

**DISCOURSE TOPIC MANAGEMENT AND DISCUSSION SKILLS
OF 4, 6 AND 9 YEAR OLDS: DEVELOPMENTAL CHANGE,
TASK AND INTERVENTION EFFECTS.**

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ABSTRACT

The research consisted of three studies which examined the collaborative discourse topic management performances of 4-, 6- and 9-year-old dyads in a variety of different task situations.

Studies one and two compared children's performances across four different tasks. Topic management performances varied across the tasks and age groups. When the children were mutually reliant for task completion few differences existed between the different age groups. However, as mutual reliance decreased there was an increasing lack of joint attention, dialogic topic maintenance and co-operation in the interactions of the 4-year-old dyads. Further, in a decision making task where mutual reliance was low, only the older children maintained topics by engaging in collaborative discussion involving the use of suggestions, justifications, counter arguments and agreements. In comparison, 4-year-olds produced short topic sequences consisting largely of self repetition.

To determine whether the 4-year-olds were unable or just unwilling to engage in collaborative discussion, the final study compared children's performances on an open-ended task either with or without the help of scaffolding to elicit this type of dialogue from the children. Results revealed that although older children gained from the scaffolding, they collaborated in some discussion in both conditions. Moreover, the intervention was successful at eliciting higher levels of justifications, suggestions and agreements from the 4-year-olds than were produced by their counterparts and even the 6 year olds in the control condition. However, despite also showing an ability to consider other's views they did not engage in collaborative discussion but rather disputed.

The overall implications are that in middle childhood changes in the ability to maintain topics occur at a local level. Further, whereas 4-year-olds do not have a full understanding of listener roles in dialogue, especially when mutual reliance is low, nor the full socio-cognitive skills required to participate in collaborative discussion, older children, increasingly with age, have these skills.

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CHAPTER 1: INTRODUCTION:

Discourse Analysis, Discourse Topic and Topic Management Skills in Adults and Children.

1.1 OVERVIEW

The present thesis is concerned with the abilities of children, in middle to later childhood, to maintain, change and organise discourse topics in a variety of different task contexts. In order to provide a background for the research, this chapter will firstly consider the research on discourse analysis and in particular, the sub-areas of pragmatics, context, shared knowledge, and conversational rules and structure. This will provide some understanding of how and why the concept of discourse topic developed. Having done this, the chapter will critically appraise the differing approaches to the characterisation of 'discourse topic' and a local approach will be favoured. This will be followed by a section outlining the topic management skills held and performed by adults. At this point, the chapter will turn to consider children's skills at managing topics; this will include sections on theories of child development and current educational curricula as well as prior research in this area. Finally, the present research will be introduced.

1.2 DISCOURSE ANALYSIS

During the 1960s and 1970s, with the swing away from behaviourist principles, psycholinguists largely studied areas such as the phonology, syntax, semantics and the pragmatics of language. In doing this research, isolated sentences were the unit of analysis. According to McTear (1985) it was quietly assumed that once a child had achieved competence in these areas he/ she could make him/ herself understood to others while participating in conversations with them. It became evident that engaging in conversation involved other socio-cognitive and linguistic skills. Further that the physical and social contexts in which language is embedded make an important contribution to language usage. Since the 1970s, researchers have begun to look at linguistic data in terms of the way adjacent utterances produced both within and between speakers are often linked. Approaches that treat linguistic data in this way are collectively known as discourse analysis (McTear, 1985; Brown and Yule, 1983; Schiffrin, 1994) and because of the recognised contribution of context involve a broadly defined pragmatic approach. However, the concepts of pragmatics and context are not free from ambiguity. Thus, this first section will briefly examine the notions of pragmatics, context and common ground, before looking at the

research concerning conversational rules and co-operation and finally discourse structure.

1.2.1 Some Key Discourse Analytic Constructs

1.2.1.1 Pragmatics

The term 'pragmatics' is often used to refer to 'language usage' (Levinson, 1983). However, there is a tendency to treat pragmatics as an 'other' category for the study of language, that is to embody all that does not fit into the areas of syntax, semantics and other traditional areas of linguistics. For this reason Levinson (1983) attempted to formalise and narrow the area of pragmatics by assessing a number of possible definitions, although with little success. He suggests however, that pragmatics should incorporate the issues of language understanding and use that have little to do with linguistic structure and also the features of linguistic structure that are dependent on context. However, clearly the area of pragmatics, involving notions such as language usage and context, can no longer focus only on language. Rather the focus of analysis must be on the speakers of language (Brown and Yule, 1983).

In terms of the analysis of discourse it has been suggested that discourse analysts take a pragmatic approach (Brown and Yule, 1983) because it requires recourse to a notion of context in relation to function and form. However, as is apparent from Schiffrin's (1994) book on "Approaches to Discourse", within this very broad pragmatic approach there are researchers who have a background in different disciplines and therefore take different views of the notion of context.

The approach taken in this research can be seen as involving generally those features of linguistic structure and use that are reliant on context.

1.2.1.2 Context

The notion of what constitutes relevant context is extremely diffuse, not least because in the past researchers have used it as a general term to refer to those features that cause variation in language form and function and aid in its interpretation. As many point out what may be relevant for the understanding of one conversation or part thereof may be irrelevant for another (Brown and Yule, 1983; Schiffrin, 1994). No matter what their perspective, researchers tend to consider context as being made up of one or more features of situation, text and knowledge (Schiffrin, 1994). However, as Schiffrin notes, these can involve very different points of view on these

features. Accounts of the relevant features of situation have generally indicated that participants, settings and purposes are particularly important (Brown and Fraser, 1979; Hymes, 1964 and Lewis, 1972, cited by Brown and Yule, 1983), with other features embodied within these main categories. According to Brown and Fraser (1979), the purposes are the main features which drive and decide the relevance of the other features incorporated under the categories of setting and participants. Brown and Yule (1983) also note how prior discourse can constrain the interpretation and production of an utterance which in turn constitute the very context within which future utterances are interpreted. Prior discourse can therefore be seen as an important feature of context. The general view of the relationship between context, speech and speakers is that features of context are perceived and constructed, individuals organising or aligning themselves to these social understandings (Applegate and Delia, 1980; Liengme-Bessire, Grossen, Ianaccone and Perret-Clermont, 1994; Goffman, 1979, cited by Forrester, 1992; Rogoff, Gauvain and Ellis, 1991; Schiffrin, 1994). For a more comprehensive account of the notion of context see Schiffrin (1994).

1.2.1.3 Common Ground and Presuppositions

An element of context is 'common ground' which represents the information that speakers and hearers share. Holding common ground is essentially a cognitive ability in that speakers must assess what may or may not be shared or assumed by other speakers when choosing the level at which to present their utterance. That is, whether or not a hearer's background knowledge needs to be updated in order for the new information to be understood.

Use of this knowledge can be observed in conversations when the speaker who is producing an utterance presupposes background knowledge on the part of the listener. That is, an utterance may be presented by a speaker in a way that treats certain information as 'undisputed'. For example in the following, speaker A treats the information that he has a brother and that Beijing is a place as known or undisputed:

- A) My Brother is just back from Beijing.
- B) Oh really, how long was he there for?

If however, B had responded "What's Beijing?" then the presupposition made by speaker A that speaker B knew, at least, that Beijing was a place was wrong. Not only do presuppositions refer to information that is shared, they can also refer to new information that the speaker feels the hearer will accept without argument as well as

features that can be located in the direct physical context. In the above example even if B did not know that A had a brother the presupposition is still acceptable as people often have brothers. As Brinton and Fujiki (1989) note the ability to presuppose requires, that individuals have an idea of what others may and may not know and therefore requires that a speaker be able to take a partner's perspective. (See Levinson (1983) for a fuller discussion of presupposition and Werth (1993) for an alternative approach to presupposition, from a discourse perspective.)

1.2.2 Conversational Rules and Co-operation

As is regularly pointed out, language is often used in conversation to communicate ideas, information and desires between people. Conversational usage implies a certain dynamism to the notions of context and common ground in that conversants often build on what other conversants have previously stated. If they did not, then discourse would consist of a number of unrelated utterances, little would be achieved, plans would not be carried out, and so on. Further, in order to ensure that the information flow is smooth, clear and comprehensible, conversants have been observed to adhere to a set of conversational rules. This is often referred to as the co-operative nature of conversation.

1.2.2.1 Co-operation and Relevance

Grice (1975) identified what he termed the 'co-operative principle' of conversation to which conversational participants adhere during conversation. The co-operative principle states that conversants should:-

"make [their]... conversational contribution such as is required at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which... [they] are engaged." (Grice, 1975 P. 45)

Grice then proceeded to outline four maxims, sub-categories of the co-operative principle. These are:- manner, quality, quantity and relation. We shall only consider the maxim of relation here but for further information see Grice (1975). Under the category of relation Grice (1975) suggests that conversants should, although he does not state how, make their contributions relevant to those that precede. Consider the following example of natural conversation from Ellis and Beattie (1986), where the speakers discuss the question of a united Ireland:-

- A) So you agree in principle with a united Ireland?
- B) Yes I think I do.
- C) Well they don't want one.

B) Who doesn't?

C) Southern Ireland doesn't want the - they don't want the unity.

B) I am not saying that I can come with a solution to the problems 'cause I don't think they can be immediately...

As is obvious in the above example, each utterance is relevant to the preceding utterance. Further, although the participants possess different views on the point of discussion the conversation remains orderly, each participant taking a turn to speak and letting others speak with little interruption or delay between utterances.

More recently Sperber and Wilson (1986; 1987), taking a rather reductionist information processing view of human cognition, have challenged a number of Grice's ideas and assumptions including the concept of the co-operative principle. In particular, they suggest that their 'principle of relevance' (POR) should replace Grice's (1975) co-operative principle and its maxims for the simple reason that the POR is more explicit and has more explanatory power. The POR states that "every act of ostensive communication (i.e. intentional communication - my brackets) communicates the presumption of its own optimal relevance." (Sperber and Wilson, 1986, P. 158). They further indicate that a basic feature of human cognition is the search for relevance. Sperber and Wilson note that the POR works in collaboration with a principle of minimal effort. That is, speakers and hearers make as little effort as possible to maintain relevance. These two principles function to constrain inferences concerning the intended meaning of an utterance, in that the intended meaning should be the most relevant and be derived with the least effort. Although Sperber and Wilson's theory does present a revolutionary approach to the derivation of the meaning of utterances, there are a number of problems with it. Perhaps the main one of these is that social features of context are not considered particularly relevant for explaining the achievement of communication. (For further criticisms see the critique of relevance theory in Behavioral and Brain Sciences (1987), Sanders (1988) and Stevenson (1993).)

1.2.2.2 The Given-New Contract

Building on the work by Grice (1975), Clark and Haviland (1977) proposed that speakers abide by a 'given-new' contract. That is, speakers are required to mark syntactically and with intonation the information that they assume to be known or 'given' to the listener and that which they consider to be 'new' information which the listener does not know. For example consider the following pseudo-cleft sentence:-
"It was only Daniel who wasn't scared by it." In normal circumstances when the

intonation falls on 'Daniel' this sentence organisation would function to indicate that 'Daniel' is the new information and that 'it', an anaphoric pronoun, is the 'given' information. Use of anaphoric pronouns causes the listener to search through his/ her memory of the preceding discourse or the context for the identity of the referent. In the above example 'it' may refer to a film, a monster, a spider and so on depending on what the conversants have been talking about. Once the antecedent is identified the new information is attached to it in the memory structure of the conversation. The marking of 'given' and 'new' information in this way, as well as through the use of definite and indefinite articles, functions to ensure that communication is efficient, utterances being interpreted and expanded with minimal effort.

Conversants at the start of a discussion often go to great lengths to identify the referent for the listener either to establish 'common ground' and context or just to provide background understanding. For example:- "*You know that film we saw last week, not the horror the other one. What was it called again?*" In this example once the referent is identified it can be referred to using a pronoun marking it as 'given'. According to Keenan and Schieffelin (1976) the establishment of referents in this way is often a prerequisite for collaborating on a discourse topic.

A number of researchers have criticised the notion of the given-new contract (Brown and Yule, 1983; Sigman, 1983). They suggest that language is not just used to convey new information rather it is frequently used to negotiate social relationships often involving lots of repetition and the restatement of known information. Despite this, the marking of given and new information is considered to remain a useful regularity in conversations (Brown and Yule, 1983).

1.2.2.3 Turn-Taking

Other rules have been identified by conversation analysts concerning the allocation of speaker turns in conversation. Sacks, Schegloff and Jefferson (1974) identified a set of rules that are used to avoid overlap between speakers in turns at talk and to minimise the gap between these turns. They suggested that at a transition-relevance-place speakers can select the next speaker, continue speaking or another participant can self select a turn. A transition-relevance-place is the position between the units such as a sentence, phrase, clause etc. the end of which is 'projected' by the unit type. Further, evidence of co-operation is in the use of gestural, intonation and linguistic signals that speakers employ to communicate an upcoming transition relevance place. Indeed Duncan (1972) identified certain paralinguistic cues, such as

re-establishment of gaze and halting of hand gestures, that marked turn endings. As will become evident in section 1.3.2, further linguistic and paralinguistic markers are regularly used to signal changes in discourse structure.

1.2.3 The Structure of Discourse

Partly as a result of co-operativeness and relevance, discourse has structure. In other words, antecedent utterances impose constraints on subsequent utterances, and in the early 1970s attempts were made to spell out these antecedent - consequent relations. Simple observations were made such as that questions are frequently followed by answers, requests by some sort of compliance or a justification for non-compliance and so on. Conversation analysts termed these relations 'adjacency pairs' (Sacks et al., 1974; Schegloff and Sacks, 1974) claiming that these pairs of utterances are the building blocks of conversation. The basic principle of the adjacency pair is that:-

"given the recognisable production of a first pair part, on its first possible completion its speaker should stop and a next speaker should start and produce a second pair part from the pair type the first is recognisably a member of." (Schegloff and Sacks, 1974, P.239)

For example consider the following:

- A) Where's the teacher?
- B) In the store-room.

This is an example of an adjacency pair as it might appear in a conversation. Adjacency pairs are regularly embedded within other pairs. In the above example if there happened to be a few teachers present the following may result:

- | | |
|--|------|
| A) Where's the teacher? | [Q1] |
| B) Which one? | [Q2] |
| A) Mr Atkinson. | [A2] |
| B) Oh, he's upstairs in Ms Johnson's office. | [A1] |

In this example, A has not identified the referent specifically enough and B has to initiate a clarification pair before an answer can be given to the first pair part. In natural conversations, the above and more complex structures frequently occur.

As a model of the basic structural units of conversations, adjacency pairs are unsatisfactory for two reasons (McTear, 1985): firstly because the adjacency pair does not cover all the possible relations between utterances in conversation; and

secondly because the conversation analysts fail to give criteria concerning which second pair parts are relevant responses and which are not.

Other discourse analysts try to improve on the conversation analytic approach while maintaining the view that the exchange is the smallest unit of interaction. The exchange is made up of moves, one of which initiates the exchange and another of which responds to the initiation. According to McTear (1985), initiations introduce predictions which function to constrain the type of responses that can follow. Further, responses fulfil the predictions introduced in the initiating move. Some moves can function to respond to a previous initiation and also function to initiate another exchange (for a fuller discussion see McTear, 1985). However, the concept of the exchange does not seem to overcome the pitfalls of the adjacency pair mentioned earlier.

Although we have seen that small structures such as adjacency pairs and exchanges can be built from utterances, there is also a view that suggests that there is a larger structural unit of organisation in discourse which produces coherence between utterances and groups them into larger units. According to Hurtig (1977), adjacency pairs and/ or exchanges cannot be regarded as the basic unit of discourse because they cannot explain the rules by which sequences of utterances may cohere into larger units without reference to higher organisational properties. For example consider the following:-

S) ...I really worked hard my second semester and finals came and I freaked out, the guy I like couldn't believe it, my girl friend and my room-mate and I would stay up all night and then we'd just go out on the roof of Stockwell and just go AUUGGHHH eco- it was really bad and I'm still a little tense and hyper from it.

C) Yeah

S) It hasn't worn off.

C) Uh huh

S) God it was really icky.

C) Yeah I know, well, the University is really - they want your money ... you know.

S) They sure do.

C) *Monopoly is a really fun game.*

(2.2 sec.)

S) Why do you bring that up?

This conversation comes from some research carried out by Vuchinich (1977). In the dialogue the utterance "Monopoly is a really fun game." is followed by a two second pause and a 'repair sequence'.

In terms of an adjacency pair or exchange structure, the 'Monopoly' utterance would be considered as being the first part of a pair or an initiator. The utterance was articulated properly, the referents were clear and so on and yet it functioned to cause a breakdown in conversation, evidenced by the repair sequence.

As the content of the repair initiating utterance indicates, the preceding utterance is not relevant at that point. Indeed, the 'Monopoly' utterance breaks Grice's (1975) maxim of relation and Vuchinich described the utterance as being 'non-cohesive'. In this study Vuchinich found that when a confederate, conversing with a subject, produced an utterance that was totally unrelated or illogically related to the preceding talk, more often than not it was followed by a pause and a remedy sequence. However, this was not always the case. On occasions the 'non-cohesive' utterance was ignored and on other occasions it caused the conversation to turn to a completely different issue. It was also sometimes the case that the 'non-cohesive' utterance was not that disruptive becoming incorporated into the ongoing sequence of talk. As will be apparent in section 1.3, employing a notion of discourse topic can provide a clear understanding of the reason why these different patterns resulted from the 'non-cohesive' utterances. The Vuchinich study demonstrates the existence of larger units of meaning that produce coherence between successive utterances and turns.

