classroom Scale, Students’ Sense of School as a Community

Step	Predictors	Step1 β	Step 2 β
1	Gender	.050	.083
	Age	-.005	-.059
	Negative Mood at T1	.439**	.405**
$F(3,182) = 14.97, p < .001, R^2 \text{ change} = .198$			
2	My Classroom Scale		-.273**
	Students’ Sense of School as a Community		.014
$F_{\text{change}}(5,180) = 8.08, p < .001, R^2 \text{ change} = .066$			

^aGender coded (1=male; 2=female); ** $p < 0.01$

This indicates that, when controlling for age, gender, and earlier levels of negative mood, higher levels of MCS at T1 predicted lower levels of negative mood at T2.

Ineffectiveness Subscale

Results for this subscale showed that classroom climate variables (MCS and SSSC) at the second step of the regression accounted for a significant portion of the variance in ineffectiveness at T2 (5.2%, see Table 20). Of the two classroom climate

variables added, MCS was not a significant individual predictor whilst SSSC was, as shown in Table 20.

Table 20

Regression Analysis Predicting Ineffectiveness at T2 from Age, Gender, Ineffectiveness at T1, My Classroom Scale, Students' Sense of School as a Community

Step	Predictors	Step1 β	Step 2 β
1	Gender	-.011	.014
	Age	-.033	-.117
	Ineffectiveness at T1	.521**	.446**
$F(3,182) = 23.42, p < .001, R^2 \text{ change} = .279$			
2	My Classroom Scale		-.072
	Students' Sense of School as a Community		-.212*
$F_{\text{change}}(5,180) = 6.99, p < .001, R^2 \text{ change} = .052$			

^aGender coded (1=male; 2=female); * $p < .01$; ** $p < .001$

This indicates that, when controlling for age, gender, and earlier levels of ineffectiveness, higher levels of SSSC at T1 predicted lower levels of ineffectiveness at T2.

Interpersonal Problems Subscale

Results for the interpersonal problems subscale showed that the classroom climate variables (MCS and SSSC) at the second step of the regression accounted for a significant portion of the variance in interpersonal problems at T2 (4.1% - see Table 21). Neither classroom climate variable was a significant predictor in its own right, as shown in Table 21.

Table 21

Regression Analysis Predicting Interpersonal Problems at T2 from Age, Gender, Interpersonal Problems at T1, My Classroom Scale, Students' Sense of School as a Community

Step	Predictors	Step1 β	Step 2 β
1	Gender	-.077	-.052
	Age	-.022	-.070
	Interpersonal problems at T1	.392*	.338*
	$F(3,182) = 12.63, p < .001, R^2 \text{ change} = .172$		
2	My Classroom Scale		-.125
	Students' Sense of School as a Community		-.132
$F_{\text{change}}(5,180) = 4.68, p < .01, R^2 \text{ change} = .041$			

^aGender coded (1=male; 2=female); * $p < .001$

This indicates that, when controlling for age, gender, and earlier levels of interpersonal problems, higher levels of satisfaction with classroom climate at T1 predicted lower levels of interpersonal problems at T2, although both variables were required in order to be effective in influencing outcomes.

Anhedonia Subscale

Results for this scale at step 1 were $F(3,182) = 41.28, p < .001, R^2 \text{ change} = .405$. Anhedonia scores at T1 were significant predictors of anhedonia scores at T2 ($\beta = .62, p < .001$) as was gender ($\beta = .14, p < .001$). At the second step in the regression classroom climate variables did not account for a significant portion of the variance in anhedonia scores at T2, $F_{\text{change}}(5,180) = 2.081, p = .128, R^2 \text{ change} = .013$.

Table 22
Regression Analysis Predicting Depression Symptoms at T2 from Age, Gender, Depression Symptoms at T1, Negative Self-Talk

Step	Predictors	Step1 β	Step 2 β
1	Gender	.075	.043
	Age	-.012	-.006
	Depression symptoms at T1	.632*	.566**
	$F(3,182) = 40.02, p < .001, R^2 \text{ change} = .397$		
2	Negative Self-talk		.164*
$F_{\text{change}}(4,181) = 6.77, p < .01, R^2 \text{ change} = .022$			

^aGender coded (1=male; 2=female); * $p < .001$; ** $p < .01$

This indicates that, when controlling for age, gender, and earlier levels of depression symptoms, higher levels of negative self-talk at T1 predicted higher levels of depression symptoms at T2.

Question 16: Does self-esteem at Time 1 predict depression symptoms at T2?

To check whether self-esteem predicted depression symptoms (as measured by the CDI at T2, hierarchical multiple regression was used. Age, gender and depression symptoms at T1 were controlled for by entering them at the first step of the regression. Total self-esteem at T1 was entered at the second step. Self-esteem accounted for a significant portion of the variance in depression symptoms at T2 (4.0%, see Table 23).

Table 23

Regression Analysis Predicting Depression Symptoms at T2 from Age, Gender, Depression Symptoms at T1, Self-Esteem

Step	Predictors	Step1 β	Step 2 β
1	Gender	.075	.053
	Age	-.012	-.033
	Depression symptoms at T1	.633*	.501*
	$F(3,183) = 40.39, p < .001, R^2 \text{ change} = .398$		
2	Self-Esteem		-.239*
$F_{\text{change}}(4,182) = 12.88, p < .001, R^2 \text{ change} = .040$			

^aGender coded (1=male; 2=female); * $p < .001$

This indicates that, when controlling for age, gender, and earlier levels of depression symptoms, higher self-esteem at T1 predicted lower levels of depression symptoms at T2.

Question 17: Is the effect of class climate mediated by self-talk and self-esteem?

It was hypothesised that self-talk and self-esteem would mediate (Baron & Kenny, 1986) the effect of classroom climate on symptoms of depression at Time 2. The first step in this mediational analysis was to check that Time 2 depression was predicted by Time 1 classroom climate. To assess this, a regression was conducted where age, gender and depression scores at T1 were controlled for by entering them at step 1 of the regression. Classroom climate (measured by My Classroom Scale) was entered at step 2 of the regression and was a significant predictor of depression scores at T2 ($\beta = -.196, p = .001$).

The second step in the mediational analysis involved assessing whether Time 1 classroom climate predicted Time 2 self-talk and Time 2 self-esteem. To assess whether classroom climate predicted negative self-talk, age, gender and T1

depression scores were entered at step 1, with classroom climate being entered at step 2 of the regression. There was no effect of classroom climate on self-talk ($\beta = .111, p = .127$), therefore self-talk cannot act as a mediator. To assess whether classroom climate predicted self-esteem, age, gender and T1 depression scores at T1 were entered at step 1, with classroom climate entered at step 2. Classroom climate was a significant predictor of self-esteem (measured by the peer relationships sub scale of the SEQ) ($\beta = .162, p = .001$).

The third step of the mediational analysis was to test whether classroom climate and self-esteem were predictors of depression. Age, gender and depression scores at T1 were entered at step 1 of the regression and classroom climate and self-esteem at step 2. Both peer relationships self-esteem ($\beta = -.168, p = .009$) and My Classroom Scale ($\beta = .189, p = .002$) were significant predictors. The standardised beta for My Classroom Scale reduced by .007, suggesting that self-esteem was not acting as a mediator. The possibility of an indirect effect, however, was checked for using the Sobel test (Preacher & Hayes, 2004) which indicated no significant indirect effect, *Sobel* = 1.85, $p = .064$.

The final stage in data analysis was to test out the final hypothesis:

Hypothesis

The effectiveness of the Penn Resiliency Program will be moderated by the degree of adherence to the programme. Higher levels of adherence will be reflected in lower levels of depression symptoms, and a more positive class climate.

To score programme adherence limited impressionistic qualitative data was used, involving information from single random observations by the author of each class during one of the Penn Resiliency Program lessons and from teacher completed evaluation sheets about their perceptions of how effective their delivery of the programme had been. Each observation and evaluation sheet were rated out of 10 (10 being excellent and 1 being poor), with scores being added together to obtain a mean adherence score. To analyse this data the total sample was used, i.e. the Intervention

and Wait-list Cohort, with equivalent time data being used. Data from the 2-month follow-up is also used. Pre-scores are referred to as T1, post-scores are referred to as T2 and follow-up scores are referred to as T3.

Question 18: Do levels of adherence to the programme predict depression symptoms post-intervention?

To test whether levels of adherence to the programme predicted depression scores at T2 (measured by the CDI) hierarchical linear regression was used. Age, gender and depression scores at T1 were controlled for by entering them at the first step of the regression. Adherence scores were entered at the second step and did not account for a significant portion of the variance in depression scores at T2, $F_{\text{change}}(4,196) = 2.96, p = .087, R^2 \text{ change} = .008$.

Question 19: Do levels of adherence to the programme predict depression symptoms at 2-month follow-up?

To test whether levels of adherence to the programme predicted depression scores at T3 (measured by the CDI) hierarchical linear regression was used. Age, gender and depression scores at T1 were controlled for by entering them at the first step of the regression. Adherence scores were entered at the second step and again did not account for a significant portion of the variance in depression scores at T3, $F_{\text{change}}(4,144) = 1.23, p = .269, R^2 \text{ change} = .006$.

Question 20: Do levels of adherence to the programme predict satisfaction with class climate post-intervention?

A further regression was conducted as above to test whether adherence levels predicted satisfaction with classroom climate (measured by MCS) at T2. Adherence scores did not account for a significant portion of the variance in satisfaction with classroom climate scores at T2, $F_{\text{change}}(4,181) = .51, p = .476, R^2 \text{ change} = .002$. A further regression was undertaken to test whether adherence predicted satisfaction with classroom climate (measured by SSSC) at T2.. Adherence did not account for a significant portion of the variance in SSSC scores at T2, $F_{\text{change}}(4,205) = 1.97, p = .162, R^2 \text{ change} = .009$.

Question 21: Do levels of adherence to the programme predict satisfaction with class climate at 2-month follow-up?