In the early seventies textual linguists attempted to account for coherence in texts by suggesting that certain linguistic devices provide cohesive relations between utterances. These devices were suggested to create 'texture', that is coherence in a text or discourse (Halliday and Hasan, 1976). These cohesive relations are produced when certain features of an utterance rely on the interpretation of other utterances in the discourse. These linguistic devices include:- reference to items in previous/ future discourse and the physical context, substitution of words for other words, ellipsis where items are omitted and conjunction which relates what is up and coming to preceding discourse. For a full account of the model see Halliday and Hasan (1976). However, there are a number of problems with the model (Brown and Yule, 1983; Goldberg, 1983; Morgan and Sellner, 1980). Firstly, it should be noted that these explicit markers are not necessary for an understanding of the text, rather it is the

underlying semantic relationships that allow understanding (Brown and Yule 1983; Morgan and Sellner 1980). Related to this previous point is that, as Morgan and Sellner (1980) point out, it is not the cohesive devices that provide the cohesion, rather, these devices are a consequence of the coherence of content and peoples' attempts to provide coherence in their discourse content. Finally, it is quite possible to create texts that bear cohesive relations but do not constitute coherent texts (van Dijk, 1980; Brown and Yule, 1983; Goldberg, 1983).

A further attempt to explain how sentences and utterances cohere into larger units came from Rumelhart (1975), cited by Rayner and Pollatsek (1989) who introduced the concept of story grammars. Story grammars consist of a set of rules, borrowed from syntactic theory, that define the structure of a story or narrative. There are two main points that are made: firstly that stories can be divided into the goals and subgoals that an actor tries to reach; and secondly that these attempts consist of episodes which have other episodes embedded within them. The whole story can then be pictured as a hierarchical structuring of these episodes. There are a number of problems with this approach to the analysis of narratives and stories. Perhaps the main one is that the texts that are used are simple, and constructed to exemplify the fact that stories are structured in the suggested fashion. In addition though the concept of a story grammar is itself fairly uninformative (see Brown and Yule, 1983; Rayner and Pollatsek, 1989; Goldberg, 1983; Morgan and Sellner, 1980; for further criticisms) as will be evident later the notions of hierarchical organisation and goals are useful notions when combined with a notion of topic and attention focus.

1.2.3.1 Summary

In sum, it seems that conversations are collaborated on in a context and require the use of cognitive, social and linguistic skills for their management. Further, there are conversational rules concerning what type of utterance should follow a previous utterance, when it should be introduced, what the utterance should contain and how it should be presented. This seems to encourage orderliness, and efficiency in conversation as well as making the listener's job of comprehending the utterance easier. In terms of units of discourse, utterances can be grouped together into adjacency pairs or exchanges of initiations and responses. However there seems to be a larger unit of discourse structure that produces coherence between utterances that cannot be explained by the exchange and adjacency pair models. Attempts from textual linguists and story grammarians have been unable to provide a full

characterisation of how utterances may cohere to produce larger structural units. Another approach to this issue comes from researchers using a notion of discourse topic and this approach will form the substance of the next section.

1.3 'DISCOURSE TOPIC'

The concept of 'topic' as a linguistic term is by no means new. Indeed, according to Schlobinski and Schutze-Coburn (1991), it is one of the most widely used words in the study of linguistics. Initially topic was described at the sentence level, where the 'topic' is the idea which the listener's attention is directed to by the speaker (Gablentz, 1960 [1881], cited by Schlobinski and Schutze-Coburn, 1991) and about which a comment is made. 'Topic' at this level is commonly known as 'sentence topic', in order to distinguish it from what is known as 'discourse topic'. Sentence topic has been addressed from a number of different angles. Examples of these are distinctions between topic and comment, theme and rheme, given and new, and subject and predicate (see Schlobinski and Schutze-Coburn (1991) for a review of these approaches). Schlobinski and Schutze-Coburn (1991) point out that even after half a century of research and theorising on the issue of 'topic' there is still very little consensus concerning its characterisation.

All of the above approaches have a bearing on 'discourse topic', that is discourse topic can be seen in similar ways. However, as Schiffrin (1987) notes, it should not be assumed that the discourse topic is a summation of the sentence topics. (From now on the term 'topic' will refer to discourse topic.)

Discourse topic, as the name suggests, views topic in terms of larger units than sentences or clauses such as conversations, paragraphs in a text and so on. However, to cloud the issue, as de Beaugrande (1992) notes, 'topic' has been addressed at a number of different levels of investigation including that of: phonology, morphology, lexicon, semantics, pragmatics and stylistics, with each treating it in a different way. He notes further that "an investigation of topic may involve considerable complexity and co-ordination among levels of description." Atkinson and Heritage (1984) suggest that "Topic may well prove to be among the most complex conversational phenomena to be investigated and correspondingly the most recalcitrant to systematic analysis." This problem is exacerbated by researchers failing to provide explicit and justified accounts concerning the identification of topic (Brown and Yule, 1983; Morgan and Sellner, 1980; Schlobinski and Schutze-Coburn, 1991). Indeed, some researchers feel that the concept is so flexible in its interpretation

and meaning that the notion of topic is more likely to hide the actual phenomenon of coherence itself (Psathas, personal communication). However, if one presents a clear and justified characterisation and definition of the notion then there is less chance of this happening.

At this point it is important to emphasise that although written texts, speeches, monologues, lectures, dialogues, and so on, all involve discourse topics, the main concern of this thesis is with how speakers collaboratively manage their topics in dialogue rather than with topic management in general.

In this section different approaches to and attempts to characterise discourse topic will be outlined. It will be argued that a local approach to topic derivation represents the better approach to discourse structure. The discussion will then look at how topics are introduced, maintained, changed, and organised in discourse by adult conversants.

1.3.1. Characterisations and Approaches to Topic

As is frequently pointed out in the literature, there is no agreed precise definition or characterisation of discourse topic. This is not necessarily due to the lack of agreement between researchers, indeed topic has been described as an "intuitive notion" (Brown and Yule, 1983; Schiffrin, 1987). Rather it is because topic is an elusive and dual functional phenomenon that can exist at a number of levels of description. Further, as researchers in this area come from a variety of different backgrounds with different aims, interests and points of view concerning topicality, they therefore characterise it and treat it in different ways. Researchers using the notion of topic can be classified into two differing approaches to the identification of the construct. Some take a top down approach to its identification whereas others emphasise that topic is constructed and constrained in a more local fashion. These two approaches can lead to two slightly different characterisations of topic. The top down approach can lead to a consideration of topic in terms of a global summarising role whereas those taking a more local approach emphasise topic as providing coherence and constraining the relevance of contributions. Each of these approaches will now be dealt with in turn.

1.3.1.1 Top Down Approaches to Topic Identification

A number of researchers interested in analysing discourse and conversation take a top-down approach to topic identification. The reason for this being that these researchers are usually not interested in the notion of topic per se but rather use it to understand other processes. Alternatively, they generally reject other methods of topic derivation. Researchers taking this approach tend to use a general 'intuitive' notion of what the discourse is 'about' in order to identify topics (Adato, 1979; Covelli and Murray, 1980; Grimes, 1981; Maynard, 1980; Hinds, 1979; Jefferson, 1984; Schiffrin, 1987). This usually involves participating in a activity of retrospection that conversants are often observed to engage in when asked 'what they were talking about.' Indeed, top down analysts with the help of a whole conversation transcript try to identify statements that connect sequences of utterances together. The end result is a title or summarising statement about which all the utterances cohere or which represents the gist of the talk. This method is clearly evident in the following definition from Brown and Yule (1983). They claim that topic is an:-

"Intuitively satisfying way of describing the unifying principle which makes one stretch of discourse 'about' something and the next stretch 'about' something else." (Brown and Yule, 1983, P.70)

Other researchers working in a similar fashion have attempted to provide slightly more informative definitions of discourse topic (Orletti, 1989; Shuy, 1982; Stech, 1982; Tracy, 1984; 1985). For example, Orletti (1989) indicated that topic can be seen as representing "the gist of speech", Stech (1982) considered it to be similar to "the train of thought" and Tracy (1984; 1985) the "main point" of a discourse. However, these definitions are particularly vague, further clouding the issue concerning a clear characterisation of the supposed 'intuitive' notion of 'topic'.

The main problem with attempting to identify topic in this top-down fashion is that there is no constraint in the size of the discourse the construct is applied to. For example, on the one hand it could be applied to a whole book, on the other maybe just a chapter from the book, a section within the chapter or a paragraph and so on. Essentially the topic of a piece of discourse can be characterised on a number of levels of abstraction. Thus, a discourse can consist of a number of topic domains or themes within which a number of related local topic sequences can exist (Dorval and Eckerman, 1984; Taylor and Taylor, 1989). This point will be returned to in the next section 1.3.1.2.

The static view of topic that the top-down descriptions invite is equivalent to either a title or summary which represent the sequence of discourse. This suggests that either the topic must be determined by participants at the start of the discourse, or that it cannot be fully identified until the discourse is complete. It is rarely the case however, that conversants come to a conversation with a pre-set idea for the topic of discussion. It may occur in formal meetings and the like (Levinson, 1983; Wilson and Gunn, 1988) but even in these situations the ordering and content of topics may vary (Covelli and Murray, 1980). Further, conversants do not have the benefit of all the utterances in a conversation in order to derive the topic during talk (Schegloff, 1990) and it is conversants not analysts who must decide what the topic is/ was within conversation (Garfinkel and Sacks, 1970, cited by Schegloff (1990)). Further, Brown and Yule (1983) point out that there is a temptation to forget that contributors have their own personal topics consisting of information they wish to talk about. Speakers put a lot of effort into reaching coherence in discourse, both at an interactive level and at a speaker level, that is both between turns and within turns of talk (Schiffrin, 1987). It seems then, that topicality in discourse does not simply consist of the semantic links between utterances, but is also part of and reliant on speakers' aims or purposes for conversing on a topic. It is therefore evident that neither topic as a summary nor as a title derived in a top-down fashion can capture the notion of topic as a device used by speakers to provide coherence and constraint to their discourse.

More recently researchers coming from a conversation analytic tradition have indicated that it may be more fruitful to spend time focusing on topic shifts in order to identify topic boundaries, rather than spending time trying to define the construct (Crow, 1983; Maynard, 1980). This has led to a lot of useful work focusing on how conversants shift topics individually, by marking them, and interactively by agreeing to change the topic (Button and Casey, 1984; Maynard, 1980; Schegloff and Sacks, 1974). However, this does not provide an insight into the way speakers may identify topics and achieve coherence in their contributions.

1.3.1.2 Generative Models

Another characterisation of topic comes from generative models of text grammar. Researchers in this area are primarily concerned with the outlining of mechanisms for determining well formed texts and text understanding. These models seem to be concerned with how topics are systematically constructed in local fashion. Indeed, Hurtig (1977), in exploring the notion of discourse topic, observed that topics consist of one or more linked 'idea units' or propositions which can be observed in

'continuous' and 'discontinuous' groups of utterances. (The notion of propositions will not be explored here; for further information see Brown and Yule (1983) and Taylor and Taylor (1990)). Despite this Hurtig presented no procedure for topic identification. A similar model was presented by van Dijk (1977; 1980) where formal rules were provided for topic derivation.

Van Dijk (1977;1980), rather than working with conversational data, used semantic representations which were derived from written texts. These representations were expressed in terms of propositions and facts which provide the relations between the propositions. In outlining topic as a notion van Dijk (1977) observed that "discourse topics seem to reduce, organise and categorise semantic information of sequences as wholes.". It is evident from this observation that van Dijk takes a view of topic as having a summarising function. However, subsequently van Dijk (1980) indicated that topic is also important for the provision of local coherence and interpretation of sentences.

In his model of text understanding Van Dijk (1977; 1980) proposed that in order to account for more global meaning structures such as topics, there must be a set of rules, 'macro rules', that convert lower level meanings into higher level abstracted meanings. These rules, he suggested, should be applied in a top-down fashion and convert the propositional structure of linked sentences, the 'microstructure', into general global units, topics or 'macropropositions'. These macropropositions then link together to form a 'macrostructure'.

Central to van Dijk's (1980) model of text understanding is the concept of levels as was briefly outlined in the previous section, 1.3.1.1. That is, propositions can be linked together at increasingly higher levels of abstraction. Not only does he suggest that there can be more than two levels of understanding but that two or more propositions or macropropositions can continue to be linked until there is just one macroproposition remaining. The process of summing propositions stops at a point where the higher order propositions fail to be informative. An example of an overall macroproposition could be a book title.

This model has provided a number of useful predictions some of which have received empirical support. However, there are a number of problems with this theory only a few of which will be presented here. Other criticisms can be found in Brown and Yule (1983) and Morgan and Sellner (1980).

The first major criticism is that, according to Brown and Yule (1980), van Dijk (1977; 1980) presents no clear and justified criteria for the identification of topics. Indeed he seems to use little more than an intuitive notion of topic and further that at best this model can be expected to produce a number of possible topics (Brown and Yule, 1980).

A second problem is that in the application of macro rules van Dijk (1977; 1980) does not indicate which rules are used and when. And further, by applying macro rules in a top down fashion there is no way of stopping the system from linking propositions across what may be considered topic boundaries.

Finally, as was noted in the previous section, 1.3.1.1, treating topic as a summary cannot explain how conversants co-operate to bring structure to their conversations by making their utterances coherent to a topic underway, how they can identify the topic or possible topics after just one utterance and how each utterance can affect the discourse topic. What is important is that topic is a locally constructed dynamic entity which provides coherence to a set of utterances, constrains and is manipulated by speakers' future utterances (Goldberg, 1983).

We move now to consider models of topicality which aim to explain how conversants may decide what the topic of a conversation might be and how they make their utterances coherent to a topic underway. These can be termed 'local models of topicality'.

1.3.1.3 Local Models of Topicality

In the previous two sections, 1.3.1.1 and 1.3.1.2, it was argued that top-down approaches to topic derivation were inadequate characterisations of the construct. In this section models that derive topic in a local fashion will be outlined. It will be emphasised that these approaches provide a notion of topic as a dynamic, cohering, constraining and constructed entity.

A number of local models have been introduced these all being fairly similar (Crow, 1983; Danes, 1974, cited by Morgan and Sellner, 1980; Goldberg, 1983; Keenan and Schieffelin, 1976; Reichman, 1978; Schank, 1977; Wilson and Gunn, 1988) and for this reason only two will be outlined.

The first model comes from Schank (1977). Schank outlined a notion of topic as "any object, person, location, action, state or time that is mentioned in the sentence to be responded to." He also notes that topics can only exist between at least pairs of utterances and further that with every succeeding utterance the topic shifts. He indicates that this view of topic should be accompanied by a set of rules that explain how a topic can progress or shift.

Further, Schank suggests that topics can have what he terms 'supertopics' and 'metatopics' to which the topic can be shifted to. The former is when two utterances refer to two different events, objects and so on that share certain similarities. The latter is described as an inference developed from the interaction or connection between the utterances.

One problem with Schank's (1977) model is that the view of topic, based on notions of shared reference and concepts across utterances, is insufficient because reference can occur across topic boundaries (Levinson, 1983). However, the main problem with this model is that, despite recognising the dynamicity of the concept of topic, there will be a new topic for every utterance produced, that is apart from the first utterance. Indeed, as Reichman (1978) notes Schank's model misses the point that a group of utterances can address one topic. However, as we shall see later when discussing Keenan and Schieffelin's (1976) approach to local topic construction, there is little need to say that the topic shifts with each new utterance. Rather the topic should be conceived as being expanded to incorporate the new information, the discourse becoming a context for future utterances.

Probably the most widely acknowledged and applied model of discourse topic comes from Keenan and Schieffelin (1976). Keenan and Schieffelin produced a model of topicality in discourse using the notion of presupposition. They suggest that the topic is based on, what they termed, the 'question of immediate concern' (QIC) that an utterance addresses. Keenan and Schieffelin (1976) point out that occasionally the question of immediate concern may appear explicitly in the discourse itself, at other times it must be inferred from the physical context, from previous discourse or from the general knowledge that the speakers share. According to Keenan and Schieffelin (1976) the topic:

"is the proposition (or set of propositions) expressing a concern (or set of concerns) that a speaker's utterance addresses."(P.343)

Keenan and Schieffelin further described two ways in which topics could be maintained to produce continuous discourse on a topic. The first they termed 'collaborating discourse topic' which is when an utterance addresses the topic presupposed by the immediately preceding utterance or utterances. The second strategy for topic maintenance, known as 'incorporating discourse topic', occurs when new information is introduced and a new QIC is addressed that presupposes the topic addressed by the preceding utterance/ s. In contrast to the Schank (1977) model, topic incorporation allows topics to be expanded into larger units. However, the model also maintains the dynamicity of the Schank (1977) model by indicating that topics are constructed as the conversation is in progress.

This model is superior to the previous two models in that it does not necessarily require the notion of shared referents and concepts across utterances. Further as the model characterises topic as an idea or issue, existing in shared knowledge, that is addressed, it is more explicit than models which stress topic as being 'aboutness'. However, Brown and Yule (1983) criticise the model as being too simplistic. They point out that often a number of different QICs could exist for the same segment of discourse. In order to get around this problem Brown and Yule (1983) propose the concept of a 'topic framework', which, they claim, exists within a contextual framework made up of activated features of the context. The topic framework therefore allows all the possible QICs to be considered as being correct. However, Wilson (1989) suggests that speakers may signal the topic that they wish to pursue by phonologically marking certain parts of the utterance. In this way speakers can limit the number of QICs that can be considered and maybe indicate which QIC they are addressing.

Overall, despite some criticism, the Keenan and Schieffelin model of discourse topic represents the best attempt at characterising the construct. The model brings together essential characteristics of topicality in discourse, i.e. that it functions to cohere and constrain utterances as well as being a dynamic phenomenon which is co-operatively constructed by speakers, without losing sight of the phenomenon.

1.3.1.4 More Recent Characterisations of Discourse Topic

More recent approaches use a combination of the Keenan and Schieffelin (1976) and van Dijk (1980) models of topic in discourse (Foster, 1983;1986; Mentis, 1991;1994; Mentis and Prutting, 1991). The reason for this is that in their model Keenan and Schieffelin (1976) attempted to connect their notion of topic as a

cohering device to the notion of a title expressed by top-down theorists. They suggested that all the propositions produced in constructing the topic can be represented by a single proposition that implies all the rest. However, Keenan and Schieffelin did not provide an explanation of how this might be achieved. By incorporating the model, in particular the notion of 'macro rules', presented by van Dijk (1980) this can be achieved. However, these theorists do not make it clear why this needs to be done. Indeed the summarising of topic propositions into a single statement is not required in order to account for topic as a cohering and constraining device. Further, this summarising seems to be an activity that cannot be done while talk on a topic is in progress, rather it is something that seems to require reflection or is recallable only after the event (Goffman, 1983).

One beneficial element stemming from the combination of these two models, is that topics can be viewed as being hierarchically related and organised. This is an essential element that Keenan and Schieffelin did not consider and therefore their model needs to be extended to incorporate this idea. However, there are a number of recent models that are more informative, than the van Dijk (1980) model, concerning the way topic hierarchicalisation may be conceptualised.

1.3.1.5 Topic Organisation

Researchers from all backgrounds have become increasingly aware that topics are not necessarily unrelated, do not always occur in series and can, sometimes, take on a hierarchical organisation (Adato, 1979; Foster, 1983;1986; Grimes, 1981; Hobbs, 1990; Orletti, 1989; Reichman, 1990; Sirois and Dorval, 1988; Stech, 1982). Indeed, these researchers have suggested that topic sequences can be both related to and sometimes be embedded within other topics.

There have been a number of attempts to formalise a hierarchical model of topic organisation in the area of Artificial Intelligence (Polyani and Scha, 1982; Linde and Goguen, 1978; Grosz and Sidner, 1986; Reichman, 1978). However, although these attempts aim to explain the relations between 'discourse segments' (sequences on one topic), they typically refer to a more general cognitive notion of 'attention focus' (Grosz, 1981;1986) or 'context space' (Reichman, 1978). These constructs incorporate the notions of topic, cohesive links and 'microstructure' along with attention mechanisms. According to Grosz and Sidner (1986) a focus space is "an abstraction of the participant's focus of attention as the discourse unfolds." (P. 179). Grosz and Sidner introduced the construct in an attempt to explain how different

aspects of context can combine to produce a focus on the concepts that are required for the interpretation of utterances. This can be considered to be a similar but more explicit characterisation of Brown and Yule's 'topic framework'. However, Grosz (1981; 1986) goes further, distinguishing between explicit and implicit focus, the latter consisting of all the concepts associated with those that are directly introduced into the discourse which make up explicit focus. Reichman (1978) further suggests that certain concepts within explicit focus have different levels of focus or importance depending on whether they are central to or germane to the topic of the context space. She illustrates by indicating that pronominal forms are always associated with entities that are high in focus.

Reichman's (1978) model of discourse structure concentrates on the relations between context spaces made up from groups of utterances that are topically related in a local fashion. When a new context space is opened the relationship with the preceding context space is determined. Reichman distinguishes between 'issue' and 'event' spaces, the former referring to a point which the utterances are concerned with, whereas the latter concerns the reporting of episodes that have or could occur.

The other model of discourse structure considered here is that of Grosz and Sidner (1986). Their model is very similar to that of Reichman's (1978) however, they also introduce an intentional structure which functions to hierarchicalise the discourse. They illustrate using examples of work carried out by Grosz (1981; 1986) on speakers collaborating on a task where the hierarchical structure of the discourse mirrors, to an extent, the hierarchical nature of the task. They indicate that the focus spaces are related according to the relations of the purposes for engaging in each discourse segment. These relations are hierarchically ordered according to a dominance hierarchy where there will exist an overall discourse purpose with a number of discourse segment purposes hierarchically ordered beneath it. The purposes are locally negotiated in that the satisfaction of one purpose will involve the prior satisfaction of other purposes. Needless to say that they liken the notion of the discourse segment purpose to that of the discourse topic. Apart from reference to cue words which can signal that an upcoming topic is dominated by a preceding topic, they provide no information about how the topic or segment purpose is derived when cue words are not present. (See section 1.3.2.4 for more information on the models presented by Reichman, 1978, and Grosz and Sidner, 1986.)

There are a number of problems associated with these models, but the main one is that many of the details of the models are inferred rather than derived locally and directly from the discourse examined. For example, the notion of hierarchicalisation of sequences is largely inferred when there is no indication in the text to suggest this relationship either in the form of cue words or topic reintroductions. Further, despite attempting to outline a local model of topic derivation, Reichman (1978) failed to incorporate any method for identifying the relations between topics into this model. Indeed the relations between topics are often inferred from an analysts perspective.

It is clear therefore that A.I. theories of discourse structure are useful in that they indicate the importance of cognitive features such as attention focus and purpose structures in any explanation of discourse structure. However, as they often go beyond the data available it is unclear how far topic sequences can be considered hierarchically organised.

1.3.1.6 Summary

In the above section, 1.3.1, it was argued that a local approach to topic derivation is the better approach than the inflexible top down approaches. Local models allow a more pragmatic approach to the analysis of discourse topic in that they focus on how speakers construct, expand and make their utterances coherent to a topic. It was suggested in section 1.3.1.3 that the model devised by Keenan and Schieffelin (1976) was the most favourable local model of topicality as it indicates how a number of utterances can be related to one topic as well as allowing the topic to be expanded. This model will be the basis of the present research. However, it was also noted that some sort of provision should be made for the ideas that topics can be sequentially and hierarchically related. A.I. models have demonstrated how topics can be related but have made the mistake of going beyond the evidence available in the discourse analysed.

In order to provide a fuller understanding of topicality in discourse the next section will outline adult competence on a number of topic management skills.

1.3.2 Adult Topic Management Competence

As was argued in the previous section research on discourse topic requires a pragmatic approach to the way speakers construct and use topic to cohere and constrain utterances in an overall attempt to bring structure to their discourse.

Speakers have been noted to use a number of skills and methods for manipulating and signalling changes in topic structure both between and within turns of talk (Schiffrin, 1987). This section will outline some of the research findings concerning these skills of topic management as performed by adults. However, as the majority of these findings come from qualitative research, the patterns and skills identified may not be frequent in adults interactions or produced in other situations. The following sub-sections will outline research findings concerning adults' abilities to initiate, change, shade, hierarchically organise, reintroduce, and maintain topics of conversation.

1.3.2.1 Topic Initiation

In exploring topic as a discourse notion, Keenan and Schieffelin (1976) outlined a number of requirements that a speaker must adhere to in order to establish a discourse topic. These are that the speaker must gain the listener's attention so that a topic can become shared, speak clearly, provide enough information for the referents to be identified and also provide the hearer with information concerning the semantic links between the referents. As was pointed out earlier in 1.2.2.2, speakers sometimes go to great lengths to identify the referents and the links between them to establish a topic. Keenan and Schieffelin (1976) further suggest that establishing and completing each stage takes different lengths of time and conversation space, depending on the context and the amount of shared knowledge between speakers. A further stage that should be introduced is that the purpose for engaging in talk on a topic must be available to the listeners, either by being stated or inferred. However, although this is not necessary for collaboration on a discourse topic, according to Grosz and Sidner (1986) the discourse only becomes coherent when the purpose is shared by participants. Even if all the stages are completed collaboration on the topic ultimately depends on the listeners' interest in and knowledge of the topic. For this reason, and to avoid a certain amount of embarrassment, Wilson (1989) notes that speakers use 'pre-topic checks' to ascertain how much knowledge is shared between speaker and hearers. This takes the form of a question as to how much background information is known by the listener.

An everyday feature of topic initiations is the very wide scope that is often given to speakers to introduce and develop a topic or a sequence of topics that are of interest to them. Button and Casey (1984) outline a notion that they term 'topic initial elicitors'. These provide conversational partners with the opportunity to initiate a topic they feel is newsworthy or relevant to the other conversants. Utterances such as 'What have you been up to?', 'What's happening?' and so on do not provide a

newsworthy event in themselves but present the opportunity for newsworthy topics to be presented. However, in terms of a sequence of related topics these topic initial elicitors would only apply at high levels, dominating the sequence of related topics (see section 1.3.2.4). And therefore topic 'initial elicitors' would not be used during a sequence of related topics.

It has been suggested that topic initiations are positioned at points where there is no propositional relation with the preceding utterances (Wilson, 1989). However, as will be evident later this may be true for certain topic initiations but not others. This definition would not include topic shading (to be discussed in section 1.3.2.3) or subtopic initiation (to be discussed in section 1.3.2.4). That is, this definition can only refer to major topic boundaries.

Finally, speakers very often use a variety of linguistic and paralinguistic cues to signal to listeners any changes that they make to the topic. Linguistic markers such as 'Hey!', 'Now', 'Next', 'But', 'Guess what', 'And then' and so on can be used to initiate new topics (Grosz and Sidner, 1986; Reichman, 1978; Schiffrin, 1987). Also, as was noted earlier, speakers can indicate using intonation which aspect of an utterance they regard as being the topic (Wilson, 1989).

1.3.2.2 Topic Changes

Two types of topic change have been suggested in the literature, 'coherent' and 'non-coherent' shifts (Crow, 1983; Planalp and Tracy, 1980). The former refer to those topic changes that occur when all participants have nothing more to add to a topic. This is signalled by passing the conversational turn back to the previous speaker using words such as 'right', 'yes', 'okay', and so on (Covelli and Murray, 1980; Goodenough and Weiner, 1977; Maynard, 1980; Schegloff and Sacks, 1974). This usually represents a co-operative method of changing the topic but topic changes can be forced through what is termed 'successive squeezing'. This is when one speaker is unwilling to elaborate on what has already been said and continuously passes the turn back to other speakers (Covelli and Murray, 1980).

'Non-coherent' topic shifts refer to those topic changes that are quite sudden, interrupting the present topic of discourse and sharing no relation to the topic they interrupt. On occasions these non-coherent shifts are signalled using cue phrases such as:- 'By the way', 'sorry to change the subject but...', 'Incidentally' and so on. Some researchers have coded shifts as 'asides' or 'inserts' when they do not become

maintained (Crow, 1983; Wilson, 1989). However, this is an inappropriate way of coding as it requires reflective coding after the subsequent utterance to the shift has been presented.

Speakers can also signal topic change by lowering their pitch range (Brown et al. 1980; Geluykens and Swerts, 1994; Hirschberg et al. 1987), through the use of gesture (Kendon, 1972; McNeill and Levy, 1982, cited by Grosz et al. 1989), or by postural and gestural changes (Schefflen, 1974, cited by Planalp and Tracy, 1980).

1.3.2.3 Topic Shading

Another form of topic change which is more subtle than topic changes is known as 'topic shading'. The phenomenon of shading has been defined as:-

"a form of topic shift which involves the establishment of a new propositional set with a link to either a predicate or argument in an antecedent propositional set." (Hurtig, 1977, P.96).

Topic shading has been reported by a number of researchers (Adato, 1979; Brinton and Fujiki, 1984; 1989; Crow, 1983; Goodenough and Weiner, 1977; Grosz and Sidner, 1986; Hurtig, 1977; Jefferson, 1984; Planalp and Tracy, 1980; Schegloff and Sacks, 1974; Wilson, 1989). Hurtig (1977) called shading '*topic fading*' using shading to refer to something else, and other terms for the phenomenon are, 'topic drift', 'fitting', 'step by step transitions', 'stepwise transitions' and 'digressions'. However, most researchers refer to the concept as 'topic shading'.

One short coming of the model outlined by Keenan and Schieffelin (1976) is that they do not recognise the notion of shading. Recent applications of this model have incorporated the phenomenon of shading (Brinton and Fujiki, 1984; Mentis, 1991; 1994).

Goodenough and Weiner (1977) provide the following example of shading:

- 1 A) I weigh more now than I did before.
- 2 B) When did you put on the weight?
- 3 A) While I was pregnant with my son.
- 4 B) I hear your son did well in school this year [Topic Shaded]
- 5 A) Yes he was on the Deans list.

Utterance 4 is an instance of topic shading where the topic is altered from a focus on weight to the son of speaker A. Goodenough and Weiner (1977) describe it as an inefficient or unco-operative method of topic changing, particularly when the goal of the conversation is the exchange of information. That is, in terms of the above example, speaker A may not have wanted to change the topic of conversation from the issue of his/ her weight. Further, Goodenough and Weiner point out that this topic shift is unmarked and therefore the listener may initially have problems identifying the topic of the utterance. They suggest that shading is more typical in casual conversations than more formal situations. In contrast to Goodenough and Wiener (1977), Crow (1983) includes shading as a coherent topic shift, as reportedly it is often marked by utterances such as 'that reminds me...' or 'by the way...'. Further, Brinton and Fujiki (1989) note that shading is on many occasions co-operative, suggesting that the level of disruption varies according to the situation and the timing of its use within the conversation.

Illustrative of this point is the finding from Brinton and Fujiki (1984) that some adults used shading more frequently than topic changes. Further, Crow (1983) found that shading is used frequently in couples' conversations. These results indicate that shading can be considered an advanced form of topic shift and when used appropriately is co-operative; however, when used inappropriately it is disruptive.

1.3.2.4 Topic Organisation

The research concerning topic organisation is rather sparse, the majority being qualitative, used to illustrate the phenomenon and to provide evidence for models of discourse structure. As was noted in section 1.3.1.5, topics can be both sequentially and hierarchically related. However, although researchers generally report that topic hierarchicalisation is prevalent in adult discourse (Grosz and Sidner, 1986; Hobbs, 1990; Reichman, 1978; 1990; Schiffrin, 1987; Stech, 1982), in a study from Sirois and Dorval (1988) little topic hierarchicalisation was observed. However, this may have been because these researchers observed what might be considered topic domains rather than the more local sequences examined by AI theorists and captured by the Keenan and Schieffelin (1976) model.

According to Stech (1982) the relationship between an embedded topic and a dominating topic can be noted. Stech described a number of different relationships that hold between embedded sequences these include:- 'subordinate embedded sub-sequences' (where the embedding is a subtopic of the main topic), 'associative

embedded sub-sequences', (where the embedded topic is tangential to the main topic), and 'formulative embedded sub-sequences', (where the embedded topic consists of metatalk about the main topic). Reichman (1978) outlines additional relations between topics.

According to Adato (1979), topic returns are 'contingent possibilities' after interruptions, shaded topics, clarification sequences (as reported by Garvey, 1977), side sequences (as reported by Jefferson, 1972), and sub-topics. Tracy and Moran (1983) confirmed this empirically by showing that speakers often reintroduced an issue or dominating topic immediately after another speaker had illustrated the issue by reporting an event. That is rather than maintaining the topic of the event, speakers reintroduced the dominating issue topic.

However, it seems that topics can only be considered as hierarchically related or organised when the purposes for engaging in these topics are ordered in terms of dominance relations, as outlined by Grosz and Sidner (1986). That is, the embedding of topics within other topics does not guarantee that they are hierarchically related unless there is a subordinate - dominance relationship. For example, although an interruption may occur during another topic, it can not be considered part of a hierarchical structure of topics even if the interrupted topic is reintroduced after the interruption.

In their model of discourse structure, as outlined in section 1.3.1.5, Grosz and Sidner (1986) point out that, although there are a vast number of intentions occurring both at the utterance level and at the topic level, there are only a small number of purpose relations which are relevant at the topic organisation level. In presenting this view they go on to distinguish between determination and recognition of the intention for each topic segment and for topic organisation. Recognition of the intentions and the dominance hierarchy depends on the conveyance by the speaker of what he/ she intends to talk about. That is, topics and sub-topics can be planned and marked explicitly in the discourse. The use of cue words such as 'first', 'before' and 'finally', indicates to the listener that the satisfaction of one intention precedes another. However, even these signals alone do not convey that topics are necessarily hierarchically organised. Clear evidence of topic hierarchicalisation can only be inferred when there is an explicit signal that a topic is dominated by or is subordinate to another topic and when a return is made to the dominant topic. These topic returns

can be termed planned returns since a return to the dominating topic is signalled at the start of the subtopic.

1.3.2.5 Topic Returns

Topic returns can have a number of functions as well as the expression of topic hierarchicalisation. Keenan and Schieffelin (1976) view topic returns as the addressing of a topic dealt with at a previous point in the discourse, apart from the topic addressed by the immediately preceding utterance.

Returns are often used when there is conversation breakdown, one participant changing the topic before the other has finished what he/ she wanted to say. At this point, the latter speaker may attempt to reintroduce the previous topic and have his/ her say. Sirois and Dorval (1988) point out that on occasion this can result in a 'topic fight' where speakers repeatedly try to hold their topic on the conversational floor. This typically occurs during heated arguments. These were termed 'alternating sequences' by Stech (1982). Topic returns can be considered to have other functions as well such as to reconsider an issue, alter something that was said, check over, to refresh a memory, summarise and so on.

Sirois and Dorval (1988) also point out that a return to a prior topic can also be indicated at the time the return occurs, for example cues such as 'getting back to...', 'Well, how about that sandwich!', 'anyway', 'however', 'so' and so on.

1.3.2.6 Topic Maintenance

There has been very little research focusing on the way adults maintain topics, rather the majority of research has considered methods of topic change. This has largely developed as a result of researchers suggesting that it would be more useful to identify topic boundaries than define discourse topic (Crow, 1983; Maynard, 1980). However, the notion of topic maintenance is an essential feature of topicality. That is, if topics were not maintained language would consist of a stream of unrelated utterances and there would be little meaning to the concept of participating in dialogue or conversation. Indeed topic maintenance is vital for the sharing of information, the negotiation of relationships and points of view, the solving of problems, the participation in disputes and discussions and so on. As was noted in section 1.3.1.3, speakers, according to Keenan and Schieffelin (1976) can maintain topics either by collaborating on or incorporating the topic. However, a speaker is constrained in that any utterance they wish to fit into the topic sequence must fit in to

the "flow of shared information already produced." (Sigman, 1983). That is, speakers must abide by the relevancy rule and given-new contract by making their utterance topically coherent. Nevertheless, the scope that speakers have in maintaining a topic is particularly wide.