A further regression was conducted as above to test whether adherence levels predicted satisfaction with classroom climate (measured by MCS) at T3. Adherence scores did not account for a significant portion of the variance in satisfaction with classroom climate scores at T3, $F_{\text{change}}(4,125) = 3.09, p = .082, R^2 \text{ change} = .016$.

A further regression was undertaken to test whether adherence predicted satisfaction with classroom climate (measured by SSSC) at T3. Adherence did not account for a significant portion of the variance in SSSC scores at T3, $F_{\text{change}}(4,138) = 1.90, p = .171, R^2 \text{ change} = .012$.

Summary of Results

The results of the data analysis in relation to the aims of the study are summarised below as well as results of supplementary analyses.

First Main Aim – Evaluation of the Penn Resiliency Program

1. To what extent did the Penn Resiliency Program (PRP) result in children showing

- (a) more positive explanatory styles**
- (b) more interpersonal problem solving skills, which in turn resulted in children showing**
- (c) fewer symptoms of depression**

Contrary to the hypothesis, the Penn Resiliency Program did not result in children showing more positive explanatory styles. The PRP did, however, result in children showing lower levels of teacher reported conduct problems and hyperactivity. Again, contrary to the hypothesis, the PRP did not result in children showing fewer symptoms of depression.

2. Were there any delayed intervention effects in relation to symptoms of depression at two-month follow-up?

A significant effect of time was found for symptoms of depression for the intervention cohort, i.e. a reduction in depression scores was found immediately post-intervention. A significant effect of time was also found for the Wait-list cohort but this time it was from post-intervention to 2-month follow-up. This inconsistent pattern indicates that there were no consistent delayed intervention results.

3. Did explanatory style or interpersonal problem solving skills mediate the effect of the PRP on symptoms of depression?

Mediational analyses were not conducted as the PRP had no significant effect on symptoms of depression.

4. To what extent did the Penn Resiliency Program intervention result in a more positive class climate?

As hypothesized, the Penn Resiliency Program resulted in a more positive class climate.

Second Main Aim – Impact of class climate on symptoms of depression and resilience

5. (a) To what extent did a positive class climate predict more positive self-talk, less negative self-talk, higher self-esteem and fewer symptoms of depression in children?

Contrary to expectations, a positive class climate was not a significant predictor of positive self-talk but was, as expected, a significant predictor of less negative self-talk and lower dysfunctional attitudes. A positive class climate did not predict overall self-esteem, but was a significant predictor of better peer relationships. When both class climate measures were considered together they were a significant predictor of global self-esteem. A positive class climate predicted fewer symptoms of depression, including predicting reduced symptoms of negative mood and lower ineffectiveness scores. When both class climate measures were considered together they predicted fewer interpersonal problems.

(b) To what extent did self-talk and self-esteem predict symptoms of depression?

Amount of negative self-talk was a significant predictor of depression symptoms, with higher negative self-talk predicting increased symptoms of depression. Positive self-talk, however, did not predict symptoms of depression. Higher levels of self-esteem predicted reduced symptoms of depression.

(c) Was the effect of class climate mediated by self-talk and self-esteem?

The effect of class climate was not mediated by self-talk or self-esteem.

Final Aim – Impact of implementation integrity

6. To what extent was the effectiveness of the Penn Resiliency Program intervention moderated by the degree of adherence to the programme?

Data from the whole sample was collated to test whether the effectiveness of the Penn Resiliency Program was moderated by the degree of class teacher adherence to the programme. Adherence levels did not significantly predict levels of depression symptoms post-intervention or at two-month follow-up. Similarly levels of adherence did not significantly predict satisfaction with classroom climate post-intervention or at two-month follow-up.

Supplementary analyses

7. Did the Penn Resiliency Program intervention have any differential effects on children whose depression symptoms were above the clinical cut-off point?

The Penn Resiliency Program had no differential effect on children whose depression scores reached the cut-off point for clinical significance.

8. Which cognitive variables considered in this study best predicted depression symptoms?

Higher levels of dysfunctional attitudes and higher levels of negative self-talk predicted higher levels of depression symptoms, whereas higher self-esteem predicted lower levels of depression symptoms in children of this age. Positive self-talk did not predict symptoms of depression.

Chapter 7

Discussion

This study had two main aims: the first main aim was to evaluate whether the Penn Resiliency Program (PRP), delivered as a universal prevention of depression / promotion of resilience intervention by teachers to their whole class, was effective in a Scottish context in reducing dysfunctional attitudes and negative self-talk and associated symptoms of depression, whilst also enhancing positive self-talk, self-esteem and more competent interpersonal problem solving. It was anticipated that the PRP would also result in children's perceptions of classroom climate being improved. The second main aim was to enhance the literature on school based preventive interventions by assessing the impact of classroom climate variables, e.g. satisfaction with teacher and classroom environment, degree of autonomy and supportiveness, on symptoms of depression and variables associated with resilience, e.g. positive explanatory style, self-esteem, and importantly, whether the effects of classroom climate on depression was mediated by self-talk and self-esteem. The final aim was to explore whether the effectiveness of the PRP was moderated by implementation integrity factors, i.e. whether degree of teacher adherence to the programme and quality of delivery of the programme, resulted in lower levels of depression symptoms and a more positive class climate.

Impact of the Penn Resiliency Program on children's explanatory style, interpersonal problem solving skills and symptoms of depression

Contrary to the hypotheses there was no main intervention effect on explanatory style or depression symptoms (and no intervention effect in relation to children scoring above the cut-off point for clinical significance on the CDI). Taking into account Gillham et al.'s (2000) definition of preventive interventions requiring a follow-up period that expands into a period of increased risk for depression, follow-up data was obtained at 2-month post-intervention. No consistent delayed intervention effects on symptoms of depression were found although significant and contradictory effects of time were found.

There are a range of possible explanations for the above results over and above the possibility that the PRP is not an effective preventive programme. A within-scale meta-analysis of children's responses on the Children's Depression Inventory by Twenge & Nolen-Hoeksema (2002) found significant decreases in scores over repeated administrations of the CDI, indicative of habituation to or boredom with the measure. It is likely that this also occurred in this study, given significant effects of time were found in decreases in CDI scores for both the intervention and wait-list control cohort. This measurement error may have seriously impacted on opportunities to obtain significant intervention effects, particularly as children of this age in a universal sample tend to show fewer symptoms of depression, leaving less scope for significant changes to be found. This study also required children to complete a number of different measures which may have led to test fatigue, affecting outcomes in turn. Class teachers, however, reported that the children appeared to enjoy completing the questionnaires. Another potential measurement error may arise from some of the sub-scales of the measures used, e.g. the CDI, having lower Cronbach alphas than the generally accepted reliability of between .7 - .8 (e.g. Field, 2005). As Cortina (1993) demonstrated, however, the value of Cronbach alphas is influenced by the number of items in a scale, so sub-scales which generally have few items are more likely to have lower Cronbach alphas.

Failing to find intervention effects on explanatory style and depression symptoms is not an idiosyncratic result for school based universal depression prevention interventions, e.g. Cardemil et al. (2002) also found no intervention effect (using the Penn Resiliency Program) on explanatory style for Latino and African American adolescents and no effect on depression symptoms for the African American cohort. Similarly, Pattison and Lynd-Stevenson (2001) found no intervention effects, whereas Chaplin et al. (2006) reported that the programme had an impact on hopelessness but not explanatory style. The finding that no consistent delayed intervention effects were identified is contrary to what has been found in other studies using the Penn Resiliency Program, e.g. Cardemil et al. (2003) found intervention effects on depression symptoms for their Latino sample at 3- and 6-

month follow-up. One possible explanation for the absence of any delayed intervention effects might be that insufficient time had elapsed to detect intervention effects in children of the age included in this study, given the low levels of depression symptoms normally found in children of this age. Attempts to measure changes in explanatory style post-intervention or at two-month follow-up may be too soon to allow children the time to consolidate and practice the skills that they have been taught. Gillham et al. (1995) found no intervention effect on explanatory style immediately post-intervention but did find a significant reduction in pessimistic explanatory style at 12- and 24-month follow-up, in their all-girls groups. One potentially confounding issue is the use of different measurements of explanatory style, e.g. in this study self-talk and dysfunctional attitudes were measured using reliable measures, whereas in Gillham et al. (1995) attributions were measured using the Children's Attributional Style Questionnaire (Seligman et al. 1984) the most frequently used measure but one which has poor internal consistency.

Furthermore, universal interventions may not be sufficiently intensive to provide adequate individual opportunities to practice and consolidate new knowledge and skills given the short term nature of the intervention (Spence and Shortt, 2007). Catalano et al. (2002) in their review of 161 general positive youth development programmes concluded that interventions lasting longer than nine months were more likely to be effective than shorter interventions, whilst Greenberg et al. (2001) identified that multi-year programmes which aim to intervene in different domains, e.g. with the child, the school and family, were more likely to be successful. The latter authors also suggested that the central focus for interventions should be on school ecology and climate.

The intervention did, however, as predicted, result in children showing lower levels of teacher reported conduct problems and hyperactivity (accounting for 2.7% and 3% of the variance in Time 2 scores respectively). The Cronbach alphas for both these sub-scales were high (.78 and .88 respectively). This latter outcome is consistent with Cutuli et al. (2006) who found intervention effects in relation to children displaying high levels of behaviour problems and Roberts et al. (2003) who

found their intervention resulted in lower levels of parent reported externalizing problems; both studies using the Penn Resiliency Program.