One of the key processes in maintaining topics is that, as mentioned in sections 1.3.1.3, the speakers in a conversation introduce new information which becomes part of their common ground. However, as Clark and Schaeffer (1989) note, many models of discourse often assume that this is automatically achieved, unless evidence is given to suggest otherwise, with the uttering of the piece of new information at the right time. The implication of this is that conversation involves speakers stating utterances and other speakers responding as if the conveyance and comprehension of meaning is an unproblematic feature of discourse. Clearly, dialogue is not this simple. Clark and Schaeffer (1987; 1989) point out that an essential, and maybe a defining, feature of conversation is that speakers reach 'grounding criterion' where they all 'mutually believe' that they have understood what a speaker meant by a given utterance. This is essentially achieved by two speakers co-ordinating their behaviour, one by presenting an utterance which is followed by the other providing feedback concerning the extent to which they have comprehended the utterance. Feedback implying misunderstanding such as a lack of attention or a clarification sequence, as discussed in 1.3.2.4, can result in a number of possible remedies going from a simple repetition to a side sequence to repair the misunderstanding. However, feedback is also given when a listener has comprehended an utterance and this can go from the simple continuation of attention, through an acknowledgement of the utterance, to explicit utterances of understanding such as so called 'back channel' responses or explicit utterances such as 'I see' etc.. Clark and Schaeffer (1987; 1989) illustrate this with numerous examples of this from naturalistic dialogue. These features of positive or negative feedback are an essential characteristic of topic maintenance.

Research from Stover and Haynes (1989) and Brinton and Fujiki (1984) found that adults maintain the majority of topics, that is between 70% and 80%, of those introduced during casual conversations. In addition adults have been found to regularly maintain topics for a considerable number of utterances and often through the introduction of novel information. However, apart from these studies, there is little research that has focused on adults' abilities to maintain topics.

Before going on to explore the development of topic management skills in children, we will briefly summarise this section, 1.3.2.

1.3.2.7 Summary

Overall, in order to initiate a topic of conversation a speaker needs to gain the attention of a listener and convey a meaningful utterance that the listener can understand. Adults are particularly co-operative when changing topics and use a variety of signals to convey either a topic change or that they have no more to say on a topic. A particularly subtle form of topic change is shading which can be both co-operative and unco-operative depending on the timing and context of usage. Topics can be hierarchically organised when the purposes for engaging in topics are related according to dominance. However, in order to infer topic hierarchicalisation in discourse, a dominance relation needs to be signalled on, or prior to the initiation of a subtopic and then at the end of the subtopic a return back to the dominant topic is required. These signalled returns were termed planned returns. Finally although speakers are somewhat constrained in their topic maintaining contributions, the scope they have for these is particularly wide.

1.4 CHILDREN'S TOPICAL PERFORMANCE

Much of the research into children's topic management skills has involved reference to and the use of the Keenan and Schieffelin (1976) model of topic (Brinton and Fujiki, 1984: 1989; Edmonds and Haynes, 1988; Foster, 1983: 1986; Kertoy and Vetter, 1995; Mentis, 1991: 1994; Wanska and Bedrosian, 1986). On occasion this has involved making additions to this model for example by incorporating the notion of shading (see section 1.3.2.3) and by connecting it with van Dijk's (1980) theory (see section 1.3.1.4). Generally there has been far more research into children's topic management abilities than into adults'. However, the research that has been done is still not comprehensive.

As was noted earlier the ability to converse with another on a topic requires the co-ordination of advanced linguistic, social and cognitive skills (Brinton and Fujiki, 1989; Harris, 1990; Ochs and Schieffelin, 1983; Orletti, 1989). So to what extent do children have the cognitive, social and communicative abilities required to introduce, maintain, change, shade and reintroduce topics of conversation?

This section on children's topical performance will consist of two main subsections. In the first two theories of child development will be outlined. Further,

recent Scottish educational curricula will be considered in terms of the abilities expected of children between the ages of 3 and 14 years. The second section will consider some of the research concerning the development of discourse topic management skills, as outlined in section 1.3.2, in children. Other conversational skills, such as turn taking and conversational repair, will not be discussed in the present section (the reader is referred to Brinton and Fujiki (1989) for a wider discussion of conversational skills).

1.4.1 Child Development: Theories and Educational Curricula

There are two theories of child development that are relevant to this discussion of topic management skill. These theories from Piaget and Vygotsky were developed around the same time in the earlier part of this century. Despite being very different in their emphasis these theories are similar and even complementary in their overall ideas. Both theories make contributions to an understanding of children's development of topic management skills.

Furthermore, recent educational curricula outline programmes for study and attainment targets in terms of children's developing conversational skills. Each of these theories and educational guidelines will now be considered in turn.

1.4.1.1 Piagetian Theory

Piaget believed that conversations between peers highlighted conflicting cognitive perspectives which when resolved constituted an important drive in a child's cognitive development. Further, Piaget (1928: translated 1959) claimed that there is little social life between children less than the age of 7 to 8 years in that they rarely co-operate or collaborate in an activity or conversation.

The early research from Piaget (1959) into children's conversational abilities led him to claim that young children are egocentric in their speech. That is, they lack knowledge concerning what information may be required to be communicated to a listener, and fail to take a listener's view into account. They further lack communicative intent in that they are said to have no desire to influence or inform a peer. However, Piaget further suggested that children become increasingly social as they grow older.

Piaget distinguished between egocentric speech, consisting of monologue and collective monologue, and socialised speech. The former is talk by the child for and

concerning him/ herself without consideration of the listeners' view. On the other hand, socialised speech:

"occurs when the child who has been spoken to in a proposition, answers by talking about something that was treated of in this proposition." (P. 21)

That is, a child must address the intentions and maintain the topic that the previous speaker has addressed.

Piaget suggested that children's speech up until the ages of 4 to 5 years is largely egocentric. After this first stage, from about the age of 4 to 4;6, children begin to produce social speech by starting to respond to each others' utterances. Piaget distinguished three stages of socialised speech which he characterised in terms of general conversation and conversation involving disagreement, that is disputes.

Piaget (1959) suggested that at first (termed stage 2, type 1), despite being able to hear what others say, children's early attempts at dialogue still have links with egocentric speech in that they are only interested in talking about themselves. This type of talk is defined as the association of the listener with the thoughts and activities of the speaker. Piaget further noted that children at this stage are not able to co-operate in dialogue by addressing each other's talk and are only able to participate in physical disputes.

With further development of social speech, Piaget indicated that children begin to talk and co-operate about shared activities that do not involve abstract thought. In addition children at this stage (termed stage 2, type 2) are only able to participate in simple disputes where positions are stated but no explanations given.

According to Piaget children around the age of 7 and up are in the third stage of socialised speech where they begin to be able to converse about, use and collaborate in abstract thought in conversation. Piaget defined abstract thought as:

"those mental processes in the child which are no longer connected with the activity of the moment, but are concerned with finding an explanation, reconstructing a story or a memory, discussing the order of events or the truth of a tale." (P. 55)

It is at this stage that children begin to use talk separately from an activity, to check each other's thoughts, to search for and evaluate an explanation or justification

in common, report on topic related events and participate in complex disputes where positions are justified (Piaget, 1959).

The major feature in Piaget's (1959) model is that movement up the scale is produced by an increase in communicative intent and an increasing ability to take into account and consider the views of others.

Piaget's theory has a number of implications concerning the development of topic management skills. According to Piaget's model, young children would be unable to gain someone else's attention in order to initiate conversational topics, to identify the referents for the hearer and to maintain topics initiated by others until about 4;6. However, children would be able to maintain monologic topics. Between the ages of 5;6 and 7 children would begin to engage in socialised speech, although only about themselves. That is, high levels of topic initiation, topic returns and inappropriate shading would be evident to adjust a partner's topic to talk from a child's own point of view. With further development children begin to talk and maintain topics on a non-abstract shared activity. However, Piaget points out that even up until the age of 7;6, children generally prefer to work alone. At the final stage from about the age of 7 years and up children begin to engage in conversations involving abstract thought, causal and common explanations and justifications. It is at this stage that children should begin to maintain conversational topics independently of an activity, and further begin to organise topics hierarchically through the reporting of topically related events.

1.4.1.2 Vygotskian Theory

The other main theory or approach to child development comes from Vygotsky (1962; 1978). Vygotsky, unlike Piaget, took a more holistic approach and was not interested in the product of a child's development rather in the processes that are necessary for development. A further difference between Piaget and Vygotsky is that whereas the former was concerned with learning as an internal process of adaptation, the latter emphasised learning as a socially mediated process which gradually becomes 'internalized'. This learning, including language learning, comes through communicative interaction with a 'more capable' other. The 'internalization' of abilities is the reconstruction of social activities into personal and psychological activities. That is, as the child becomes aware of and able to control and regulate an activity unaided, the skills involved become used as tools or operations for personal thought.

Central to this process of learning is the concept of the 'zone of proximal development' (ZPD). The ZPD represents the area between what can be achieved by an individual alone and what can be achieved through aided interaction with a more able partner, and therefore is a measure of learning potential (Vygotsky, 1978). However the ZPD is not static and as skills become internally regulated new possibilities become available for learning.

Although Vygotsky made few predictions concerning the development of specific conversational abilities (because development is assumed to vary according to the socio-cultural context), a central feature of his theory is that children are socio-centric and able to engage in communicative interaction from an early age. An essential element in Vygotsky's model is that the development of speech frees a child from the constraints of context. As speech becomes a tool for thought children are able, increasingly, to regulate, plan and organise their own behaviour as well as that of others. Vygotsky (1962) suggests the following pattern of development. From around the age of 2 years, once children become aware of the symbolic function of words, speech begins to serve thought. As social speech becomes internalised children produce speech to guide their own activity. This represents a re-evaluation of Piaget's observation of high levels of egocentric speech in children up to the age of 7 years. Once speech is fully internalised children rarely produce monologue to plan and control their own activity.

Vygotsky further noted that as speech becomes a tool for thought children gradually learn and understand socially elaborated symbols such as social rules, values and beliefs. However, this is a point that Vygotsky did not greatly elaborate. Indeed, due to an untimely death Vygotsky was unable to expand on many of the ideas he proposed. However, since then some of these ideas have been further explored by his followers.

Building on Vygotsky's principles Bruner (1978; 1983), who was primarily interested in language development, suggested the notion of 'scaffolding' which is where an adult supports an interaction by structuring the joint activity to the child's ZPD. For example an adult may elaborate and question a child on certain features of their joint activity. As the child's abilities increase the adult becomes increasingly demanding by working from the child's efforts in order to elaborate or demand more information from the child. In this way the child is able to extend his or her

knowledge of language as well as being given the opportunity to apply it actively. The main problem with this model is that it is very difficult to show empirically that scaffolding of an interaction facilitates a child's learning of language (Garton, 1992).

One major difference between the theories of Vygotsky and Piaget is in terms of the social relationships emphasised for learning. Piaget emphasised the importance of peer interaction and conflict for socio-cognitive development whereas, in contrast, Vygotsky emphasised that children learn through co-operative interaction with a more capable person. More recently Forman and Cazden (1985) have suggested that Vygotskian theory may be useful for understanding peer collaboration where children of equivalent competence are able to achieve more on a task than they would if doing the task alone. Forman and Cazden (1985) suggest that during collaboration on an activity children often take complementary roles where language is used to guide a peer's actions. This peer will in turn guide his or her partner's activity. In this way children organise their own and their partner's activity by sharing a definition of the task at hand.

One particular feature that Vygotsky did not explore in any detail, is how children achieve conversational competence. According to Sevastyanov (1989) this is essentially because Vygotsky did not view the ability to consider another's perspective and co-operate in dialogue as relevant elements of linguistic competence. Sevastyanov (1989) notes that during scaffolded interaction, a child's lack in pragmatic skills are compensated for by the adult. Further that, as the development of knowledge concerning social rules and norms for engaging in dialogue develop at a slower rate than linguistic knowledge, the child has problems engaging in dialogue with a peer until these skills develop. These additions to Vygotskian theory bring the model more in line with that outlined by Piaget (1959). However, as the process emphasised by Vygotsky is more gradual, certain conversational skills would be expected to appear earlier than suggested by Piaget. Indeed, Vygotsky would suggest that conversational skills would initially be learned in the context of interaction with a more capable other, before being used during interaction with peers of equal ability. Children will therefore learn how to initiate, maintain, shade and hierarchically organise topic sequences with the help of scaffolded interaction and then as these skills become a tool for thought they become used to organise and plan social interactions with a peer of equal ability. Further, an increasing ability to understand social rules and norms will allow children to adapt social and conversational behaviour to the context.

1.4.1.3 Educational Curricula

Recent education guidelines for both preschool and primary education, although not making specific reference to topic management abilities, stress certain skills that are relevant for an analysis of conversational skills. According to preschool curriculum guidelines from Strathclyde Regional Council Education Department (1994-95) preschoolers should be learning the following interpersonal skills:- negotiation, comparison of ideas, resolution of conflict and provision and obtaining of feedback. The document also indicates that children should learn about:- the provision of explanations, ideas, plans and reasons; and should be encouraged to learn vocabulary used in 'linking' and 'sequencing'. Although the guidelines are rather vague and general, they draw together features from both Vygotskian and Piagetian models of development and emphasise peer interaction and the learning of skills in a variety of contexts. Further, despite not referring to concepts such as engaging in dialogue and topically coherent talk, the document highlights many of the skills involved in engaging in conversation and managing topics. As the document aims only to provide guidelines for curriculum construction no attainment targets are set.

A recent document providing an outline of the curriculum for 'English language education: 5 to 14 years' comes from the Scottish Office for Education (SOED) (1991). This document provides programmes for study as well as attainment targets. According to the attainment targets set out by the SOED document, children between the ages of 5 and 8 should be able to convey information through instructions and directions. Further in doing this, children of these ages are expected to be able to contribute to the purpose of an activity but not to refer to or respond to what others have said. This ability is not expected until between the ages of 7 and 9 and only in the form of answers to questions. Further, children of this age are anticipated to be able to talk about their own and other's experiences and feelings. The SOED document further suggests that between the ages of 8 and 11, children will begin to offer an opinion, as well talk about other's opinions, and ask and answer questions. However, it is not until later on in development, between 9 and 12 years, that children are expected to be able to question and support opinions and to show some awareness of other's ideas. Later in this age span, children should start to comment on other's opinions. Finally, in this age period of 9 to 14 years, children are anticipated to be learning how to sustain a line of argument through justification and to challenge other's views.

There are a number of problems with the SOED (1991) document. The main one is that despite emphasising some skills involved in conversation the document fails to emphasise other skills and therefore is fragmentary and vague. In particular very little is recommended concerning the skills of feedback provision, clarification sequences and recipient design (the ability to construct utterances according to other's shared knowledge) as well as general topic management skills and other social and cognitive skills involved in conversation.

A second problem is that the abilities expected of children between 5 and 14 are not very optimistic particularly in comparison to the models outlined by Piaget and Vygotsky. Indeed, both of these theorists would expect children to be able to perform many of the skills presented in the document from about 7 to 8 years. This is particularly worrying given that teachers are expected to be able to identify children with linguistic, pragmatic and conversational abilities. In view of the development of skills emphasised by the SOED guidelines and attainment targets, children with mild language difficulties would not be identified until early to mid adolescence.

1.4.2 Children's Topic Management Competence: Empirical Research

Since Keenan and Schieffelin (1976) first introduced the notion of discourse topic there have been a number of pieces of research that have addressed the issue of children's topic management competence. This section will outline this, as well as other relevant research, in order to provide an idea of children's developing ability to initiate, maintain, change, shade and hierarchically organise topics of conversation. These will be considered in terms of the models of child development presented by Piaget and Vygotsky as outlined earlier, 1.4.1.1 and 1.4.1.2. During this section, it will also become apparent which aspects of topic management require further investigation.

1.4.2.1 Topic Initiation

Developmental research concerning topic initiation has largely found that infants are aware of the requirements of having to gain another person's attention before a topic can be established. Foster (1986) found that initially infants use crying and later vocal gestures to bring a mother's attention to themselves, this often being accompanied by checking that the mother was attending. With increases in linguistic ability, children become able to use words such as 'Hey!', 'Look!' or call a name 'Mummy' and so on.

In Foster's (1986) study children were noted as being able to identify the referents by using non-verbal gestures such as pointing, showing, giving and touching. Further, with the development of 'dual-directional' signalling (Masur, 1983), the child, from 13 months, begins to gesture and at the same time check the adult to make sure he/ she is attending and is able to identify the referent. These findings suggest that infants are aware of other's perceptual views and are intent on communicating from quite an early age.

Adults are also observed to scaffold their interactions with a child through the questioning of and elaborating on utterances and gestures given by the child (Foster, 1983; 1986; Sachs, 1979). By responding in different ways the child may become aware of the use of topic initiations to alter an other's behaviour. That is, within the first year children learn that certain types of behaviour result in certain reactions from an adult.

According to Keenan and Schieffelin (1976) locating referents that are not present in the physical context takes more time than doing this with those referents that are visibly present. The main reason for this seems to be the late development of anaphoric reference and tense marking but of course a cognitive limitation could underlie both the communicative and linguistic deficit. However, some preliminary research suggests that from 18 months, infants begin to use what are termed 'enactive' gestures which represent an object that is not present (see Zinober and Martlew (1985) and Acredolo and Goodwyn (1988) for a discussion of these gestures). These gestures are represented by the action of the object, for example when asking for access through a doorway, a key or handle turning action may be produced together with a look to the person at whom the gesture is directed. However, these gestures are not used very frequently.

According to Foster (1986) and Wanska and Bedrosian (1986) children's linguistic abilities, from about the ages of 2;6 to 3 years, are such that fantasy topics and displacement topics (where the referents are not physically present) are increasingly initiated, although largely by the mother (Sachs, 1979; Foster, 1986).

In terms of coherent articulation, children are increasingly able to articulate utterances clearly with increased development in language ability. According to Keenan and Schieffelin (1976) children up to 2;6 are aware that a repetition of what they have said is required when a repair is initiated by another participant. Garvey

(1977) found that children of 2;10 upwards, when asked to repeat what they have already said, reduce the tempo of the repetition, articulate it more clearly, utter the repetition more loudly and stress the part of the utterance that was queried.

Research focusing on dyads of children suggests that they attempt to initiate dialogic topics from at least as early as 2;9, although this would often require a few attempts (Keenan and Klein, 1975). However, this repetition of topic initiations is evident in children even around the age of 5 years (Pellegrini, 1982), suggesting that even children of this age have problems gaining and providing attention in order to initiate topics.

It appears then that even quite young children are capable of initiating topics suggesting that they are attempting to communicate intentionally and are aware that others' attention may be directed elsewhere. Further support for this point is the way in which children adjust their speech when asked to repeat what they have said. This indicates, in contrast to Piaget's (1959) view of the egocentric child, that even very young children attempt to engage in social speech, both with an adult and a peer.

These findings are more consistent with the claims made by Vygotsky (1962) and Bruner (1983) that children are capable of social interaction from an early age. However, a requirement of dialogue or socialised speech, according to Piaget, is that a child is able to maintain a topic initiated by another person.

1.4.2.2 Topic Maintenance

As was noted in section 1.3.2.6, the ability to maintain topics is vital for engaging in conversation and as is suggested by Piaget represents a child's entry into the social world. This claim has led to some research into children's developing abilities to maintain topics.

In her study of infants' topic management skills, Foster (1986) noted that young children up to the age of around 2;6 are unable to maintain topics for extended sequences except within the context of parent-child scaffolded interactions and routines. However, after this age the observed children began to elaborate and maintain initiated topics independently. A similar result was found in a study from Bloom, Rocissano and Hood (1976), where children, (between 19 and 38 months) interacting with adults, were observed to maintain topics, sometimes by presenting novel information.

Other research has indicated that children can maintain topics for a number of utterances. Wanska and Bedrosian (1986) found that, children aged from 2;10 to 6;3 when interacting with mothers, maintained here and now topics (that is where the object referred to is present), fantasy topics and displacement topics for an average of 3.8, 4.2 and 2.3 turns respectively.

However, despite these findings, it is unclear from this early research how well children are able to maintain topics. That is, whether they are able to address a topic globally, by way of 'incorporating discourse topic', as opposed to just linking their utterances to the previous utterance, by way of 'collaborating discourse topic'. As Brinton and Fujiki (1989) point out it may be a lot harder to make an utterance globally relevant to a topic. Indeed, in order to produce topic incorporating utterances a child must completely understand the preceding utterances and the topic (Kertoy and Vetter, 1995).

Recent research from Kertoy and Vetter (1995) with 3;2 to 4;8 year olds interacting with their mothers, indicates that topic incorporating utterances were produced regularly. Indeed, despite producing lower levels than the mother, children produced topic incorporating utterances around 17% to 20% of the time. This indicates that children are able to make their utterances topically coherent from a younger age than that studied.

The picture presented thus far suggests that from an early age children have the ability to maintain topics in quite complex ways. Indeed, it seems that quite young children show signs of addressing topics rather than just linking an utterance to the immediately preceding utterance. However, all of the above studies have focused on parent - child interactions which, as pointed out in section 1.4.1.2, constitute an environment within which children can perform at the leading edge of the skills they actually hold. That is, in these situations adults 'scaffold' the dialogue and activity with the child by maintaining the topic through elaboration and by encouraging the child to maintain and expand topics themselves. Moreover, adults, with their greater expertise in dialogue, often provide feedback which can allow the development of new skills to aid and communicate joint understanding, resolve instances of misunderstanding and ensure that children are more explicit in the future.

Topic management skills and joint understanding acquired in such settings provide the background for further skills in dialogue to develop. The cumulative effect of this learning via scaffolded interaction provides children with the skills to manage topics effectively and efficiently in future dialogue not only with adults but also with their peers.

Other researchers have focused on the ability of child peers to maintain topics of conversation. These studies are interesting because not only do they provide information about a different social situation that is increasingly important and apparent in children's social lives, particularly from middle childhood, but also because they are informative about the state of children's dialogical skills outside of a scaffolded environment. It is to these studies that we now turn.

A longitudinal study from Keenan (1974) and Keenan and Klein (1975), of twin boys aged 2;9 to 3;9 interacting in a context devoid of toys, found that the dyad paid attention and responded to each others' utterances. However, responding was only in terms of repetition or sound modification and no evidence was presented showing that these children were able to make utterances globally coherent to an ongoing topic. This finding was contrasted with Piaget's (1959) view of the egocentric child in that repetition was used to indicate acknowledgement of the prior utterance and therefore evidence of socially oriented speech. However, the linking utterances to the immediately preceding utterance by repetition or similar sounds hardly constitutes a very advanced form of topic maintenance (but see volume edited by Johnstone (1994) and in particular chapters by Bennet-Kastor and Knox).

Research with slightly older children indicates that they are able to make their utterances globally coherent to a topic underway. Garvey and Hogan (1973) report that the language of 3;6 to 5 year old dyads was often 'mutually responsive' and it is evident from the examples given, that the children regularly introduced novel information to the topic. Moreover, topics were on average between 4 and 5 utterances long.

However, Keenan and Schieffelin (1976) indicated that young children have problems maintaining topics for extended periods. They suggested that this is because children have short attention spans, are easily distracted by situational events external to the dialogue, have difficulties identifying the discourse topic and because their linguistic skills are still limited. Although these points go some way towards

explaining the problems young children have when participating in dialogue, it is evident that the skills presented by older children are not much better. Indeed, research comparing the topic management skills of 5 and 9 year olds and adults, reported few differences between the patterns produced by the different aged children (Brinton and Fujiki, 1984). Average topic lengths were between five and six utterances for the 5 and 9 year olds respectively. Further, when only utterances that introduced novel information were considered, the mean topic length was reduced by one utterance. In comparison, adults maintained topics for an average of ten to eleven utterances per topic. Although Brinton and Fujiki (1984) concluded that 5 and 9 year olds were very poor at maintaining topics, the figures they provided represent a slight increase in comparison to studies of younger children (Foster, 1986; Garvey and Hogan, 1973; Wanska and Bedrosian, 1986). Unfortunately, these studies failed to report how topics were maintained and it may be the case that although older children did not maintain topics for any longer than younger children, these older children may have been doing this differently.

Another study concerned with older children but with 7, 10 and 14 year olds and adults, comes from Dorval and Eckerman (1984) and although they provide data concerning the quality of children's topic sequences the picture they present may cloud the issue. In their study of the quality of conversations among groups of peers, these researchers found that the topic sequences of 7 to 8 year olds were largely made up of repetitive routines. Further, that these children also produced large numbers of unrelated or tangential utterances. The fifth graders' (10 to 11 years) conversations were also highly repetitive but involved fewer tangential utterances. Apart from these details the interactions of the two age groups did not differ.

On the basis of these findings, Dorval and Eckerman (1984) suggested that Piaget (1959) had overestimated the abilities of children aged 7 years and upwards and presented an adjustment to his stages of dialogue development. Dorval and Eckerman (1984) suggested that the talk of 7-8 year olds was typical of Piaget's stage 1 and stage 2 type 1 dialogue. In addition that of 10 year olds was typical of stage 2 type 2 talk because although it was topically coherent there was a lack of factual explanation. Finally, the dialogue produced by adolescents was characteristic of Piaget's stage 3 talk but contained little explanation of other individuals' motivations, something which was only present in adults' dialogue.

However, despite outlining a poor picture of topic maintenance among children (between the ages of 7 and 11), Dorval and Eckerman went on to point out that the majority of 10 year olds' topic sequences were over 31 turns. Further, that the 7 to 8 year olds' dialogues consisted of between 11 and 30 turns; a large difference from the data presented by Brinton and Fujiki (1984). Evidently, this difference seems to have developed from differences in the way topic was derived. Indeed, Dorval and Eckerman report that they were unable to capture local topical changes with their coding scheme, only changes in topic domain. That is, topics of the form associated with the top down approach to topic derivation, outlined in section 1.3.1.1. Moreover, what Brinton and Fujiki (1984) might have considered to be attempts to change the topic, were actually coded as unrelated turns, that is unless they became maintained

Overall the above research seems to indicate that children have great problems maintaining topics. However, other findings coming from the analysis of children's disputes, indicate that the types of utterances used to maintain topics may on occasions be quite advanced. Indeed, in a study from Genishi and Di Paulo (1982) on preschoolers' disputes, a fifth of all arguments consisted of supporting arguments, compromise and acceptance. However, the remaining arguments consisted of repeated oppositions. In another study of preschoolers, Eisenberg and Garvey (1981) found that there were high levels of insistence and the presentation of reasons during disputes. However, there were very few compromises. They also found that the initial opposition type predicted, to some extent, the course of the rest of the dispute. That is, where no new information was presented the dispute continued in this line, whereas when a reason was given, disputes were usually terminated. Phinney (1986) found similar results with 5 year olds but also that when new information was provided in the form of explanations, reasons etc. these were often complemented by a sequence of elaborated moves. She further found that this increased with age and their occurrence depended on the topic of the dispute.

In contrast to these research findings, Dorval and Gundy (1990), working with the data from Dorval and Eckerman (1984), found that although children argue more than adults, it is not until early adolescence that arguing consists of more than simple assertions and comments. Indeed, they reported that 7 year olds were unable to use justifications or come to a compromise. Justifications were increasingly used as age increased, peaking in early adolescence.

These findings suggest, in contrast to some of the findings reported earlier, that the disputes of children around the age of 5 years involve some advanced linguistic skills. Abilities such as justification and compromise, although rare, were evident in the disputes of quite young children. However, it is also apparent that these advanced linguistic skills are not utilised regularly until early adolescence, young children's topic or dispute sequences remaining relatively simple and short until this stage.

It seems reasonable to suggest that some of the variability in the patterns presented by different aged children may be explained by differences in the contexts within which the interactions were studied. This is a point echoed by other researchers, who also suggest that context may very well determine features such as the choice and length of topics as well as the overall patterns of topic management presented (Ervin-Tripp, 1984; Pellegrini, 1982; Sigman, 1983; Wanska and Bedrosian, 1986; Wanska et al. 1986). From this point of view it is worrying that Brinton and Fujiki (1984) do not make it clear what activity the adults and children were participating in while taking part in the study. They reported that children were given "materials appropriate for [their] age group" whereas adults, obviously, will not have been given toys. This may have affected the results of this study in that children engaged in parallel play are less likely to engage in conversations or topic maintenance routines than those focused on a task or chatting generally.

In exploring the possibility of contextual effects, Schober-Peterson and Johnson (1989) studied dialogues of 4 year olds at the more general level of 'themes' or 'topic domains'. That is topics were derived in a top down fashion in the way outlined by van Dijk (1980). Children were found to maintain conversations while enacting scenarios for the longest, followed by describing objects to other children, and problem solving. However, despite this, of the total conversations 75% were reported as being between 2 and 6 utterances long. Although this research indicates that children are unable to maintain topic domains, let alone local topics, for very long, it does clearly show that themes about which children have extensive knowledge, encourage longer dialogues concerning those themes.

In sum, the research on topic maintenance suggests that children co-ordinate their contributions on topics, in one way or another, at a younger age than that proposed by Piaget (1959). Again some of the patterns identified seem more compatible with the description of children's conversational abilities implied by

Vygotsky (1962; 1978). Indeed, when adults scaffold the interactions according to a child's zone of proximal development, fairly advanced topic maintenance skills are apparent. In contrast research evaluating children's skills when interacting with a peer suggests that children's actual abilities to maintain topics are rather poor. That is, although children can maintain topics through the introduction of novel information, topic sequences are often short and repetitive. Further, this seems to be the case right up until late childhood and early adolescence. However, research focusing on disputes found that even quite young children showed signs of a developing ability to use justifications, provide counter arguments and come to a compromise. One factor that clouds the issue is the possibility of different topic management performances being expressed in different social and physical contexts. Finally, it is still unclear whether there are differences between different aged children, in the way topics are maintained.

1.4.2.3 Topic Changes

As already stated above, children from an early age are quite capable of maintaining topics for a few utterances. However, is it the case that they introduce large numbers of topics, a few of which become maintained, or are all the topics that are introduced maintained? From a view of the child as being socio-cognitively immature and egocentric, the former pattern might be expected. Further, what research is there to indicate that children co-operate to close and open new topics as is typical in adult conversation (Goodenough and Weiner, 1977; Maynard, 1980), as discussed earlier, section 1.3.2.2?

Research generally indicates that like adults, children between the ages of 5 and 9 years maintain the vast majority, between 80 and 98%, of topics (Brinton and Fujiki, 1984; Edmonds and Haynes, 1988). However, in the Brinton and Fujiki (1984) study, children introduced on average 10 more topics, not to mention substantially more topic reintroductions, than adults, over a fifteen minute period. Similarly, Dorval and Eckerman (1984) reported that more frequent attempts to change the topic were made by 7 year olds than older children and adults.

In contrast to these findings, Kertoy and Vetter (1995) found that there were very low levels of topic initiations in mother - child interactions. Further, in a study by Edmonds and Haynes (1988), normal children interacting with language impaired children aged between 5;6 and 7;11 were found to introduce relatively few topics, that is about 10% to 12% of the total utterances functioned to initiate new topics; this

figure includes topic shading and reintroductions. Once again variations in the contextual settings may account for these conflicting findings. This seems to be particularly the case in the latter study where the children were seemingly behaving in a co-operative manner in order to help their language impaired partners.

Sirois and Dorval (1988), noted that there was an increase with age in the co-operative changing of topics. Whereas younger children were observed to make abrupt topic changes, older children's topic shifts were marked by pauses. This latter pattern indicates some co-operative behaviour in that children were allowing others an opportunity to have a say before changing the topic domain.

In comparison to the Piaget's (1959) claims, previous research implies that even 5 year olds are willing to maintain topics and therefore engage in social speech. However, there is some variability in the extent to which topics are initiated and it may be the case that the levels of topic change vary depending on the context. Generally speaking however, children in late childhood show some evidence of co-operation in the way they change topics.

1.4.2.4 Shading

As noted earlier shading can be seen as being both co-operative and unco-operative depending on the situation and timing of use (Brinton and Fujiki, 1989). It may be the case that children use shading frequently and inappropriately, as would be typical of stage 2 type 1 speech as outlined by Piaget (1959).

Evidence confirming this suggestion comes from Dorval and Eckerman (1984), who found that children between the ages of 7 and 11 years shaded topics more frequently than adolescents and adults*. However, in other studies of children and adults (Brinton and Fujiki, 1984; Edmonds and Haynes, 1988 (children only); Stover and Haynes, 1989 (adults only)) the opposite result was found. That is, children shaded topics less frequently than adults.

These contrasting results from different studies may be accounted for in terms of differences in the contexts studied and the use of different definitions of shading. It

* This finding is not explicit in Dorval and Eckerman's (1984) data. In that shading as a proportion of tangential utterances increased with age. However, as the overall category of tangentials decreased with age dramatically, the levels of shading as a proportion of overall turns produced, actually decreased.

is clear that as of yet little is known about children's use of shading, particularly in terms of whether it is appropriate or not.

1.4.2.5 Topic Organisation

As was noted earlier, 1;4-1;1, Piaget (1959) suggests that children are able to report on topically related events from about the age of 7;6. This implies, to some extent, that from this age children may begin to organise topics hierarchically. However, the hierarchicalisation of topics has received little attention in the child language literature. This also seems to be the case for adults although there are plenty of anecdotal reports of topic hierarchicalisation. Indeed, there is very little data indicating when sub-topics are initiated, in which contexts, how often and how regularly returns back to a dominant topic occur.

Initiating sub-topics requires that the dominant topic be kept in mind while the sub-topic is dealt with. This is easily done when the conversation concerns some feature that is present in the immediate environment. However, in a situation where the conversation is dealing with opinions, memories of events, and so on, the referents, intentions and plans concerning the dominant topic must all be kept in mind while the sub-topic is discussed. Given that children are suggested to have short attention spans and are easily distracted (Keenan and Schieffelin, 1976) they might not be expected to be able to organise their topics in a hierarchical fashion.

A simple form of sub-topic initiation is when a speaker overestimates the hearer's knowledge concerning a referent and must provide additional information to establish common ground. These clarification sequences are marked by requests for repetition, expansion or clarification and are termed 'contingent queries' (Garvey, 1977) or 'side sequences' (Jefferson, 1972). Garvey (1977) looked at simple forms of contingent queries in young children, 2;10 to 5;6, and found them to be used regularly. These queries frequently gained the required response, followed by a reintroduction of the topic. However, children may have problems with complicated queries involving lengthy descriptions of a referent that the listener does not know. Another simple form of topic hierarchicalisation is in the use of subordinate utterances, such as justifications. Although on their own justifications cannot be considered to constitute a subtopic, if details from the justification are maintained, then a full blown subtopic can result (Schiffrin, 1987).

Over and above the initiation of clarification sequences, researchers have indicated that children are unable to organise their topic sequences hierarchically until early adolescence (Hobbs, 1990; Reichman, 1990). These researchers suggest that topic hierarchicalisation may come with the development of social rules for talk, cognitive abilities (Hobbs, 1990), and the use discourse markers (Reichman, 1990)

In a study of topic reintroductions, Sirois and Dorval (1988), using the data recorded by Dorval and Eckerman (1984), found very few instances of topic hierarchicalisation among children's conversations. More importantly, they also failed to find topic hierarchicalisation within adult's conversations. However, this result is not surprising given that the authors were unable to track local topic which is more likely to be organised hierarchically than topic domains. The researchers also note that group conversations may not be a suitable context for the performance of topic hierarchicalisation.