One possibility is that participating in the programme as a whole class had an impact on relationships (bearing in mind that a positive class climate predicted improved peer relationships) as the programme required some sharing of personal information, collective problem solving, shared fun and each class attempted to make the programme an important time together, e.g. by changing seating arrangements / classroom layout during the lessons. The programme, therefore, may either directly or indirectly have helped the children to alter their behaviour. Battistich, Watson, Solomon and Lewis (1999) suggested that teachers and pupils simply getting to know one another is an essential prerequisite to create warm, supportive relationships. It is possible that involvement in this intervention allowed teachers to get to know some of their more challenging children better, which in turn may have improved relationships or changed perceptions of behaviours which teachers often report as difficult in the classroom setting (e.g. Tizard, Blatchford, Burke, Farquar & Plewis, 1988). Alternatively, the children may have got to know their teachers better, with this in turn having an impact on their behaviour. These results could also conceivably be accounted for by teacher bias in their reporting of post-intervention scores, given that they also delivered the intervention, although this seems unlikely as other aspects of pupil behaviour were not reported as improved. Parents did not report significant changes in the behaviour of their children although it is not unusual for there to be little correspondence between teacher and parent perception of behaviour, possibly because some behaviours, are more problematic in different contexts, e.g. hyperactivity may be particularly problematic in a school context (Tizard et al. 1988). Finally, whilst teachers reported improved behaviours it is not possible to know whether children's behaviours had objectively improved or whether it was teacher perception of behaviour which had improved.

Impact of the Penn Resiliency Program on class climate

The intervention had a significant positive effect on class climate, a potentially important outcome in its own right given the importance of creating

caring communities within the classroom as a vehicle for social competence and conflict resolution (Battistich et al., 1997) and academic and emotional well-being (Roeser et al., 1998). Perceptions of social support in class are also associated with reduced levels of stress and more effective coping strategies (Boekaerts, 1993). Similarly, in a review of findings from a series of longitudinal studies looking at school bonding over two decades undertaken by the Social Development Research Group, Catalano et al. (2004) found a significant negative association between school bonding and delinquency, violence and academic problems, all of which in turn are implicated in well-being. Although in these latter studies the school context was being considered rather than the level of the class there is no reason to believe that classroom effects are not as important, bearing in mind that positive teacher effects on pupils can persevere even when the teacher is no longer teaching that class (Sammons et al., 1994). Luyten (2003) also noted that teacher effects tend to outweigh differences between schools.

As Roeser et al. (1998) has argued characteristics of the children will interact with characteristics of the classroom to create a reciprocal influence. One possibility is that the level of Penn Resiliency Program's effectiveness is dependent on subtle class or school climate effects. Gillham et al. (2007) reported that their intervention effects differed by school as did Cardemil et al.'s (2002) study (although this was also confounded by the latter schools having different ethnic populations). By positively impacting on class climate the Penn Resiliency Program may create an environment that acts as a protective factor which can moderate the effect future stressors have on the children in the class, as Garnezy et al. (1984) argued through enhancing social and emotional competences in the children. Future research should consider analyzing data by taking into account implications of classes being nested within schools to allow a more detailed understanding of intervention effects using this programme at the level of the class.

There is considerable evidence from the literature that the climate within schools influences pupil adjustment and well-being (e.g. Kupersmidt & Coie, 1990, Roeser et al., 1998, Way et al. 2007) with these models postulating that it is the

children's perceptions of the climate that is most relevant for understanding well-being (e.g. Eccles et al, 1993). Given that there was no objective measurement of classroom climate in this study an alternative explanation could be that the change in perceptions of classroom climate was influenced by changes in the mood of children, thus affecting their perceptions, rather than any actual change in climate. As noted earlier, Anderson (1989) suggested that pupil perceptions of class climate were more realistic than that of teachers and there is some evidence of moderately strong correlations between pupil and observer ratings of teaching skills (Ellis et al. 2007). As far as the author is aware only one study, Way et al. (2007), has tested for the direction of influence, i.e. whether well-being influences perceptions of climate or climate influences well-being. Way et al. (2007) concluded that the direction of influence was unidirectional from climate to well-being, i.e. it was not pupil adjustment which predicted climate but climate which predicted adjustment which lends support to the findings in this study that the PRP significantly improved classroom climate.

Relationship between class climate and self-talk, self-esteem, dysfunctional attitudes and symptoms of depression

The second main aim of this research was to assess the impact of class climate on resilience and depression by exploring the relationship between a positive class climate, as perceived by children, their self-talk, dysfunctional attitudes, self-esteem and symptoms of depression. Different measures of class climate predicted different cognitive variables, for example, a positive class climate, measured by Students Sense of School as a Community predicted lower negative self-talk, but not positive self-talk. In contrast, a positive class climate measured by My Classroom Scale, predicted lower dysfunctional attitudes and fewer symptoms of depression. Different measures also predicted different symptoms of depression, e.g. MCS predicted fewer negative mood symptoms and reduced interpersonal problems whereas SSSC predicted lower ineffectiveness scores. MCS and SSSC together predicted fewer interpersonal problems. Neither measure predicted overall self-esteem although the SSSC was a significant predictor of two subscales of the SEQ, i.e. better peer relationships and better global self-esteem.

It is difficult to be certain why different class climate measures predicted different cognitive variables, given that both were reliable measures. The likelihood, however, is that each measure tapped slightly different constructs of class climate. MCS focused on more affective variables, such as relationship with class teacher and satisfaction with classroom, whereas SSSC tended towards more functional aspects of class climate such as perceptions of autonomy and supportiveness of the class. Research on class climate suggests that a range of outcomes are associated with different aspects of classroom climate, for example, Anderman (2002) reported that a sense of belonging in the classroom was associated with lower levels of symptoms of depression. In accordance with Anderman (2002) this study found that a positive class climate predicted fewer symptoms of depression.

Battistich et al. (1997) found that creating a caring community in the classroom contributed to increased social competence and skills in conflict resolution. Whilst in this study overall self-esteem was not predicted by a positive class climate the global self-esteem subscale was, as was fewer interpersonal problems and better peer relationships, suggestive of skills in conflict resolution being present. Findings in this study are also consistent with that of Somersalo et al. (2002) who found that teacher reported class climate was associated with both internalising and externalising behaviours. Similarly, a positive class climate predicted lower dysfunctional attitudes, thus expanding on extant research in highlighting the importance of class climate through its impact on dysfunctional attitudes, which in turn predicts depression (Abela & Sullivan, 2003). The discussion in the previous section in relation to the possibility that perceptions of class climate reflect adjustment rather than climate predicts adjustment also applies here as it is not possible to be certain about the direction of influence.

Contradictory findings in relation to gender differences in self-talk have been found by Burnett (1994) who reported that girls described more positive self-talk than boys and no gender differences in negative self-talk and Burnett (1996) who found gender differences varied depending on the child's school year group. In this study no gender differences were found at Time 1 for positive self-talk although boys

reported less negative self-talk. This latter gender difference may be a function of the age range of the children in this study as Burnett (2006) found that girls had higher negative self-talk in grades 5 and 6, i.e. similar ages to children in this study. A positive class climate was implicated in lower levels of negative self-talk, which is an interesting finding given that Burnett (1995) found that negative self-talk was predictive of depressive symptoms in children aged 8- 13 years. The current study, however, found that boys reported more symptoms of depression at Time 1 than girls, consistent with Nolen-Hoeksema et al. (1991). This finding is puzzling given that boys reported less negative self-talk, suggesting that another factor has to also be involved in influencing the interaction between self-talk and symptoms of depression. There were no significant findings in relation to positive self-talk in this study which lends support to Calvete and Cardeñoso's (2002) findings that positive and negative self-talk are two separate dimensions. Furthermore, in this study higher levels of negative self-talk predicted symptoms of depression whereas positive self-talk did not predict depression, suggesting that it is the presence of negative self-talk, rather than positive self-talk, that is most predictive of internalising problems.

In this study, and contrary to hypothesis, the effect of class climate was not mediated by self-talk and self-esteem. The finding, however, that higher initial levels of negative self-talk and dysfunctional attitudes predicted higher levels of depressive symptoms suggests that in a classroom, attempts to challenge negative self-talk and other depressive cognitions, whilst taking care with the kinds of feedback provided, may be useful strategies for a teacher to employ. This is particularly relevant where girls are concerned given that the kind of attributions a teacher makes in providing feedback to children, has an impact on girls' own self- talk (Burnett, 1996: Dweck & Licht, 1980).

Lower depressive symptoms, fewer dysfunctional attitudes and higher global self-esteem being predicted by a positive class climate, as found in this study, also lends support to class climate affecting emotional well-being. Furthermore, higher initial levels of self-esteem predicted lower levels of depressive symptoms. Inconsistent findings, however, have been found in relation to links between

dysfunctional attitudes, self-esteem and depression symptoms in children. Abela and Skitch (2007) reported high levels of dysfunctional attitudes as predictive of depression symptoms in the presence of stress, in the context of low self-esteem, whereas Abela & Sullivan (2003) found this was the case only in the context of high self-esteem. One possible explanation for the discrepancies in relation to self-esteem may be that different domains of self-esteem are implicated in interacting with dysfunctional attitudes to predict depression. Alternatively, the conflicting results may be related to the different populations involved in the research, e.g. Abela & Skitch (2007) studied children of affectively ill parents. This highlights the importance of examining how different vulnerability factors interact to increase risk for depression symptoms in children (Hankin & Abela, 2005).

This study found that a positive class climate predicted improved peer relationships, which is a potentially important finding given that peer acceptance has been associated with enhanced academic performance (Flook, Repetti & Ullman, 2005) and motivation to learn (Kindermann, 1993). In contrast, problematic peer relationships have been linked with poor academic achievement (Malecki & Elliott, 2002, Flook et al., 2005). Where rejected children are concerned, a range of externalizing difficulties such as truancy, delinquency and crime (Kupersmidt & Coie, 1990) and internalizing problems such as depressed mood (Brendgen, Vitaro, Turgeon & Poulin, 2002; Kochenderfer & Ladd, 1996) have been found. This suggests that attempts to improve class climate may have positive implications for building resilience in children not least through its impact on peer relationships.

The above suggests that a positive class climate comprises a range of features including children feeling a sense of belonging, feeling part of a caring community both in terms of relationships with their teacher and with their peers, where they have a degree of autonomy and where care is taken in relation to the kinds of feedback provided by teachers. Attempts to intervene within school to enhance class climate appears to be a useful mechanism to promote resilience and reduce symptoms of depression in children.

Kasen et al. (1990) reported that a school climate, which had an academic focus, was more protective for students than a climate that encouraged discussion about emotional and family problems. Students who reported the latter kind of climate were more likely to report depressive symptoms, perhaps because it encouraged introspection, which is associated with symptoms of depression (Hansell & Mechanic, 1985). Consideration, therefore, needs to be given to the possibility that a side-effect of a depression prevention programme may be that its very nature may tip over into introspection rather than keeping a focus on building relationships and competency development. In one school involved in this study teachers reported that children frequently wanted to reveal a level of personal information during the Penn Resiliency Program lessons which they felt uncomfortable about, and the focus of our subsequent contact was helping them be clear how to manage this and keep the focus on teaching the children skills and helping them develop competencies.

Impact of implementation integrity on outcomes

The final aim of this study was to assess the impact of implementation integrity on outcomes. In this study implementation integrity was measured by a sole observation by the author, which was combined with teacher reports about their delivery of the programme to give an overall programme adherence score. Opportunities to make a second observation were affected by the author's time constraints, with teachers also citing time limitations as influencing their difficulties in providing feedback after each session. Programme adherence levels were, therefore, tentatively measured by one classroom observation and end of study feedback from teachers; this needs to be borne in mind when considering outcomes. The decision was made to combine the two kinds of data for two reasons. Firstly, the observational data identified that the quality of delivery of the programme was generally high with little scope to differentiate between the teachers delivery of the programme following one observation. Secondly, collating the data was an attempt to gather as much relevant information as was available to inform decisions about quality of implementation rather than just measuring what is typically measured, i.e. level of programme adherence. The study would have been enhanced had it been possible to have independent observations of the quality of the teachers' delivery of

the programme and opportunities to record each session and have them assessed by two independent raters for programme adherence. Teachers own perceptions of their efficacy, however, has been shown to be related to their capacity to facilitate children's own sense of efficacy and subsequent academic attainment (Midgley et al., 1989) and to successful implementation of novel programmes (Stein & Wang, 1988).

Observations by the author suggested that the teachers were all teaching the material to a very acceptable standard, with children generally appearing engaged and to understand the concepts being taught. Clearly a sole observation only provided a snapshot of programme delivery and there were some observable differences in how the teachers presented the material in terms of teaching styles, and degree of animation. An attempt was made to obtain an overall sense of what it felt like for the teachers delivering the programme, as recommended by Domitrovich and Greenberg (2000). Whilst most teachers reported that they enjoyed teaching the material and thought that the children both enjoyed the lessons and benefited from them, teachers commented that delivering the programme well was very time consuming and at times they felt that the material was greater than they could manage in the time they had available. Teachers described different ways of managing the volume of material in the manual, e.g. dividing each lesson into two parts and delivering it across two sessions in one week. Other teachers took longer than anticipated to cover the programme, e.g. choosing to teach one lesson over two weeks. The material was also not adapted for a Scottish context, so invariably a small number of the case scenarios had to be slightly adapted by the teachers as they went along as at times the language used was likely to be unfamiliar to the children. It is unclear whether these minor differences in delivery had an impact on implementation of the programme.

Implementation integrity, as measured in this study, and using the whole sample, did not have a significant impact on depression symptoms either at post-intervention or at two-month follow-up. Similarly, adherence levels did not have a significant impact on classroom climate either post-intervention or at two-month follow-up. This might suggest that programme adherence had no impact on results or

alternatively might suggest that how programme adherence was measured was not robust enough, or did not measure what actually matters, given the likelihood of subtle contextual aspects of programme implementation affecting outcomes. Another possibility is related to programme implementation effects, e.g. Gillham et al. (2006) suggested that more positive outcomes were found when the programme was delivered or closely supervised by members of their research team. This may suggest that either the intervention is being optimally delivered in that context (and the challenge is to replicate that in the real-world school setting) or the involvement of researchers who have a long standing commitment to the programme may present the programme in such a way that effects not directly related to the intervention have a placebo effect which affect outcomes.

Other implementation factors may also have affected outcomes. In terms of this study there was limited training for the teachers delivering the intervention, which may have resulted in teachers not being sufficiently prepared for delivery of the programme (Sutton, 2007). Feedback from the teachers, however, casts doubt on this possibility as all but one reported positively in terms of finding the programme interesting to deliver, feeling that the children understood the concepts being taught and that it was beneficial for the children involved. Another possibility is that there was insufficient commitment from school staff to ensure a high level of programme implementation, which may have affected outcomes. In three out of the five schools involved in this study the management team from the schools also attended the training suggesting that they may have been motivated to support their staff in programme implementation. A minority of teachers (three out of ten) completed the requested implementation information sheets at the end of each lesson, which may be indicative of difficulties in finding the time to manage the requirements of the programme within a busy school timetable. There was, however, some positive overlap between teachers who completed the evaluation sheets after each lesson, schools where managers attended the training and levels of adherence, although it was not possible to analyse whether this cluster had an impact on outcomes.

Strengths and limitation of this study

This study had a number of strengths: it was conducted in the real world life of schools with all the subtle class, teacher and school differences that might conceivably be expected to influence the implementation of a novel programme across ten classes in five schools and with the amount of support that might typically be available from an Educational Psychologist. An attempt was made to randomly allocate the schools to intervention and wait-list control groups and to use a range of outcome measures including functional measures of well-being. Whilst a number of measures relied on self-report, information from teachers and parents were also obtained. In keeping with the need for a preventive study to follow-up participants through a period of elevated risk for depression this study included a two-month follow-up. This study is also the first, as far as the author is aware, to teach the Penn Resiliency Program, a manualised programme, to whole classes as a universal study. Most studies using the Penn Resiliency Program deliver the programme in small groups. Another strength of this study was the attempt to test for mediation, i.e. whether self-talk and self-esteem acted as mediators.

This study also attempted to promote and measure programme integrity and to assess whether level of programme integrity acted as a moderator of outcomes. Most studies to date have reported only on whether the programme materials have been delivered as described in the manual, with Gillham et al. (2000) suggesting that it may be subtle untested aspects of programme delivery that is crucial for successful programme implementation. The attempt by this author to broaden the method used to assess, albeit in a limited manner, a range of aspects of programme implementation factors and to explore its subsequent impact on programme outcomes is not typically seen in the literature and is, therefore useful.

A number of limitations are also evident in this study. It might have been useful to randomise the groups by class rather than school given that children are nested in classes which in turn are nested in schools and therefore the children in each class may have scores that correlate more highly with one another than with children from a different class. This would have allowed the data to have been

analysed using Multilevel Modeling. The reliance of self-report data to assess classroom climate is potentially problematic particularly as no test for direction of influence was conducted. A more objective method of assessing classroom climate to supplement children's perceptions would have been useful to check whether climate had objectively improved. Likewise, testing the direction of influence between adjustment and class climate would have added to the existing research which links classroom climate and well-being but without usually being able to specify the direction of influence. Using a number of self-report measures may also have contributed to test fatigue which in turn may have affected outcomes. Similarly some of the sub-scales of measures, particularly the CDI, had low Cronbach alphas which may indicate that these sub-scales were not sufficiently reliable measures. The use of symptoms of depression as an outcome measure may also be problematic (despite it being used routinely in school-based preventive interventions) given that for an intervention to be preventive of depression it is necessary to influence the cognitive variables associated with depression and measurement of symptoms of depression arguably blurs the boundaries between prevention and treatment. Related to this it might have been useful to measure anxiety as an outcome measure given that anxiety may precede depression and be comorbid with it.

The study would have been strengthened by use of a placebo control rather than a wait-list control as this would have allowed the author to control for non-specific factors of the intervention such as adult attention and teachers, making the time during delivery of the programme special. Another difficulty is that the teachers who delivered the intervention also rated the children in terms of their behaviour which may have confounded the results as they may not necessarily have been objective in their ratings. Given the young age of the children in this study and the low levels of symptoms of depression evidenced a much longer follow-up period which coincided with a time period whether the children would be expected to be more likely to be at greater risk for depression would have been useful to test whether the programme could prevent symptoms of depression over time.

Finally, the study would have been enhanced if it had been possible to capture more systematically and objectively as well as using qualitative data, some of the likely subtle contextual differences that may affect successful programme implementation to gain a clearer understanding of what is required for successful implementation

Implications for future research

Future research should endeavour to compare alternative programmes whilst testing for mediators and moderators of outcomes in order to be clear what aspects of a programme are required for effectiveness. School-based interventions should consider randomly allocating by class and by measuring class climate using objective measures as well as children's self-report. Utilising a longer-term follow-up would allow a clearer understanding of whether symptoms of depression can be prevented over time by the Penn Resiliency Program. Finally, more systematic assessment of implementation integrity factors is required to support understanding of what factors are essential in delivering school-based prevention of depression / promotion of resilience programmes.

Conclusions

This study which evaluated the Penn Resiliency Program, delivered as a universal programme to whole classes by teachers, did not find any significant main intervention effects on explanatory style, self-esteem or symptoms of depression either post-intervention or at 2-month follow-up. Whilst this may indicate that the PRP is not effective it may also be that measurement or 'dosage' issues, insufficient time to practice the skills and competencies being taught during a short programme with only a two-month follow-up did not allow intervention effects to emerge. The PRP did, however, show small but significant effects on teacher reported externalising behaviour and on children's perceptions of class climate, both of which were improved by the intervention. Whilst teacher bias in reporting cannot be ruled out it is possible, given that teachers did not report other aspects of behaviour as having improved, that the intervention had a positive impact on teachers' perceptions of externalising behaviour, which is interesting given that lower levels of externalising behaviour are also implicated in enhanced resilience (e.g. Rutter, 2000).

Whilst it is possible that children's adjustment influenced their perceptions of class climate, other research by Way et al. (2007) indicated that the direction of influence between perceptions of climate and adjustment was unidirectional from climate to adjustment.