Taken at face value much of this research seems to indicate topic hierarchicalisation does not develop until at least early adolescence, if it develops at all. It is clear however, that children initiate side sequences when required to clarify or re-establish common ground. It may be the case that it is in this context and at this local level, that children begin to be able to organise their topics in a hierarchical fashion. Whatever, the case may be, it is clear that further research is needed to clarify the issue.

1.4.2.6 Topic Returns

A feature that has been explored in the child language literature is that of topic returns. The preliminary research from Brinton and Fujiki (1984) found that topic returns were regularly used by 5 and 9 year olds but very infrequently by adults. Brinton and Fujiki interpreted these results as suggesting that returns were used to "obtain, hold and control the conversational floor." (P. 356). Sirois and Dorval (1988) although failing to find as high a prevalence of topic returns (probably because they analysed topic domains), came to similar conclusions. Sirois and Dorval (1988) found that children, aged 7 to 11, used returns to thwart topic changes whereas adults used them infrequently and only to thwart tangential utterances. The children were described as having 'topic fights', as discussed earlier, where different children addressed different topics alternately in order to control the conversational floor. Sirois and Dorval (1988) went on to suggest that around adolescence a form of

'consensus orientation' develops among conversants which dictates that only one topic can exist on the conversational floor at any one time.

In contrast to these findings, Edmonds and Haynes (1988) and Stover and Haynes (1989) reported that returns were used very rarely by both adults and children. The finding concerning the children may be due, as noted before, to the unimpaired children adopting a simpler discourse style to aid the language impaired children.

It seems then, that although the use of returns may vary depending on the social context, during casual conversations, returns may be used to control and hold the conversational floor. As conversants mature they begin to co-operate with one another allowing only one topic on the conversational floor.

1.4.3 Summary and Areas Requiring Further Research

In sum, the findings concerning young children's topic management skills seem to be more akin to the Vygotskian ideas than the Piagetian model of children's dialogue development. Indeed, not only are young children capable of initiating topics from around 2;6 they are capable of maintaining them independently of adult scaffolding. Despite this, young children's dialogues seem to involve high levels of repetition and little novel information. Older children's topic management skills seem to be little better than those of 4 to 5 year olds. Indeed, they have difficulties maintaining topics for much longer than younger children, frequently introduce and reintroduce topics and occasionally engage in battles for the conversational floor. However, the research with children spanning middle to later childhood is both sparse and presents, to some extent, conflicting pictures of children's skills. Moreover, although many researchers have noted that topic management performances may well vary across different social and physical contexts, little research has functioned to examine this. In addition, further research attention is required concerning the development of certain topic management skills.

Firstly and in particular, a greater understanding is required concerning topic maintenance. Whilst older children seem to have difficulties maintaining discourse topics for very long, it is unclear whether this is actually due to these children having difficulties or just whether they do this differently. Moreover, although a number of researchers agree that a large amount of topic maintenance among dyads of young

children consists of repetition, little else is known about the types of utterances used to maintain topics except in dispute settings.

A second issue upon which research is somewhat unclear is on the notion of shading. That is whether the use of shading increases or decreases with age and whether children use it appropriately or inappropriately to shift the topic.

Thirdly, and of particular interest is that, apart from research into repair sequences, little has focused on children's developing ability to organise topics hierarchically.

Finally, it is still unclear how well organised and coherent children's topic sequences are. While some studies indicate that children maintain the majority of topics, suggesting coherence and co-operation in dialogue, other research indicates that children are frequently unco-operative in their dialogue, as evidenced by the use of topic reintroductions to hold a preferred topic on the conversational floor.

1.5 THE PRESENT RESEARCH

The current research, presented in chapters 2, 3 and 4, aims to examine the differences in the discourse topic management performances of 4, 6 and 9 year olds. Of particular interest are the effects of different task contexts on these performances. In addition, attention will be given to the notions of topic maintenance, shading and hierarchicalisation.

CHAPTER 2: STUDY 1:

The Effects of Two Task Contexts on Children's Discourse Topic Management Abilities.

Overview

This chapter will report the methodology and findings for the first study in this research, the aim of which was to examine the effects of two task contexts on the topic management performances of children aged 4, 6 and 9 years. After a brief introduction and details of the method for the present study, the coding scheme used throughout the research will be described. The succeeding sections will present and discuss the findings.

2.1 INTRODUCTION

As has been pointed out by a number of researchers, the notion of context, despite being considered a relevant variable in explaining different behaviour patterns, has received secondary attention to that of individuals' abilities (Forman, 1994; Rogoff et al. 1991). However, over the past ten to fifteen years with the increased interest in pragmatics, discourse analysis, socio-cultural theories (such as that from Vygotsky, 1978; 1991) as well as a growing awareness of multidisciplinary research and theory, researchers have begun to realise the importance of the notion of context when explaining learning and development. While many researchers have looked at the highly complex issues such as wider social and cultural contexts, others have looked at variables such as friendship, expertise, prior knowledge and a wide variety factors that can be subsumed under the category of 'context'. Research in the area of discourse and dialogue analysis has in the past been concerned with explaining the benefits and limitations of using certain tasks but it is not until recently that researchers have begun to make a concerted effort to look at the effects of different tasks and features of these tasks on dialogue and learning (Fine, 1994; Howe and Tolmie, 1994; Kruger, 1994; Pica, Kanagy and Falodun, 1993).

As was evident in the previous chapter, despite some interest in the effects of elements such as types of toys and activities on topic management patterns (Schober-Peterson and Johnson, 1989; Wanska, Bedrosian and Pohlman, 1986), there is still little known about how far these vary with context. Indeed, features such as topic maintenance, topic shading and topic hierarchicalisation may be particularly

susceptible to context (Goodenough and Wiener, 1977; Grosz and Sidner, 1986; Sigman, 1983; Sirois and Dorval, 1988).

In chapter one, the point was made that despite some research concerned with children's topic management skills, the majority has focused on children up until the age of between 4 and 5 and over and above this age research is scarce. In addition, the research concerned with children over the age of 5 has tended to treat the skills presented as decontextualised representations of individuals' abilities as well as presenting occasional conflicting and ambiguous patterns of these skills. Indeed, different findings are evident on the measures of topic initiation, topic maintenance and shading. It was suggested that these conflicting results may stem from differences in the contexts within which topic management was studied as well as different responses to these contexts from different aged children (Ervin-Tripp, 1984; Schober-Peterson and Johnson, 1989).

The present study aims to address and explore some of these issues by examining the effects of two task contexts on the topic management patterns presented by children aged 4, 6 and 9 years. This age range represents a period of great developmental change, particularly in terms of dialogue and topical talk as outlined by Piaget (1959).

The study concerns itself, in particular, with the notions of topic maintenance, shading and hierarchicalisation, features which have received little attention from previous research. In order to explore these it was decided that the tasks to be used should be designed so as to encourage these skills. The task contexts were chosen in view of the findings from Schober-Peterson and Johnson (1989) who found that problem solving tasks encourage long dialogues on one topic domain. In order to encourage topic maintenance and topic shading a sequencing task with a seaside theme was employed. This theme was chosen as it represents an area about which young children have a lot of background and script knowledge (Hudson, Shapiro and Sosa, 1995), gained from personal experience, from story books and from extensive use in preschool and primary school curricula. As noted in the previous chapter, background knowledge is especially important for topic maintenance (Pellegrini, 1982). It was also reasoned that the presence of personal experiences may encourage the use of shading of topics.

The second task, a construction task, was designed so as to encourage topic hierarchicalisation. The reason for using this task was that in some of the previous literature, outlined in the previous chapter, construction tasks involving a hierarchical activity structure have been found to encourage (although not causally) the hierarchicalisation of topic sequences (Grosz, 1981; 1986). Thus if children are able to hierarchicalise their topic sequences, this sort of task may provide opportunities to demonstrate this.

2.2 METHOD

2.2.1 Data Collection

2.2.1.1 Design

In the present study observations were made of same gender dyads interacting and conversing in two task contexts. Each dyad comprised of children from one of 3 age groups, 4, 6 and 9 year olds. Therefore the design consisted of a within variable of task context and a between variable of age. The task contexts consisted of a construction task and a picture sequencing task, the order of which was counterbalanced across gender and age to reduce any task order effects. The two tasks were designed so as to encourage interaction and conversation among the dyads.

2.2.1.2 Subjects

Samples of children at the three age levels were obtained by approaching schools in the Glasgow area. The youngest sample came from three nursery schools consisting of children from mixed socio-economic backgrounds. The other samples came from a Catholic primary school where the children came from middle socio-economic backgrounds.

Permission to gain access to the schools was gained from the relevant educational authority and from the head teacher for each school. Parents of the children from these schools were contacted and asked to volunteer their children to take part in the study. The children were also asked if they would like to take part. The resulting samples consisted of a total of fifty eight children, twenty six, sixteen and sixteen in the youngest, middle and oldest age groups respectively. These children were paired into same age and gender dyads. Unfortunately, equal numbers from each sex could not be gathered for each age group and the resulting distributions consisted of seven female and six male dyads in the youngest age group, six female and two

male dyads in the middle group, and four female and four male dyads in the oldest group. The children in each dyad were familiar with each other, that is, in the very least, they were from the same class and sometimes were friends. Whilst it may appear that some of the 4 year olds were not demographically homogenous with the older aged children, there are three points which indicate that this was not to such a great extent. Firstly, two of the three nurseries were feeders for the primary school, that is many of the children, but not all, who left the nurseries went on to the primary school. Secondly, all of the schools were situated within about half a mile of each other and within the same area of Glasgow. Finally, although the 4 year olds consisted of children from slightly different socio-economic backgrounds, this does not seem to be a factor of importance as the within group variances on the measures for this age group were no higher than those for the older children. Indeed, on many occasions these within group variances were smaller than for the older children who were from the same school, which would suggest that the 4 year olds were more similar in their performances than the older children.

The initial request was for children aged around 3, 6 and 9 years. However, the ages of the children in the so called 3 year old group turned out to average 3;10 (S.D.= 0;3). As the mean age was so high, it seemed more appropriate to regard this group as '4' year olds and this will be the practice from now on. The ages of the children in the middle (6 year old) age group, averaged 5;11 (S.D.=0;3); and the oldest (9 year old) age group, averaged 8;10 (S.D.= 0;2).

One of the main problems during data collection was that occasionally the recording equipment failed and this resulted in some of the dyads only being observed in one of the contexts. Among the 4 year olds the data for four dyads were not recorded and the resulting sample consisted of ten and twelve dyads being observed in the picture sequencing and construction tasks respectively. Among the 6 year olds the interaction was not recorded for one dyad appearing in the picture sequencing task. This resulted in recordings of seven dyadic interactions in the picture task and eight dyadic interactions in the construction task. All of the interactions for the 9 year olds were recorded.

2.2.1.3 Materials

A 'Camcorder' with an external microphone was used to record the conversational interactions between each dyad. The camera was positioned so that it

faced the children at eye level. There were a number of reasons for using a video recorder rather than just an audio recorder which were as follows.

Firstly, as pointed out by Ochs (1979) and McTear (1985), for research involving the analysis of children's language there is a real need to record the accompanying non-verbal behaviour as not only does it supplement much of the conversation, it is often used as an alternative to it. As well as this, video also provides essential contextual information that may not be available from an audio recording.

A number of researchers have expressed reservations about the use of video as a means of data collection largely because any contextual events outside of the view of the camera are missed (Bennett-Kastor, 1988; Wilkinson, 1995). However, in the present study the children's attention was focused almost exclusively on the tasks in front of them. The only exception was when there were interruptions, by others accidentally entering the room. Fortunately this was rare and often went without comment.

Probably the main problem with the use of video cameras in research is its obtrusiveness. Indeed, the presence of an observer and a camera can reduce the likelihood of natural behaviour and spontaneous interaction (Bennett-Kastor, 1988; McTear, 1985; Millward, 1995). In the present study as the children were taken into a separate room and confronted with a stranger with a video camera, spontaneity and natural behaviour would be expected to be low. However, although the extent of this cannot be determined, every effort was made to be as unobtrusive as possible and make the children feel relaxed. This involved building up a rapport with the children at a preliminary stage. On viewing the video recordings afterwards, none of the children seemed affected by the presence of the video camera. Indeed only a few of the children passed any comment about it. However, it was evident that a few of the children were concerned with the observer's presence but rather than not speaking they spoke more quietly. Nevertheless, most of the children became so engrossed in the tasks that they failed to notice the observer or the camera.

As noted already two tasks were used in the study, a construction task and a picture sequencing task.

2.2.1.3.1 The Picture Sequencing Task

The picture sequencing task consisted of twelve pictures illustrating a young boy engaged in a variety of tasks at the seaside, some of which came from a book by Oxenbury (1982). (All pictures are shown in Appendix 1). The children were required to organise the pictures by placing them on a numbered grid in lines of three pictures so that they told a story about a boy going to the seaside.

2.2.1.3.2 The Construction Task

In the construction task a toy known as 'Mini-Quadro' was used. This consists of different lengthed tubes which can be connected together to form a structure upon which different coloured square slates can be placed to provide surfaces. The children were given a part constructed bed, and subsequently a table and chair which they were to complete with the help of photographs of the end product. The extent of pre-construction of these items depended on the age group, 4 year olds receiving almost complete versions of each item. (This was particularly the case for the bed where only the coloured slates were removed). This was done so as to make the task equally challenging for each age group, therefore encouraging conversation. (The photographs used and the extent of construction (for the table and chair only) for each age group are shown in Appendix 1).

2.2.1.4 Pilot Study

A pilot study was carried out with a small sample of 3 to 4 year olds from the University pre-school as this was deemed to be the age group that might be the least responsive and would find the tasks possibly over demanding.

Adjustments were made to the instructions given to the children largely to increase their understanding of what they were expected to do but also to encourage a rapport with the researcher.

A second alteration that was made concerned the construction task specifically. It was found that when children were given the photograph of the complete construction they simply built it without conversing. To remedy this one child was told to keep the photograph hidden from the other. This child was then required to tell the other how to build the construction. This method is relatable to the 'Glucksberg and Krauss' paradigm (Glucksberg and Krauss, 1967) which has been used by numerous researchers in the past. However, unlike the paradigm as used

traditionally, the present method did not introduce artificiality but rather functioned to make the construction task more game like.

There were also a number of problems associated with the picture sequencing task. It was evident that the placing of the pictures on the numbered grid required knowledge of sequencing left to right and top to bottom as in reading or writing, a concept which these 3 to 4 year olds had not yet grasped. Extensive explanation was required to convey this which often led to the children 'freezing', reducing conversational interaction to a minimum, as they failed to understand the task. The task was therefore altered so that the children could place the pictures in a line from left to right. This not only made it easier for them to understand but also changed the game so that they spent more time talking about the pictures rather than simply putting them on to the board.

A final alteration that was made to encourage talk during the picture sequencing task, was in terms of the interaction with the researcher while the task was presented. Informal chat, prior to the task, about the children's personal experiences of the seaside and what they thought was happening in each picture, encouraged more conversation while they were doing the task.

2.2.1.5 Main Study Procedure

Children of the same age and gender who were familiar with each other were approached, under the supervision of a teacher, and asked if they would like to play some games the researcher had set up in another room. If they assented, they were accompanied from the classroom to a separate room in the school that had been designated as the study room. In between the two rooms the researcher introduced himself, asked the children their names and ages and chatted generally about the games they were going to play. Once in the room, the children were invited to sit next to each other at a table and the video camera facing them was discreetly switched on. The researcher then gave the dyad one of the tasks.

2.2.1.5.1 Picture Sequencing Task

The children were introduced to the picture sequencing task by asking them about their own personal experiences of the seaside. This was done to encourage a rapport with the researcher but also to encourage reference to personal experiences while they were doing the task. At this point the twelve pictures were introduced. In order to make sure the children in the younger age groups understood what was

going on in the pictures they were questioned as to what the boy was doing in each of them. The children were told that the aim of the game was to put the pictures in a sequence so that they told a story about the boy's day out at the seaside. Further, they were to decide together where each picture should go. The younger children were helped with the first three pictures so that they understood what they were supposed to do. The children were then left to play the game.

2.2.1.5.2 Construction Task

In order to introduce the dyads to the construction task they were shown how pieces could fit together to construct objects. The children were then instructed to make a bed using the pieces in front of them by copying the picture of the bed. They were also informed that only one child was allowed to see the picture and that this person should direct the other on how to build the bed. In order to encourage a feeling of shared responsibility in the design and success of the game they were allowed to decide who would build and who would direct. The researcher helped the children put a couple of pieces onto the bed so that they knew exactly what they were supposed to do and then the children were left to play the game. Once the bed was completed the children were given the photograph of the table and chair. The same procedure was followed as for the bed task. More often than not, the children swapped roles for the second task. If any real problems arose whilst doing the task the researcher intervened and either re-explained the instructions or tried to encourage interaction between the children.

Once the children had finished doing both tasks they were thanked and accompanied back to the classroom.

2.2.2 Transcription and Coding

2.2.2.1 Transcription

Once all the data was collected the videos were transcribed orthographically. During transcription details of non-verbal behaviour such as pointing, showing, giving, taking, responding in the form of an action to a directive, and so on, were also transcribed, as recommended by Ochs (1979). The reasoning behind this being that topic sequences are frequently introduced and maintained non-verbally, particularly by younger children (Ochs, 1979). However, in the present study multiple points to the same referent, offers and so on, produced by the same speaker within the space of a few seconds were only recorded as occurring once. As well as recording non-verbal

behaviour, important contextual detail was also noted, when possible. This included, for example, which picture was being looked at, whether the main part of the chair was upside down and so on. This made the transcripts more meaningful.