A positive class climate in this study was a significant predictor of lower dysfunctional attitudes, depression symptoms, negative self-talk and enhanced peer relationships. Whilst bearing in mind that it is not possible to be certain of the direction of influence, the Penn Resiliency Program shows promise as a depression prevention programme through its positive impact on classroom climate, which predicted reduced symptoms of depression, which in other studies has been linked to emotional well-being (e.g. Roeser et al., 1998). This study did not, however, find any mediation effects of self-talk or self-esteem in influencing the effects of class climate on symptoms of depression, nor did it find any significant moderating effects of the level of implementation integrity. This latter point may, however, have been affected by the limited assessment of implementation integrity that was possible in this study.

The study could have been enhanced by the use of a placebo control, a longer follow-up period and increased opportunities to more systematically assess factors associated with the process and measurement of implementation integrity given the possibility that implementation factors, both in the promotion and verification of implementation integrity may have affected outcomes. Whilst most teachers were very positive about the intervention this was not invariably the case and may have had an impact on outcomes, e.g. not every teacher was supported in the training by their management team and one teacher indicated that she did not enjoy teaching the programme. This reinforces the importance of such interventions being embedded in school development plans and any universal intervention being coordinated with other school-based support systems (Graczyk, Weissberg, Payton, Elias, Greenberg & Zins, 2000) to maximize impact.

Finally, interventions within schools designed to enhance classroom climate, in particular to challenge negative self-talk and dysfunctional attitudes, whilst paying attention to the kinds of attributional feedback teachers provide to children, are potentially useful strategies for class teachers to use to promote resilience and prevent symptoms of depression in children. The kinds of knowledge and skills taught to children in the context of their classroom, through involvement in shared problem solving and fun, during the Penn Resiliency Program, appears to show promise in enhancing classroom climate although it did not show evidence of effectiveness in reducing symptoms of depression or the cognitive variables associated with depression.

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REQUEST FOR ACCESS TO SCHOOLS FOR THE PURPOSE OF EDUCATIONAL RESEARCH

Your Name: Muriel MacKenzie
Your Address:
Your Post: Educational Psychologist
Your Employer: X Council Psychological Service
Title of your Project: Promotion of Resilience and Prevention of Depression in Primary School Children: Impact of Class Climate.
Context and purpose of the research (e.g. M.Ed dissertation, personal study, project funded by SOEID) I am currently in year two of a Doctorate in Educational Psychology at Strathclyde University. The proposed research would be conducted as part of the doctorate and would be overseen by members of staff from the Psychology Department at Strathclyde University. The research is also directly relevant to the work of an Educational Psychology service promoting emotional competence in school children, linking well to the Curriculum for Excellence and the Health Promoting Schools initiative.
Give a brief outline of the research, indicating the kind of information you will be gathering and the main questions the research is trying to answer The research proposes to evaluate a school based universal intervention, the 'Penn Resiliency Program', delivered by teachers to their whole primary 6 / 7 class in place of their usual PSD programme. This manualised cognitive-behavioural and social problem solving programme is designed to promote emotional resilience in order to prevent depressive symptoms in primary school aged children. Primary 6 / 7 children have been chosen to try and build their capacity before transition to adolescence at which point symptoms of depression increase sharply, particularly for girls. The programme aims to increase children's skills in moderating self-talk, and explanatory styles, generation of alternative beliefs as well as assertiveness, negotiation and coping skills; the mechanism by which should result in an increase in resilience and a reduction in depressive symptoms. It is also anticipated that improving interpersonal problem solving skills will lead to an improvement in children's behaviour both at home and in the class. The research would utilise a wait list control group, i.e., it would occur in two phases: half of the

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teachers would initially receive the training then deliver the programme and on completion of the programme the second cohort of teachers would be trained and subsequently deliver the programme.

Whilst the effectiveness of this program has been evaluated in the USA, Australia and China it has not been evaluated in the UK. As with many similar programmes, how the intervention is delivered in the real world of a school is likely to have an impact on its effectiveness. The study, therefore, also aims to assess the impact of classroom climate variables and implementation integrity on intervention outcomes.

The programme will be evaluated by gathering information from pupils before and after the intervention through a number of questionnaires (see below); gathering information from teachers using a questionnaire (see below) and gathering information from parents using the *Strengths and Difficulties Questionnaire – parents' version* (Goodman, 1997). Information obtained from teachers about programme integrity through observation of each teacher delivering two lessons, and completion of a teacher pro-forma following each lesson will also contribute to the evaluation.

The four hypotheses to be tested include:

- A positive class climate will predict fewer depressive symptoms in children, with this being mediated by more positive self-talk and higher self-esteem.
- The Penn Resiliency Program will result in children showing fewer depressive symptoms, with this being mediated by explanatory style and interpersonal problem solving skills.
- The Penn Resiliency Program will result in a more positive class climate.
- The effectiveness of the Penn Resiliency Program will be moderated by the degree of adherence to the programme, with higher levels of adherence being reflected in lower levels of depressive symptoms and more positive class climate.

The research, therefore, aims to clarify whether the Penn Resiliency Program can be effective in the Scottish context when taught to pupils by their primary six teachers. It also aims to promote understanding of the influence of the classroom climate on the effectiveness of the intervention and vice versa. Finally, by measuring aspects of programme implementation it will provide useful information about what impact programme fidelity has on outcomes, therefore, enhancing knowledge of what works in transporting interventions into real world settings of a school.

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When do you intend to begin your work with schools/teachers?

I would anticipate starting work with teachers in August 2007.

When do you expect to complete your work with schools/teachers?

The work involving schools should end by the end of March 2008.

When will the research as a whole be completed?

I would expect the research to be completed and submitted as part of the doctorate by the end of September 2008.

What would you be asking schools or teachers to do? (e.g. fill in 6 page questionnaire, 40 minute interview, allow observation of six lessons)

I would be asking the primary 6 / 7 teachers to attend a one day training course on the Penn Resiliency Program and then deliver 12 class lessons weekly lasting 1.5 hours from the Penn Resiliency Program manual to their whole class instead of their usual PSD lessons. I would also be asking them to complete a brief one page pro forma at the end of each lesson noting whether they had been able to cover all of the relevant concepts in the lesson and whether any children were absent. I would also be asking the teachers to allow me to observe two of the lessons. I propose to offer teachers an opportunity to meet with me as a group fortnightly to support them with any issues / problems arising. Telephone and e-mail contact would be available from me outwith that time.

I would also be asking the teachers to complete the *Strengths and Difficulties Questionnaire – teachers' version* (Goodman 1997) on each child in their class before the start of the programme and at its end. Finally I would be asking the teachers to allow their pupils time to complete a number of questionnaires before and at the end of the programme. These include two measures of class climate: *My Classroom Scale* (Burnett, 2002) and *Students' Sense of School as a Community* (Roberts et al, 1995). Other pupil questionnaires required are designed to measure how successful the intervention has been, including *Self-Talk Inventory* (Burnett, 1996); *Self-Esteem Questionnaire* (DuBois et al, 1996), *The Children's' Attribution Style Questionnaire* (Seligman et al, 1984) and the *Children's Depression Inventory* (Kovacs, 1985).

Copies of questionnaires apart from *The Children's Depression Inventory* and *The Children's Attribution Style Questionnaire* (which I have still to obtain) are attached.

(If you have a draft questionnaire or schedule for interview or observation, please attach a copy to this form).

How many schools and teachers would be involved?

I require the involvement of between 120 - 150 primary 6 / 7 pupils, i.e. around six classes and therefore approximately six teachers (depending on class size).

How much time would be involved for each individual during working hours?

One day's training, 1.5 hours each week delivering the lesson, approximately 30 minutes each week to prepare the lesson and complete the pro-forma questionnaire. Approximately 2.5 – 3

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hours in total to complete the *Strengths and Difficulties Questionnaires*.

How much time would be involved for each individual outside working hours?

An optional hour each fortnight to resolve any issues / solve problems that arise is likely to be outwith normal teaching time.

Please state any way in which the research would involve pupils:

Martin Seligman and his colleagues at Pennsylvania State university in the USA have designed the Penn Resiliency Program. It uses cognitive-behavioural and social problem solving principles to teach children the skills required to think about how best to approach problems, develop emotional competence and in turn promote resiliency and prevent symptoms of depression. The research involves pupils directly as they would be the recipients of the intervention programme and would also be asked to complete the questionnaires referred to above both before and after the intervention.

Is any organisation involved in any way?

The University of Strathclyde oversee my doctorate. I have obtained access to the programme for research purposes from Martin Seligman and his colleagues at Pennsylvania State University.

X Council

To whom will you be reporting your research, and in what form?

The research will be written up as part of my Doctorate in Educational Psychology. It is also hoped that findings will be presented at conferences and submitted for publication in peer reviewed journals.

Are you willing to provide X Council with a summary of your findings:

Yes, I would plan to provide the Council with a report.

Please list any specific schools you plan to involve:

I have had discussions in principle with the following schools who have all indicated a willingness to become involved if permission to undertake the research is granted:

A Primary; B Primary; C Primary and D Primary.

Any other information you wish to add:

FOR AUTHORITY USE ONLY

This request for research access has the support of X Council

Signed:

Date:

18 June 2007

Muriel MacKenzie

Dear Muriel,

Research Request

Thank you for completing the pro-forma regarding research which you intend to carry out within Council Primary Schools. It would be helpful if you could let me know the schools you intend to approach in order that I can copy relevant correspondence to headteachers.

I am happy to agree in principle to the research. However, it is highly unusual to ask teachers to undertake a day's training event. Ultimate approval lies entirely with the headteacher of the school and, of course, the parents of individual children.

I enclose signed pro-forma and wish you success in your project.

**APPLICATION FORM FOR UNIVERSITY ETHICS COMMITTEE
AND DEPARTMENTAL ETHICS COMMITTEES**

This form applies to all investigations within the remit of the University's Code of Practice on Investigations on Human Beings. This includes all investigations with human participants undertaken by staff or students of the University of Strathclyde which falls within the remit of the University Ethics Committee (see Code of Practice, para 5.1) or the Departmental Ethics Committees (see Code of Practice, para 5.2).

However, this form should NOT be used for any investigation involving clinical trials (see Code of Practice, para 6.4) or medicinal products, nor for investigations involving staff, patients, facilities, data, tissue, blood or organ samples from the National Health Service. Applications for ethical approval for investigations involving the National Health Service in any way must be made under the governance arrangements for National Health Service Research Ethics Committees (see Code of Practice, para 3.2(d)) and where ethical approval is required from the NHS using the form issued by COREC (see Code of Practice, para 6.1).

Information sheets for volunteers and consent forms to be used in this study should be submitted with the application form for consideration by the Committee. The application will be judged entirely on the information provided in this form and any accompanying documentation - full grant proposals to funding bodies should not be attached. Please explain any abbreviations, acronyms etc that you use. The Code of Practice (<http://www.mis.strath.ac.uk/Secretariat/Ethics.htm>) contains guidance on completing this application, on information sheets and on consent forms.

Applications which are not signed and/or do not include the required additional forms (e.g. participant information sheet and consent form) will not be considered by the University Ethics Committee and will be referred back to the Chief Investigator.

The form is designed for completion in Word, and should in any case be typed rather than handwritten. The grey-shaded text boxes on the form will expand to allow you to enter as much information as you require. If you have difficulty filling out the form in Word, please contact Fiona Campbell in the Secretariat (ext. 2101).

Checklist of enclosed documents

Document	Enclosed?	N/A
Participant information sheet(s)	☐	☐
Consent form(s)	☒	☐
Sample questionnaire(s)	☒	☐
Sample interview format(s)	☐	☐
Sample advertisement(s)	☐	☐
Any other documents (please specify below)	☐	☐
	☐	☐
	☐	☐
	☐	☐

1. Chief Investigator (for the purposes of this application, this should always be the person responsible for the study at Strathclyde)

Name: Barbara Kelly
Status (e.g. professor, senior lecturer): Associate Tutor
Department: Psychology
Contact details: Telephone: 0141 548 2669
E-mail: barbara.kelly@strath.ac.uk

2. Other Strathclyde Investigator(s)

Name(s): Simon Hunter
Status (e.g. lecturer, post-/undergraduate): Lecturer.
Department(s): Psychology
If student(s), name of supervisor:
Contact details: Telephone: 0141 548 4879
E-mail: simon.hunter@strath.ac.uk

Please provide details for all investigators involved in the study (*the text box below will expand to allow details to be entered*):

Name: Muriel MacKenzie
Status: post graduate
Department: Psychology
If student, names of supervisors: Barbara Kelly / Simon Hunter
Contact details: Telephone 01786 442530
E-mail: mackenziem@stirling.gov.uk

3. Non-Strathclyde collaborating investigator(s)

Name(s): N/A
Status:
Department/Institution:
If student(s), name of supervisor:
Contact details: Telephone:
E-mail:

Please provide details for all investigators involved in the study (*the text box below will expand to allow details to be entered*):

4. Title of the investigation:

Promotion of Resilience and Prevention of Negative Mood States in Primary School Children: Impact of Class Climate.

5. Where will the investigation be conducted? (Note that the Committee reserves the right to visit testing sites and facilities)

In 4 mainstream primary schools within Stirling Council area.

6. Duration of the investigation (years/months):

(Expected) start date: August 2007

(Expected) completion date: March 2008

7. Sponsor:

University of Strathclyde

8. Funding body (if applicable):

N/A

Status of proposal – if seeking funding (Please cross as appropriate):

i) in preparation ☐

ii) submitted ☐

iii) proposal accepted by funding body ☐

Date of submission of proposal

Date of commencement of funding

9. Objectives of investigation:

Brief outline of the background, purpose and possible benefits of the investigation.

The research proposes to evaluate a school based universal intervention, the 'Penn Resiliency Program', delivered by teachers to their whole primary 6 / 7 class as part of their usual Personal and Social Development programme. This manualised cognitive-behavioural and social problem solving programme is designed to promote emotional resilience in order to prevent negative mood states in primary school aged children. The study also aims to assess the impact of classroom climate variables and implementation integrity on intervention outcomes, to enhance knowledge of what works in transporting interventions into real world settings of schools.

10. Nature of the participants:

Number: 120-150

Age (range): 9-11 years

Gender of volunteers: Males and Females

Recruitment method(s)

Via whole classess in mainstream primary schools with parental permission.

Inclusion/exclusion criteria (if appropriate)

N/A

Screening procedure (if appropriate)

N/A

Any special skills, attributes, medical conditions

N/A

Any vulnerable participants (see Code of Practice, section 5.1(ii) and annex 2)

N/A

Justifications for sample size (e.g. power calculations)

Sample size is based on the recommended sample required to perform multiple regression analysis with 3 predictor variables (Tabachnick and Fidell, 2007).

Will data be anonymised and destroyed after use? If not, please give reasons.

Yes

11. What consents will be sought and how?

(Consent forms and participator information sheets (and questionnaires where used) must be appended to this application

Parental permission will be required (see attached consent form and questionnaires).

12. Methodology

Design: what kind of design is to be used in the investigation (e.g. interview, experimental, observation, randomised control trial, etc.)?

The research design is a randomised (by class) control trial using a wait list control group.

Techniques: what methods will be employed and what exactly is required of participants?

Teachers would be required to attend a one day training course on the Penn Resiliency Program taught by the researcher; teach a class lesson from the Penn Resiliency Program manual weekly to their whole class for 12 weeks; complete a one page pro forma at the end of each lesson. Teachers would be asked to allow observation of two of the lessons by the researcher. They would also require to complete the Strengths and Difficulties Questionnaire (see attached) on each child in their class before and after the intervention and 12 weeks later.

The programme will be evaluated by gathering information from children before and after the intervention and 12 weeks later through a number of questionnaires (see attached) and gathering information from parents and teachers using the Strengths and Difficulties Questionnaire at three time points. Information from class observations and teachers' pro formas will be used to evaluate implementation integrity.

Reference should be made to any of the following to be used in the investigation (see Code of Practice, section 5.1):

Invasive techniques ☐

DNA testing ☐

Administration of drugs, foods, liquids, additives, other substances ☐

Any deception ☐

Physical exertion/exercise ☐

Manipulation of cognitive or affective human responses, possibly causing stress/anxiety ☐

Highly personal, intimate and/or confidential information being sought ☐

Acquisition of bodily fluids or tissue ☐

Access to confidential data (e.g. medical reports) ☐

Description of the use of any of the above:

The duration of the study for participants and frequency of testing (if repeat testing is necessary)

Pupils: 12 weekly lessons lasting 1.5 hours taught by class teachers. Completion of questionnaires at three time points - before and after the intervention and 12 weeks later.

Teachers: delivery of the Penn Resiliency Program over a 12 week period; completion of the Strengths and Difficulties Questionnaire on each of pupils at the three time points.

Parents: completion of the Strengths and Difficulties Questionnaire on their child at three time points - before and after the intervention and 12 weeks later.

13. Potential risks or hazards:

Full details should be given of any potential risks or discomfort for participants, any burdens imposed and any preparatory requirements (e.g. special diet, exercise), as well as any steps/procedures taken to minimize these risks and/or discomforts. Details should also be given of any potential risks to investigators.

N/A

14. Ethical issues

What do you consider to be the main ethical issues which may arise during the investigation, and how do you propose to address them (please refer in particular to Code of Practice, section 5.1)

Should any of the questionnaires identify a child presenting with a negative mood state the researcher (who is a qualified and practising Educational Psychologist) would discuss this with the child's parents and agree any action required.

15. Any payment to be made:

Include reference to reimbursements for time or expenses incurred, plus any additional fee/incentive for participation.

N/A

16. What debriefing, if any, will be given to volunteers?

Teachers will be given the opportunity to meet as a group with the researcher every two weeks during the course of the intervention and at the end of the study to discuss any issues arising. Telephone and e-mail contact will be available outwith that time.

17. What are the expected outcomes of the investigation? How will these be disseminated? Will you seek to publish the results?

It is expected that the intervention will increase children's skills in moderating self-talk, explanatory styles and generation of alternative beliefs as well as increasing assertiveness, negotiation and coping skills. These changes represent the process which should result in an increase in resilience and a reduction in negative mood states. It is also anticipated that improving interpersonal problem solving skills will lead to an improvement in children's behaviour both at home and in the class. The research will be written up as part of a Doctorate in Educational Psychology. Findings will also be presented at appropriate national conferences and submitted for publication in peer reviewed journals.

How long will data (incl. e.g. photographs) be kept, and how will it be stored?

Data will be retained in a locked filing cabinet for a period of five years from the end of the study.

18. Nominated person (and contact details) to whom participants' concerns/questions should be directed before, during or after the investigation (in the case of student projects, both the supervisor (Ord 16 staff member) and the student should be named); in all cases a member of University staff should be named.

Barbara Kelly, Department of Psychology (0141 548 2669)

Simon Hunter, Department of Psychology (0141 548 4879)

Muriel MacKenzie, Psychological Services, Stirling Council (01786 442530)

19. Previous experience of the investigator(s) with the procedures involved.

Barbara Kelly, the chief investigator, has substantial experience of working as a qualified Educational Psychologist and has previously evaluated a separate whole class based intervention. Simon Hunter has 10 years experience conducting questionnaire based research with children and young people, often with large samples ($N > 900$) and relating to sensitive topics (e.g. racist and discriminatory bullying). Muriel MacKenzie has 6 years experience working as a qualified Educational Psychologist during which she has undertaken questionnaire based research within schools with children and young people, e.g. investigating perceptions of school.