Rather than separating non-verbal and verbal behaviour within the transcripts, the non-verbal behaviour was incorporated into the discourse and presented in brackets at the point of onset. This differs from the method used by researchers in the past (Bennett-Kastor, 1988; Ochs, 1979). Ochs (1979) criticises this bracketing of non-verbal behaviour, suggesting that it then becomes 'backgrounded'. However in the present study, non-verbal behaviour was considered equally important as language, particularly as it often clarified intended meaning or was used instead of language.

Other details that were also recorded in the transcripts include false starts, incomplete utterances, stuttering, and simultaneous speech.

2.2.2.2 Coding

Once the transcription was completed the dialogue was coded according to a scheme which was based on that proposed by Keenan and Schieffelin (1976) but which was finalised after the data had been collected. It seemed important, given the preliminary nature of research in this area, to allow the data to have some impact on the coding scheme used, rather than simply to force a scheme on to the data.

During the coding process it became evident that whilst the transcripts were detailed in terms of contextual information, sometimes this was insufficient and the video recordings had to be referred to. This was particularly the case for the older dyads during the construction task. It should be noted that the transcription and coding of the dialogue took a long time ranging from about a month for the present study to about two to three months for the second and third studies.

In the present study and in contrast to the Keenan and Schieffelin (1976) model, the unit for analysis was the 'communicative act' rather than the turn because a topic can be introduced, maintained and closed in one turn. For this reason the turn as a unit of analysis is inappropriate for assessing topic management. Further, as suggested by Stech (1982) and by examining the dialogues generally, the communicative act seems to be the unit from which topics are constructed.

The 'act', as used in the present research, is similar to the 'utterance', as defined by Schiffrin (1994), except that the 'act' embodies a non-verbal component to include the use of gestures. The notions of act and utterance are very difficult to define simply because they are dependent on context and accompanying discourse history. For example, in one situation the word 'no' may be appropriately classified as an act, whereas in another situation or later in the same situation 'no' might be considered only part of an utterance. Utterances and communicative acts embody clauses, phrases and sentences. In many ways, an utterance is a unit where coherent meaning can be established against a background of prior discourse and context. Indeed, according to Schiffrin (1994), many researchers view utterances as 'contextualised sentences'. Finally, henceforth the term 'utterance' will be used synonymously with the term 'communicative act'. Features such as coughs, laughs, 'erms' and incomplete utterances, were not regarded as being communicative acts and therefore were not coded.

In attempting to create an all encompassing coding scheme for analysis, a number of different coding categories were developed and tested. These were drawn from the Keenan and Schieffelin (1976) and Grosz and Sidner (1986) models as well as the notion of shading from Brinton and Fujiki (1984). The most appropriate coding scheme turned out to be the simplest. A number of problems were encountered during this stage of the study which functioned to clarify the complexity of the concept of 'discourse topic'.

As signalled in Chapter 1, the Keenan and Schieffelin (1976) approach is subscribed to, over and above other models, for two main reasons. Firstly, because their model provides a local derivation of topic which also manages to capture the dynamicity of the construct; and secondly because this model provides a clear definition and method for the identification of a discourse topic based on the notion of presupposition. This contrasts with the intuitive methods used by the majority of the other models including that of Grosz and Sidner (1986) and Reichman (1978), see section 1.3.1. Therefore, the discourse topic was seen to be based on the 'question of immediate concern' (Keenan and Schieffelin, 1976) and an attempt was made to identify it from each utterance. However, sometimes it was difficult to identify the topic an utterance addressed and therefore some modifications were required. As pointed out earlier, Brown and Yule (1983) have suggested that there are always a number of possible questions of immediate concern. This was also observed in the present research. This problem was relatively easily resolved when not only the

aspects of intonation, the context and shared knowledge of the context were considered but also when an attempt was made to identify the rationale for engaging in that topic. This indicates the importance of features such as 'focusing structure' (Grosz and Sidner, 1986) or 'topic framework' (Brown and Yule, 1983) and the purposes involved in engaging in conversation on that topic (Grosz and Sidner, 1986). However, this may not be as simple when the conversations are more casual, lacking in clear identifiable purposes and not involving reference to contextual information. Thus while topic identification was based on a clear method, that is the 'question of immediate concern', some element of intuition was required, although this was based on features that are easily identified.

Modifications were also made to the coding categories advocated by Keenan and Schieffelin (1976). This involved the introduction of two additional categories, one to capture the notion of topic shading, termed 'shading', and the other to capture explicit instances of topic hierarchicalisation, which was termed 'planned return', that is when a dominant topic is reintroduced. Moreover, some subtle changes were made to Keenan and Schieffelin's (1976) categories of 'collaborating discourse topic' and 'incorporating discourse topic' in order to differentiate between the provision of novel information and minimal forms of feedback. The details of these modifications will be elaborated in the next section.

Communicative acts were coded into categories at three levels: firstly, at a level of topic function; secondly, at a level of presentation form; and finally, at a lower level of the types of utterances used to maintain topics. These three coding levels will now be outlined in turn.

2.2.2.2.1 Topic Management

In terms of the topical function of each communicative act, an act could either introduce a new topic, maintain the present topic, shade a topic or reintroduce a prior topic.

An act was coded as introducing a new topic when the act itself did not share any details with, or addressed an entirely different question of immediate concern to, that of the immediately previous act. For instance:-

1. A) How does this one (tube) go?
2. B) In that way, there.
3. A) Now the squares.

[Topic: Yellow square]
 [Topic Maintained Adding]
**[New Topic: John and
 Carol]**

Topic maintenance was considered to be achieved when an act either addressed the same topic as the immediately preceding utterances or added new information to it. These two different instances of topic maintenance were coded separately either as 'minimally related' acts for the former type of topic maintenance or as 'adding' acts for the latter type.

Minimally related acts were considered to be those acts that do not introduce any new propositional information to the discourse topic, for example:-

1. A) The black bit goes on there [Point at chair]. [Topic: Black bit goes?]
2. B) Mm? [Topic Maintained Minimally]
3. A) The black bit goes there [Point at chair]. [Topic Maintained Minimally]
4. B) Oh right! [Puts black bit there] [Topic Maintained Minimally]

Or

1. A) Does that go [Points at table] there? [Topic: What goes there?]
2. B) No. [Topic Maintained Minimally]

If the speaker agrees, disagrees, requests a repetition of a previous act, requests re-confirmation, repeats or rephrases a previous act or carries out a response in the form of an action and does not introduce any new information, the act is considered to be minimally related.

The category of 'adding acts' was used when, as noted above, an act functioned to introduce new information to the discourse topic. It was reasoned in the present study that any act that introduces new information functions to develop the topic. For example:-

1. A) What colour next? [Topic: What colour next?]
2. B) The yellow one [Gives yellow square]. [Topic Maintained Adding]
3. A) Where does it go? [Topic Maintained Adding]
4. B) There [Points at chair]. [Topic Maintained Adding]
5. A) [Puts square where indicated] [Topic Maintained Minimally]
6. A) Which one (Tube) goes in there
 [Points at chair]? [New Topic: Which tube goes
 there?]

Therefore if the speaker introduces or requests new information in the form of a statement, a response providing new information, a justification, evaluation or suggestion, then the act is considered to 'add information' to the topic under discussion (see section 2.2.2.2.3 for other types of minimally related and adding utterances).

Despite sharing many similarities with Keenan and Schieffelin's (1976) categories of 'collaborating discourse topic' and 'incorporating discourse topic', minimally related and adding acts represent a different grouping of certain types of utterances. Indeed, the category of minimally related acts only corresponds partially to the category of 'collaborating discourse topic', that is it would be included in it. The difference is that in their category Keenan and Schieffelin would also include all answers to questions and statements that address the same question of immediate concern. However, it is the case that answers add new information to the topic in a sense that is very different from simply repeating or confirming an utterance. For example, complex utterances such as justifications, suggestions and clarifications are regularly presented as either answers to questions or statements that address the same topic. For this reason answers and statements that provided new information were coded as instances of adding information to the topic. In the above dialogue Keenan and Schieffelin would consider utterances 2 and 4 and 7 as instances of 'collaborating discourse topic'. In contrast in the present study they are grouped together with utterances that would function to incorporate the discourse topic such as utterance 3 in the above example. Overall children's ability to maintain topics by adding information to the topic or by responding minimally to statements is an important issue to address and may represent a clear distinction between different aged children.

It is also evident that, as was highlighted in section 1.3.2.3, Keenan and Schieffelin's category of 'incorporating discourse topic' includes topic shading. As shading in some forms represents a subtle form of topic shift and is a phenomenon of particular interest to the present study, it was not fully included in the category of adding information.

A communicative act was coded as functioning to shade the topic if the act addressed a new question of immediate concern, indicating a topic change, but with a propositional link remaining with the previous question of immediate concern/ topic

(Brinton and Fujiki, 1984; Hurtig, 1977). That is, part of the propositional content of the previous utterance is carried over in to the new topic, for example:-

- | | |
|---|------------------------------------|
| 1. A) The boy is getting dried. | [Topic: What's the boy doing?] |
| 2. B) Yes his Mum's drying him in the car. | [Topic Maintained Adding] |
| 3. A) <u>My Mum has got a new job.</u> | [Topic Shaded to Mum's job] |

Or

- | | |
|---|--|
| 1. A) The boy is getting dried. | [Topic: What's the boy doing?] |
| 2. B) Yes his Mum's drying him in the car. | [Topic Maintained Adding] |
| 3. A) <u>My Brother's got a new car.</u> | [Topic Shaded to Brother's car] |

The first two utterances in the examples above are the same and the third utterances in each case are just two possible ways in which the topic could be shaded. In the first example the link between the second and third act is that of 'Mums'. The third act is considered an occurrence of shading because the 'Mums' are not the same person. The same occurs in the second example but the propositional link is that of 'cars'. It is also interesting to note that shading can occur in a number of ways from the same utterance, in the above example it was 'cars' or 'Mums' but it could also be in terms of 'drying'.

In the present study shading was treated in a slightly different way as that used in previous studies. Other researchers, such as Brinton and Fujiki (1984) and Hurtig (1977), generally view shading as the uptake of any predicate or argument. This means that if, in the above examples, the conversation had proceeded on some feature concerning the 'boy's mum' or on the same 'car' then the topic would have been considered shaded. In the present study, however, these would be considered instances of topic development by adding information. In the present study, 'shading' was reserved for instances when the topic is altered to talk about a different instance of the same category used in the preceding utterance. On the rare occasions that shading was used to reintroduce a topic, the communicative act would not be coded as topic shading, rather as a topic return.

Communicative acts could also function to reintroduce a previous topic. That is, if/ when an act addressed a topic that had already been addressed and which was different from that of the immediately preceding act then it was considered a return. Further, a distinction was made between planned and unplanned returns. A return was

considered planned when some linguistic signal had been presented in the topic being returned to, that a return would be made. Examples of such signals are cue words such as 'before' or 'firstly'. For example:-

- | | |
|--|--|
| 1. A) Where does this tube go? | [Topic: Where Tube Goes] |
| 2. B) Hold on, you've got to put the black bit in first . | [New Topic: Black Bit First] |
| 3. A) Oh yeah. | |
| 4. A) How does it go? | |
| 5. B) It goes in that way [points] | |
| 6. B) Turn it | |
| 7. A) [Turns and puts in] | |
| 8. B) <u>Right, now you can put the tube on.</u> | [Planned Return: Where Tube Goes] |

In the above example the cue word 'first' functions to initiate a subtopic through which the satisfaction of a purpose, which is negotiated in these topics, must be achieved before the dominating topic can be rejoined. Of course, the planned return need not be made if the plan is abandoned. However, in any event planned returns indicate topic embeddedness.

If a topic return was not signalled when a new topic was initiated then any subsequent return was coded as being an unplanned return. These forms of returns do not communicate an hierarchical organisation of a text and therefore hierarchicalisation cannot be inferred. For example:-

- | | |
|---|--|
| 1. A) Where does this tube go? | [Topic: Where Tube Goes] |
| 2. B) The black bit goes in there [points]. | [New Topic: Where does the Black Bit go?] |
| 3. A) Oh yeah. | |
| 4. A) How does it go? | |
| 5. B) It goes in that way [points], turn it. | |
| 6. A) [Turns and puts in] | |
| 7. B) <u>Right, now you can put the tube on.</u> | [Unplanned Return: Where Tube Goes] |

In the above example there is no evidence* to indicate that the intervening topic functioned as a subtopic. For this reason unplanned returns cannot be considered to indicate embeddedness or satisfaction precedence. In fact, there are no

* The words 'Right, now' in utterance 7 may be considered to imply topic hierarchicalisation as they mark the preceding topic as a subtopic. However, this only functions to define the intervening topic as hierarchically related after the event. This is discussed in some detail in Adato (1979).

grounds for differentiating the above from the following example, where the discourse is not hierarchically organised.

- | | |
|--|--|
| 1. A) The car goes [points]there. | [Topic : Where the car goes] |
| 2. B) Okay [Puts car near where indicated] | |
| 3. B) Where does this [show tree] go? | [New Topic: The Tree Goes Somewhere] |
| 4. A) No the car goes there [points] | [Unplanned Return: Where the car goes] |

In the above sequence, speaker A feels that speaker B has not satisfactorily carried out his/ her directive and therefore corrects B so that this purpose can be satisfied. However, in between speaker B putting the car in the wrong place and speaker A correcting him/ her, B initiates a new topic which makes A's correction a topic return.

2.2.2.2.2 Form of Act Presentation

Each act was also considered in terms of its form or medium of presentation. An act could be presented either gesturally, in which case it was coded as being 'Non-verbal'; verbally, in which case it was coded as being 'Verbal'; or a combination of the two, coded as 'Combined'. Gestural acts had to be communicative with respect to the context and previous discourse in order to be coded. For example a point would not be considered a gesture unless it was used communicatively, usually indicated by a look to the partner in the dialogue (Masur, 1983). Minimally related acts could also take the form of an action in response to a directive and these were coded as 'Actions'. These relevant 'actions' are essentially the perlocutionary (Austin, 1962, cited by Taylor and Taylor, 1990) effects of a directive which were considered to be topic accepting and maintaining.

2.2.2.2.3 Type of Maintaining Acts

Communicative acts that functioned to maintain the topic were also considered at a lower level of types of acts. That is, a communicative act was coded according to its relational and informational status with respect to prior utterances within the topic in which it was presented. This part of the coding scheme was developed after the previous schemes (see 2.2.2.2.2 and 2.2.2.2.3) and within the interests of the differences between the age groups and tasks. It was not intended to identify the types of utterances that could be used to maintain topics as this would have led to the use of numerous categories.

If an act was coded as being minimally related then it was also coded according to one of the following categories.

An act was coded as being an 'action' response if it was a response to and carried out a direct or indirect request, that is the act was perlocutionary. This was the same category as for the form of act presentation outlined in the previous paragraph. For example:-

1. A) Put that [point tube] there [point].
2. B) [Puts tube in position indicated] [Minimal Response: **Action**]

These were coded as they were considered to be relevant and co-operative attempts to maintain the activity and topic of conversation.

The category labelled 'repeat' was used if an utterance or gesture consisted of a restatement of an act that had previously been presented within that topic, but only as long as there had been no contextual change to alter the meaning of the act. For example:-

1. B) Where do these [Point short tube and longer tube] go?
2. A) That [point short tube] goes there [point].
3. B) This [point short tube] one goes
[Puts where indicated] here. [Minimal Repeat as has the
same meaning as above]
4. A) That [point **longer** tube] goes there [point]. [Not a repeat as is
referring to something
different]

In the example above, utterance 3 more or less repeats what is said in utterance 2. However, although utterance 4 consists of the same words as utterance 2 it refers to a different tube, as indicated by the gesture, and therefore is not a repeat.

If an act that contained the same meaning was presented in a different form, that is re-phrased or presented as a gesture after it had been presented verbally, it was coded as a repetition. However, if for example, the act consisted of a repetition and an affirmative then it was coded under the category of agreement as this was seen as being the more salient information in the message. Alternatively, if the act involved a

repetition but also added new information to the topic then it was categorised under the latter category. This was the same for all types of minimally related utterances.

Acts were coded as functioning to show 'agreement' if they consisted of an affirmative when there was no clear request for this form of response and when the rest of the act did not introduce any new information to the topic. These forms of agreement often took the form of back channel responses in the form of 'ah ha' or 'mhm' and so on.

In those instances where speakers gave negative feedback in the form of 'I don't think so' or 'No it doesn't', then these were coded as functioning to 'disagree'. There were also instances where 'yes it does' was coded as a disagreement. For instance:-

1. A) That goes there [puts tube on structure].
2. B) No it doesn't. [Disagree]
3. A) Yes it does. [Disagree]

In the above example the utterance 'Yes it does' is coded according to its relation to the previous utterance, that is, it expresses disagreement.

In situations where an affirmative or negative was requested, an act that took the form of either of these responses was coded as being a 'yes/ no response'. For example:-

1. A) Does that go there?
2. B) Yeah. [Yes or no response]

The difference between this category and the above two categories of agreement and disagreement is that in this category an affirmative or negative is requested to confirm or disconfirm what is being said. However, in the above two categories the affirmative or negative is not requested and therefore the act functions to agree/ disagree rather than confirm/ disconfirm.

When a speaker requested that an utterance be restated this act was coded as a 'repetition request'. For example:-

1. A) Building a sand castle comes next.
2. B) What?
3. A) Building a sand castle comes next.

[Request for repetition]

Utterance 2 in the above example functions to request repetition. Other utterances such as 'Uh?' with rising intonation also took this function.

During the dialogues speakers occasionally repeated or rephrased an utterance in a question format that required a yes or no response. These communicative acts were labelled as 'requests for reconfirmation'. These utterances had the function of making sure that the respondent had understood what the speaker had meant and therefore are a form of contingent query (Garvey, 1977).