20. Generic approval: if approval is sought for several separate investigations, or a series of investigations, all employing the same basic methodology and serving the same overall objective, then generic approval can be sought for a 3-year period. Give, on a separate sheet, further details about additional studies to be covered by this approval application, using the relevant headings (1-17 above), and drawing attention to any variations in

methodology, participants, risks, etc. Student projects can also be submitted via Generic approval – see Code of Practice on Investigations on Human Beings, Section 6.3.

21. **Sponsorship**

This application requires the University to sponsor the investigation. I am aware of the implications of University sponsorship of the investigation and have assessed this investigation with respect to sponsorship and management risk. As this particular investigation is within the remit of the DEC and has no external funding and no NHS involvement, I agree on behalf of the University that the University is the appropriate sponsor of the investigation and there are no management risks posed by the investigation.

If not applicable, cross here

Signature of Head of Department	Please also print name below
.....	Professor James Thomson

Date:

22. **Declaration**

I have read the University’s Code of Practice on Investigations on Human Beings and have completed this application accordingly.

Signature of Chief Investigator	Please also print name below
.....	Barbara Kelly

Signature of Head of Department	Please also print name below
.....	

Date:

Notes

- 1. If there is any variation to any aspect of the investigation (location, investigators, methodology, risks, etc.) then the Secretary to the Ethics Committee should be notified in writing immediately.
- 2. Should anything occur during the project which may prompt ethical questions for any similar projects the Chief Investigator should notify the Ethics Committee.
- 3. Insurance and other approval requirements from appropriate external bodies must also be in place **before** the project can commence.

For applications to the University Ethics Committee this completed form should be sent (electronically, with signed hard copy to follow) to Research and Innovation in the first instance.

You may append further documents by expanding the text box below:

UNIVERSITY OF STRATHCLYDE

Research and Consultancy Services

Management Risk Assessment and Sponsorship

The Code of Practice on Investigations involving Human Beings requires that all investigations involving humans as subjects (whether for an individual project or a generic investigation covering many student projects) should be subject to management risk assessment as well as ethical scrutiny. For those projects that fall within the remit of the University Ethics Committee, and/or involve the NHS, and/or are externally funded then this form should be completed and returned to Research & Consultancy Services. For all other projects the form should be completed and returned to the Head of Department who can consider the management risk and whether or not it is appropriate for the University to sponsor the proposed project and, if satisfied, may sign this form.

- 1. Chief Investigator, or name of University academic or student if Chief Investigator not from University: **Barbara Kelly**
- 2. Project Title: **Promotion of Resilience and prevention of Negative Mood States in Primary School Children: Impact of Class Climate**
- 3. Is it proposed the University will sponsor of the project (i.e. have responsibility for overall management of the project)?

Yes

If no, who is the Sponsor?

- 4. Are you aware of any issues relevant to the University’s insurance cover? For example is this a clinical trial and/or are you offering no-fault compensation to volunteers?

No

If yes, what are those issues?

- 5 Are you aware of any issues relevant to the University’s assessment of management risk of this project? Please see attached for examples of possible management risk issues.

No

If yes, what are those issues?

Signature of University Investigator:

Date:

If the appropriate ethics form is a COREC form (ie the NHS is involved in the project or the project is a clinical trial) please have Head of Department also sign this form.

Head of Department

Date:

For projects that fall within the remit of the University Ethics Committee, and/or involve the NHS, and/or are externally funded please send this completed form with the appropriate ethics application form to Lynda Frew, Contracts Officer, Research and Consultancy Services.

All other projects may be approved by the Head of Department and the Departmental Ethics Committee.

MANAGEMENT RISK ASSESSMENT ISSUES

When considering management risk Research and Consultancy Services and Senior Officers will consider factors including but not limited to the following.

1. Risk to reputation of University and risk of litigation and/or insurance claims.

This risk maybe caused by

- harm to volunteers and wider community,
- poor research strategy,
- breach of statutory framework or contractual obligations,
- project not being carried out according to protocol,
- inadequate or inappropriate insurance cover.

2. Risk to research completion.

This risk maybe caused by

- failure to properly carry out research,
- failure to proper supervise students,
- inadequate resources and/or facilities,
- inexperienced staff.

3. Risk to dissemination and use of research results.

This risk maybe caused by lack of resources or failure to identify and act upon intellectual property in results.

4. Risk to researchers – career and reputation.

This risk maybe caused by misconduct or non-completion of research.

The management risk assessment will consider the University's context. In particular,

- Research and Development Strategy, including the objective of the University in general, and the objective of University research generally and within the relevant faculty/department.
- Research and Development Structure and Systems. In particular the support provided by the University's structure to reduce the risks posed by research and by this project, and the systems in place to monitor and respond to the risks.

From: "Steve Kelly" <steve.kelly@strath.ac.uk>
To: "Barbara Kelly" <barbara.kelly@strath.ac.uk>
Date: 23/08/2007 17:45
Subject: ethics

CC: "Simon Hunter" <simon.hunter@strath.ac.uk>, <mackenziem@
Dear Barbara,

The Departmental Ethics committee has given approval for your study entitled "Promotion of resilience and prevention of negative mood states in primary school children" and the Head of Department has signed the Risk and Sponsorship documentation. You may begin when ready.

Steve

Dr Steve Kelly
Dept. of Psychology,
University of Strathclyde,
Graham Hills Building,
40 George Street, Glasgow.
G1 1QE
Tel: 0141 548 4880

Dear *parent / carer*

This year as part of our Personal and Social Development programme we are planning to teach children in P 6 / 7 skills in problem solving, assertiveness, negotiation, and coping skills, using the Penn Resiliency Programme.

This is an exciting opportunity for the children to become involved in a new venture that should help them cope effectively with the day to day challenges they face and stand them in good stead on their transition to secondary school.

One of the Educational Psychologist's working for the Council, Muriel MacKenzie, plans to evaluate the effectiveness of the programme as part of a Doctorate in Educational Psychology which she is undertaking at the University of Strathclyde.

As part of the evaluation we will be asking the children to complete a number of questionnaires including questions on how they feel about themselves, what their mood is like, how they explain things that happen to them and what they think about their class. Their teachers will also complete a short questionnaire on the children and we hope that you will also agree to complete the same questionnaire on your child.

Information from these questionnaires about specific children will not be shared with the school, being used only to evaluate the usefulness of the programme. In the event of any of the questionnaires identifying a concern about a child, e.g. a low mood, Muriel would contact you to discuss this with you. Schools will of course be given feedback about how useful the programme was generally.

Each child will be given a workbook to use and some short tasks to complete as homework and we would encourage you to talk to them about what they are learning.

Muriel will be in school on at..... if you wish to discuss any aspect of the programme or research with her in more detail. You can also contact her by telephone on 01786 442530 when she will be happy to answer any queries.

Best wishes
Head teacher

Parent / carer consent

I give permission for my child..... Class.....
to participate in the activities outlined above and the research evaluating their effectiveness.

Parent / carers name (please print).....
Signed:



Penn Resiliency Project
Positive Psychology Center
20 Walnut Street
Philadelphia, PA 19104-6241
215.573.4128 Fax 215.746.6361
Email: info@pennproject.org

Principal Investigators:
Jane Gillham, Ph.D.
Karen Reivich, Ph.D.
Martin Seligman, Ph.D.

May 11th, 2007

Dear Ms. MacKenzie,

Enclosed please find the materials for the Penn Resiliency Program: A Life Skills and Depression Prevention Curriculum for Children and Adolescents. I hope these materials are helpful to you. As always, please let me know if you have any questions.

Thank you again for your interest in PRP. We are excited to share our curriculum and eager to hear about new projects and findings related to PRP. We would be grateful for your feedback and project updates. Please keep in touch.

Sincerely,

A handwritten signature in black ink, appearing to read "M. Bartges".

Megan Bartges
Project Manager
Penn Resiliency Project

Encl.:
PRP Leader's Manual
PRP Teacher's Materials
PRP Student's Notebook
Sample File Games (2)

3 May 2007

Megan Bartges
3720 Walnut Street
Philadelphia
PA 19104
USA

Dear Megan

Re: PRP Starter Manual Set

Many thanks for allowing me access to the PRP. Please find enclosed a copy of the signed agreement and a money order for \$100.

With best wishes.

Muriel MacKenzie
Educational Psychologist

Enc.

Enhancing emotional resilience in primary aged children

Introduction to the Penn
Resiliency Program

Muriel MacKenzie
Educational Psychologist

Aims of this workshop

- Develop an understanding of risk and protective factors for children
- Increase knowledge about depression and its implications
- Promote an understanding of prevention and resilience programmes
- Introduction to the Penn Resiliency Program and its evaluation

Penn Resiliency Program

- A Life Skills and Depression Prevention Curriculum for Children and Adolescents
- Developed by: Jane Gillham, Lisa Jaycox, Karen Reivich, Martin Seligman and Terry Silver, University of Pennsylvania, USA

What is the Penn Resiliency Program?

- Evidence based curriculum for children and adolescents
- Combines cognitive-behavioural and social problem solving skills
- Teaches skills that children can use to handle difficult situations, feel good about themselves and increase resilience in the face of adversity

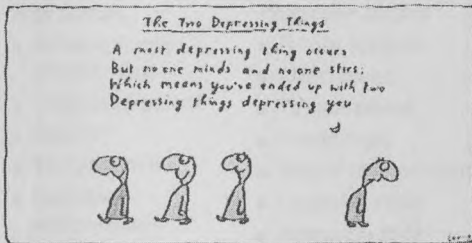
Mental health problems

- In Great Britain around 10% of children aged 5-15 years suffer from a diagnosable mental health problem
- 4% of these children have emotional disorders (anxiety or depression)
- Many of these children will not be identified as such or receive treatment

Parental response?

- Nearly half (47%) the parents of children with emotional disorders had sought help from their child's teacher expressing concerns about their child's mental health

Depression...



Depression

Depression occurs as a result of a:

- complex interplay of biological, social, environmental and intrapersonal risk and protective factors
- Cognitive diathesis-stress model
- Comorbidity - over 60% of adolescents with depression have a history of anxiety

Symptoms of depression

- Depressed or irritable mood
- Feelings of intense sadness
- Loss of enjoyment in usual activities
- Social withdrawal
- Fatigue or loss of energy
- Inability to concentrate

Symptoms...

- Problems with sleeping
- Eating difficulties
- Motor agitation
- Feelings of guilt or hopelessness
- Recurrent thoughts of death or suicide

Implications of depression

- Depression is distressing in itself but is also associated with many negative outcomes including:
- Academic difficulties
- Problems with family and peer relationships
- Interpersonal conflict / rejection

Implications...

- Substance abuse problems
- Risk factor for depression as an adult
- Increased risk of suicide attempts
-even children with sub-threshold levels of depression are at risk

Risk and protective factors

Risk factors

- Adverse family environment
- Depressed parent
- Gender
- Temperament
- Cognitive vulnerability
- Rumination

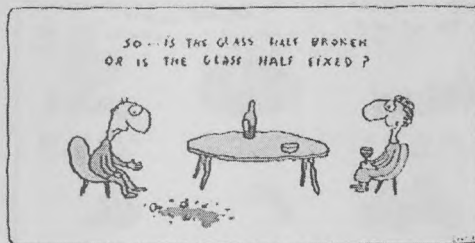
Protective factors

- Family support
- Attachment
- Temperament
- Friendships
- School environment
- Cognitive style
- Response style

School environment

- Class climate
- Sense of belonging / connectedness
- Confidence as a learner
- Praise and feedback - ability versus effort
- Attributional feedback from teachers

Attributions...



Attributions

- *Attributions*: how we think about / appraise ourselves, situations, events
- Attributions can be considered across three dimensions:
 - Internal / external
 - Stable / unstable
 - Specific / global

Cognitive vulnerability

- Negative beliefs about oneself, the world, the future
- Tendency to make global, stable and internal attributions for negative events
- When confronted with a stressful life event the stressor and its consequences are *appraised* negatively and depression occurs

What is resilience?

- Resilience: the ability to spring back from or adapt to adversity
- Interaction between child, home, school and community factors

Promotion of resilience

Cognitive - behavioural skills

- Realistic thinking
- Generation of solutions to problems

Emotional self-regulation

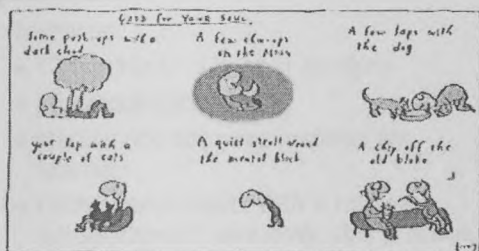
- Awareness of emotions
- Child's perceptions

Social support

Why is resilience a good thing?

- Children who have good emotional and social skills do better at school academically
- Children who are emotionally competent develop better relationships with other children and with adults
- Resilient children show fewer behavioural difficultieseven when their life is hard

Good for your soul...



Why intervene in schools?

- Health Promoting Schools initiative
- Curriculum for Excellence
- Important context for emotional development
- Impact of social environment in school
- Potential for meaningful adult support

Prevention programmes

- Prevention rather than cure?
- *Targeted programmes*: for those at risk of developing a disorder or for those already showing symptoms
- *Universal programmes*: directed at whole populations, e.g. a whole class, beneficial to a whole population

Universal programmes

Advantages

- Inclusive, non-stigmatising
- Promotes shared thinking & enhances peer support
- Helps all children
- Avoids costly screening

Disadvantages

- Sufficient 'dosage' for those with significant problems?
- Resources provided for those who may not need it

Penn Resiliency Program

Teaches children practical skills to:

- identify negative thoughts & replace them with more balanced, reasonable ones
- identify negative feelings and learn how to manage them
- learn to overcome problems rather than avoid them, feel helpless and hopeless

Cognitive-behavioural therapy

Looks at the relationship between

- what children think
- what they feel
- what they do

Programme structure

Involves:

- 12 weekly 1 - 1½ hour sessions
- Workbook for children
- Manual and resource material for teachers
- Each session starts with a review, introduction of new skills, skill practice, review of main points, homework

Research questions?

- Can the Penn Resiliency Program be effective in Scottish schools?
- What aspects of the programme makes a difference?
- What is the impact of class climate on outcomes?
- What support do schools need to implement the programme well?

Research methodology

- P6 / 7 children in 5 different schools
- Random allocation by school to intervention / wait list control
- Measures obtained from children, teachers and parents at 3 time points - pre and post intervention
- Staff development for teachers

Methodology...

- Ongoing support for teachers
- Look at implementation factors - concepts taught, attendance, homework, observation of 2 lessons, children's views, teachers' views
- Data analysis
- Write-up results

Measures

Class climate:

- My Classroom Scale
- Students' Sense of the School as a Community

Information from teachers and parents:

- Strengths and Difficulties Questionnaire

Measures...

Information from children:

- Self-Talk Inventory
- Self-Esteem Questionnaire
- Children's Dysfunctional Attitudes Questionnaire
- CDI - Children's Depression Inventory

PRP Leader's Manual

Format:

- Title of session
- Main objectives
- Lesson outline
- Materials
- Scripts
- Homework

Programme outline

- Session 1: Introduction / link between thoughts and feelings
- Session 2: Thinking styles
- Session 3: Alternatives and evidence
- Session 4: Evaluating thoughts and putting it into perspective
- Session 5: Conflict / review of sessions
- Session 6: Assertiveness & negotiation

Outline...

- Session 7: Coping strategies
- Session 8: Overcoming procrastination and social skills training
- Session 9: Decision making / review of sessions
- Session 10: Problem solving
- Session 11: Problem solving and review
- Session 12: Review and party!

Session 1: link between thoughts and feelings

- Aim is to explore common problems, thoughts and feelings for their age group
- Purpose of the programme
- Introduction to self-talk concept
- Identification of the link between their self-talk, feelings and action

Session 2: thinking styles

- Aim is to understand thinking styles and types of thoughts that can make people feel bad and give up
- Introduction to changing feelings
- Thoughts that make us feel bad
- Practice identifying thoughts and generating alternatives

Session 3: alternatives and evidence

- Aim is to help children learn how to generate alternative thoughts and evaluate them for accuracy
- Sherlock Holmes and Merlock Worms
- Cartoons / skits

Session 4: evaluating thoughts & putting it into perspective

- Aim is to learn how to put the implications of problems into perspective
- Chicken Little story
- Rapid Fire Disputation

Session 5: conflict / review of sessions

- Aim is to apply techniques learned to family conflict - parent or siblings - and review lessons 1-4
- Causes of conflict
- Decatastrophising
- Putting it into perspective

Session 6: assertiveness and negotiation

- Aim is to discuss styles of interaction and teach basic assertiveness skills
- Assertiveness training - passive, aggressive, assertive
- Steps for being assertive
- Negotiation - compromising and steps for negotiation

Session 7: coping strategies

- Aim is to teach children what they can do to feel better when exposed to conflict
- Relaxation
- Think about something good
- Leave the situation
- Talk to someone
- Anger and sadness control

Session 8: overcoming procrastination / social skills training

- Aim is to introduce a technique to overcome procrastination and social skills training
- Visualised relaxation
- Social Skills training - approaching and interacting with peers
- Hot seat practice

Session 9: Decision making

- Aim is to introduce a technique for decision making and review lessons 6-8
- Relaxation practice
- Assertiveness practice
- Decision making

Session 10: Problem solving

- Aim is to teach children to approach social interactions in a problem-solving manner and take others' perspective
- Introduces a 5 step approach to problem solving
- Encourages perspective taking

Session 11: Problem solving

- Aim is to review and practice the problem-solving approach and decision making
- Tic Tac Toe game
- Hot seat practice

Session 12: Review and party

- Aim is to review the concepts discussed in the programme and to encourage the children to use these skills in the future
- Jeopardy game
- Finish the programme with a small party

Homework

- Each child has a workbook
- Skill practice
- Encourage sharing activities with families
- Important to record homework completion

Next steps...

- Fortnightly group sessions on offer with me to provide support, answer any queries
- Outwith these sessions you can 'phone or e-mail me
- Completion of questionnaires
- Lesson observation
- Feedback

Further information

- www.centreforconfidence.co.uk
- www.authentic happiness.sas.upenn.edu/
- Seligman, Martin *The optimistic Child*

Penn Resiliency Program: observation schedule

Class:

Lesson:

1. Degree of satisfaction with the teacher's delivery of the program

1	2	3	4	5	6	7	8	9	10
not satisfied									very satisfied

Comments:

2. Degree of satisfaction that the children understood the concepts being taught in the programme?

1	2	3	4	5	6	7	8	9	10
not satisfied									very satisfied

Comments:

3. How engaged did the children appear during the lesson?

1	2	3	4	5	6	7	8	9	10
not engaged									very engaged

Comments:

4. Degree of teacher's overall adherence to the lesson?

1	2	3	4	5	6	7	8	9	10
not at all									very much

Comments:

Penn Resiliency Program: Teacher evaluation

Thank you for all the hard work you put into this project. I am very interested in hearing what you thought of the Penn Resiliency Program and would be grateful if you would complete the following questionnaire.

1. How satisfied overall were you that the children understood the concepts being taught in the programme?

1	2	3	4	5	6	7	8	9	10
								not satisfied	very satisfied

Any comments?

2. How relevant do you think the programme was for the children in your class?

1	2	3	4	5	6	7	8	9	10
not relevant								very relevant	

Any comments?

3. How interesting do you think the children found the programme?

not interesting very interesting

Any comments?

4. Do you consider that the children benefited from the program?

[illegible]

Any comments?

5. How interesting did you find teaching the programme?

not interesting very interesting

1 2 3 4 5 6 7 8 9 10

Any comments?

6. Would you recommend the Penn Resiliency Program to other teachers?

Yes / No

Any comments?

7. What suggestions do you have that would improve the programme?

8. Any additional comments

THANK-YOU!