Any other utterances or gestures that were considered to be minimally related that did not fit in to the above categories were coded as being 'others'. This category included expletives, noises, sequences of words that had no apparent meaning for example 'lemon squeezey' or 'brrrrrrmmm', and words such as 'right', 'oh', 'I see', and so on.

We turn now to consider the coding of acts that functioned to maintain the topic by adding new information. As will be immediately obvious, most of the following categories require an act to be presented verbally.

Firstly, utterances or gestures that introduced new information in the form of a statement, declarative or directive were coded as 'new'. This was a general category and covered all instances of adding information, including statements, directives and explanations, apart from requests and those utterances that fit the categories below.

Utterances produced by the children that expressed an opinion or proposed an idea were coded as a 'suggestion'. These acts often took the following form:- 'Maybe' or 'That might...' or 'I think...' or 'We could...' and so on. These types of utterances often required discussion and agreement before the suggested idea was put into action.

Further, reasons were occasionally given in support of a claim or opinion and these were coded as 'justifications'. Utterances that fitted in to this category could be identified by the word 'because' presented before the reason was given. However, not

all supporting statements were fronted with this word. For example utterance 3 is perfectly feasible as a justification with or without the word 'because':-

1. A) Maybe we should put that one first.
2. B) Why?
3. A) Because he's getting changed there [point]. [Adding: Justification]

Utterances that assessed or requested assessment of an action/s or an opinion were categorised as 'evaluations'. Evaluative statements and evaluative requests were grouped together because the latter were always presented as a request for confirmation, that is, a request for a yes or no response. For example: "Is this right?". Therefore, although the evaluating was not completed by the request, it is initiated by this act and all that is required is confirmation or negation.

During the dialogues, the children often made a request for further and new information and acts that functioned to do this were coded as 'requesting new information' for example utterances such as "Where does this go?" and "What colour is it?" and so on, request new information as long as they are not repetitions.

Acts that requested an opinion were coded as 'requests for suggestion'. These utterances usually took the following forms:- "What do you think?", "What do you reckon?" and so on.

Another form of request that was coded was 'requests for justification'. These could take the following forms:- "How do you know that?", "Why did you do that?" and so on.

Utterances that function to request that a speaker be more precise on an issue, such as "Which one do you mean?" were coded as 'requests for specification'. These generally occur when a speaker has assumed that the respondent is aware of the item he/ she was referring to or when multiple items fit the category the speaker has identified.

Another form of request was coded as a 'request for clarification'. The requests that fit in to this category are those where a respondent indicates that he or she has heard but failed to understand the speaker's utterance. Typical forms of these requests are:- "Who do you mean?", "What do you mean?" or "I don't understand".

The final coding category was termed 'confirmation requests'. Essentially this is where a speaker introduces new information in a question format requiring a yes or no response. For example:- "That goes there, doesn't it?" or "Does this one go there?". All utterances that took this format were coded as confirmation requests except for requests for evaluation which often took the above format. These were coded as evaluations (see above).

Sometimes a communicative act could be coded in a number of different ways. If this occurred then the most relevant or 'advanced/ complex' part of the act was coded, verbal acts being considered more advanced than non-verbal and adding acts being considered more advanced than minimal responses. For example, if an action was accompanied by the words 'yes' or 'oh' then the act would be coded according to the utterance. Alternatively, if an affirmative was given along with some new information, then the act would be coded as adding rather than as a minimally related affirmative.

Here is a constructed text in order to provide an example of each coding category in use. The context is similar to that in some of the transcripts. One person is directing another on how to construct a bed using Mini-Quadro. B has the photo that they must copy.

- | | |
|--|-----------------------------|
| 1. A) Where does this [show medium tube] go? | [New Topic] |
| 2. B) There [point bed] | [Adding - New] |
| 3. B) Put it (medium tube) in. | [Adding - New] |
| 4. A) [Puts medium tube in place] | [Minimal - Action] |
| 5. A) Right, now what is this for? [show yellow square] | [New Topic] |
| 6. B) That's part of the mattress. | [Adding - New] |
| 7. A) Where does it (yellow square) go? | [Adding - Request New] |
| 8. B) It goes there [point bed] | [Adding - New] |
| 9. B) But you need to put another pipe (tube) in first. | [New Topic] |
| 10. A) Okay I'll just put it (yellow square) here then.
(puts it to one side) | [Unplanned Return (8)] |
| 11. B) Put this pipe [give short tube] in there [point]. | [Unplanned Return (9)] |
| 12. A) This way or that way? [shows] | [Adding - Req. Specificity] |
| 13. B) That way [show]. | [Adding - New] |
| 14. A) Oh right [Puts in place short tube] | [Minimal - Other] |
| 15. B) Now you can put the yellow one in. | [Planned Return (9)] |
| 16. A) Yeah [Puts in place Yellow square] | [Minimal - Agree] |
| 17. B) Put it (yellow square) in. | [Minimal - Repeat] |
| 18. A) Right, the long pipe now. | [New Topic] |
| 19. A) Maybe it goes there. [Puts in place long tube] | [Adding - Suggest] |
| 20. B) No it can't go there, | [Minimal - Disagree] |

21. B) 'Cos the picture says it goes there. [point] [Adding - Justification]
 22. A) Yeah but there's no space for it to go there. [Adding - New]
 23. A) So it must go here. [Adding - New]
 24. B) Eh, what do you mean? [Adding - Req. Clarification]
 25. A) It must go here, [Minimal - Repeat]
 26. A) Because there's no space there [point] [Minimal - Repeat]
 27. A) And the yellow is in the way. [Adding - Justification]
 (this is coded as a justification even though there is no 'because', as the utterance presents a reason why the long tube cannot go there.)
 28. A) You see? [Minimal- Req. reconfirmation]
 29. B) Oh yeah. [Minimal - Yes/ no response]

At this point B gets A to take pieces off so that they can put the long tube in.

30. B) Take the yellow off. [New Topic]
 31. A) Right [Takes yellow square off] [Minimal - Other]
 32. B) Take that one off [point square next to yellow] [New Topic]
 33. A) Why? [Adding - Req. Justification]
 34. B) 'Cos then you can get that [point medium tube] out. [Adding - Justification]
 35. A) What out? [Minimal - Req. Repeat]
 36. B) That out [point medium tube] [Minimal - Repeat]
 37. A) What this one [points medium tube]? [Minimal- Req Reconfirmation]
 38. B) Yes. [Minimal - Yes/ no response]
 39. A) Ah got you. [takes medium tube out] [Minimal - Other]
 40. B) Now get the long tube. [Unplanned Return (18)]
 41. A) And put it in there [show]? [Adding - Req Confirmation]
 42. B) Yeah. [Minimal - Repeat]
 43. A) [Puts in place long tube] [Minimal - Action]
 44. B) That's right now. [Adding - Evaluation]
 45. A) One piece left [show black square] [New Topic]
 46. B) Where do you think it goes? [Adding - Evaluation]
 47. A) Here maybe. [show] [Adding - Suggest]
 48. B) Yeah of course. [Minimal - Agree]
 (A Puts in place the black square. Not coded as there was no request, direct or indirect, to put it in)
 49. B) Right [Minimal - Other]
 50. A) Right that's us (finished). [New Topic]
 51. B) Ah ha. [Minimal - Agree]

The following is a constructed example of a conversation in the picture sequencing task. The children are trying to sequence the pictures in order to tell a story about the boy's visit to the seaside. The question of immediate concern is very often- 'Which picture goes next?' but sometimes the children focus on a specific

picture - 'Where does this one go?' and so on. The children have already put one picture into the sequence, that of the boy going to the seaside.

1. A) Yeah maybe. [Minimal - Agree]
 2. B) No it must be this one [show boy taking shoes off] [Adding - New]
 3. A) Is that him taking his shoes off? [Adding - Req Confirmation]
 4. B) Yeah. [Minimal - Yes/ no response]
 5. A) Yeah that next [Puts in place
Boy taking shoes off] [Minimal - Agree]
 6. A) And then it could be this one
[show getting ice cream] [New Topic]
 7. B) Having an ice..., is that the first thing you do when
you get to the sea side? [Adding - Req Confirmation]
 8. A) Naa maybe this one [show boy paddling]. [Adding - Suggest]
 9. B) Yeah that's him paddling [point picture] [Adding - New]
 10. B) And then he's swimming [show picture] [New Topic]
 11. A) He could be fishing before that one [point paddling] [New Topic]
 12. B) Yeah [Puts in place fishing 1 in third position] [Minimal - Agree]
 13. B) Then after he could be getting dry [show drying] [New Topic]
 14. A) No because he still hasn't been swimming yet. [Adding - Justification]
 15. B) I go swimming at the leisure centre. [Shading]
 16. A) So do I [Adding - New]
 17. A) He wouldn't be getting dry until after he's
been swimming. [Unplanned Return (14)]
 18. B) Okay. [Minimal - Other]
 19. A) I think this one [show fishing 2] after that
one [point fishing 1] [New Topic]
 20. B) Yeah or maybe this one [show boy playing
with boat] [Adding - Suggest]
 21. A) No this one [Puts in place fishing 2] [Minimal - Disagree]
 22. A) And then that one next. [point boy playing
with boat]. [New Topic]
- (This is a clear illustration of the importance of the question of immediate concern as although the picture of the boy playing with the boat appeared in line 20 it is introduced in terms of a different question of immediate concern and therefore this utterance is a topic initiating utterance.)
23. B) Yep [Puts in place boy and boat pictures] [Minimal - Agree]
 24. A) Then he's paddling [point paddling picture] [Planned Return (9)]
 25. B) And then he's swimming [Puts swimming
picture in place] [New Topic]
 26. A) Then he gets dried [Puts drying picture in place]. [Planned Return (17)]
 27. B) Yeah, [Minimal - Agree]
 28. B) And this one goes after [Puts picnic picture
in place picnic] [New Topic]
 29. A) They're having a picnic in that one. [point picnic] [Adding - New]

30. B) We had a picnic.	[Shading]
31. A) Yeah I know.	[Minimal - Other]
32. B) Then he plays ball. [Puts in place playing ball]	[New Topic]
33. A) No he'd be making a sand castle next [take out ball + Puts in place sand castle]	[Adding - New]
34. B) Then he plays ball.	[New Topic]
35. A) Yeah [Puts in place ball]	[Minimal - Agree]
36. B) Then he has an ice cream [Puts in place ice cream]	[New Topic]
37. A) Yeah I like strawberry ice cream.	[Shading]
38. B) Yeah but chocolate is nicer.	[Adding - New]
39. A) Finished that anyway.	[New Topic]
40. B) Yeah.	[Minimal - Agree]

2.2.2.3 Inter-Observer Reliability

Inter-rater reliabilities were calculated for the categories at the levels of topic management and types of maintaining acts. A second rater was employed to code a twenty percent sample of the transcripts. This sample consisted of six transcripts, two from each age group. 757 communicative acts were coded at the topic level and agreement was found on 642 of them which constitutes 85% agreement. At the lower level of the types of topic maintaining acts, categorisation was dependent on the categorisation at the topic level. That is, calculation of inter-rater agreement at the lower level required raters to agree that the communicative act functioned to maintain the topic. There did not, however, have to be agreement over how maintenance was achieved. For instance, if one coder felt that the utterance was minimally related and the other felt that it was an example of adding, a comparison was still made at the lower level. Therefore some agreement, although not full agreement, was required at the topic level before an act could be considered at the lower level. Of the 440 utterances coded at the lower level, agreement was found on 349 of them, this constituting 79% agreement.

As suggested by Wilkinson (1995), as well as calculating the percentage agreement it is also useful to calculate the Kappa coefficient, as outlined by Siegel and Castellan (1988), which compares the level of agreement to that expected by chance. Therefore, Kappa was calculated at the two coding levels. At the topic level this was found to be significant at the 0.01% level where $K=0.79$. At the level of types of topic maintaining utterance significance was also found at the 0.01% level where $K=0.76$. (See Appendix 1 for the calculations of Kappa.)

2.2.3 Data Analysis

Before going on to explore the results, it is important to note how the data were derived and used in the statistical analysis. The coding of the transcripts led to a table of frequencies for each coding category as outlined above. However, rather than reporting frequencies, the data for each measure were presented as proportions (except for a couple of measures to be discussed) of the total communicative acts or of the total of the topic level measure under which the data were subsumed. The reason behind this was that in the present research we were more interested in the relative patterns produced by the different aged children rather than the absolute frequencies produced.

Whereas the topic level and presentation form level data were calculated as proportions of the total communicative acts, the data at the level of the types of maintaining utterances were calculated as a proportion of the total minimally related or total adding acts. For example, suppose one dyad produced a total of 150 acts in the construction task, of which 50 (33%) were minimally related. If 30 (60%) of these minimal acts were agreements, then out of the total acts, agreements would represent 60% of 33% of 150. That is equivalent to 18 acts out of 50 minimally related acts out of the 150 total acts.

A dyad's data were not used in statistical analyses at the lower levels, if there were no instances of the higher level category. That is, if there were no minimally related acts, then the data of zeros at the lower levels of agreements, repetitions, etc. could not be used in an analysis carried out on the lower level measures. They were therefore considered missing data.

As well as the coding categories outlined earlier, three other variables were measured using the data from the transcripts. Firstly, a measure of the total topic initiating utterances that were maintained was obtained and expressed in the form of a percentage of the total topic initiating acts. The second measure was of the mean length of topics which was expressed in terms of the mean number of acts per topic, including the topic initiating act and any returns. The third measure was of the mean length of maintained topics, again expressed in terms of a mean number of acts per topic, which is a measure of the length of only topics that were maintained.

The tables concerning the topic level measures presented in the results section include the total frequencies of communicative acts, the mean percentages for each

measure (except for the two measures of the lengths of topics), the standard deviations and the number of dyads contributing data. The tables of types of minimally related and adding information acts were identical except that the total frequencies for adding and minimally related were included rather than total acts as these were the figures from which the data were calculated. It is important to keep the frequencies in perspective when analysing the data because by converting the frequency data into percentages the transformation of dangerously low frequencies into seemingly acceptable data can occur. By incorporating the total numbers of acts into the tables this problem can be avoided.

Parametric multivariate analysis of variance (MANOVA) tests were employed to help interpret the data. When the data flouted the assumption underlying the MANOVAs of normally distributed data, statistical testing was not carried out. However, this was very rare because as indicated by Kirk (1968) parametric analysis of variance is very robust, being able to cope with a lack of heterogeneity and normality of variance. In situations where the flouting of these assumptions was so extreme it was felt that the use of non-parametric equivalents to MANOVA would reveal fairly meaningless results and therefore were not utilised.

The data were analysed using two factor MANOVAs to give a global picture of the patterns of topic management across the ages and contexts generally and any age by context interactions. When interactions resulted, oneway ANOVAs were used to identify age differences within each context. Further, when main effects were identified, Tukey hsd follow up tests were employed to identify the source of the variance between the data for the different age groups. Less conservative follow up tests, such as Newman-Keuls test, were not used because the samples were often of unequal numbers (Kirk, 1968). Further, the more conservative Scheffé test was inappropriate because comparisons were being made across only three levels of the age variable, thus not requiring the test to be overly conservative (Kirk, 1968). The results of follow up tests are marked in the tables using subscripts. When these subscripts differ, differences were evident at the 5% level. Finally, when graphs are presented, P.S.T. refers to data from the picture sequencing task, and C.T. the construction task.

2.3 RESULTS

2.3.1 Overview

What follows is a qualitative and quantitative analysis of the data. Firstly, the conversational interactions will be considered generally with respect to the ages of the participants and the task contexts. This will be followed by an in depth examination of the data in terms of topicality in discourse and the measures applied to the data, as outlined previously. Within this section, the measures of topic initiation, maintenance, change and returns will be considered in terms of the different age groups and the contexts studied. Further, the types of topic maintaining utterances produced in each task and across the age groups will be examined.

2.3.2 Conversational Interactions.

The first noticeable feature concerning the children's conversations was that they largely focused on the task at hand. There were few topic sequences that were not linked in some way to the task the children were doing at the time.

Another feature of the conversations is that the older children produced more communicative acts and therefore spent more time doing the tasks than the younger children. This can be seen by comparing the mean total acts across the age groups presented at the bottom of table 1a. That is, as age increased the numbers of communicative acts also increased, the 4, 6 and 9 year olds producing 98, 148, and 248 acts respectively. This constituted a main effect of age which was statistically significant ($F=26.9$; $D.F.=(2,21)$; $P<0.001$). Further, three times as many communicative acts were produced during the construction task than in the picture sequencing task ($F=135$; $D.F.=(1,21)$; $P<0.001$). There was also a clear age by context interaction ($F=8.0$; $D.F.=(2,21)$; $P<0.01$). That is, although all children produced more acts in the construction task than the picture sequencing task, the levels for the 9 year olds were far higher than for the younger children.

There was also a lot of within group variation on many of the measures, particularly once the data were converted into percentages, as can be seen when the standard deviations for each table are examined. Further, as can be seen in table 1a, the amount of within group variation seemed to be much greater among the two younger groups than among the 9 year olds. This suggests that even within age

groups and particularly among 4 and 6 year olds, there was variety in the patterns produced by children.

As is evident in tables 1 and 1b the majority of communicative acts were presented verbally, either alone or in combination with a gesture. Communicative acts rarely took the form of gestures alone, although there were a lot of responses in the form of perlocutionary actions without verbal accompaniment.

Table 1a:- Mean Total Acts Across the Age Groups and Task Contexts Including Percentages of Total Acts According to the Presentation Form.

Picture Sequencing Task								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Context
	Mean Total Acts	S.D.	Mean Total Acts	S.D.	Mean Total Acts	S.D.	Mean Total Acts	S.D.
% Uncodable	2%	3.9	2%	2.3	2%	2.1	2%	2.9
Mean Total Acts	22 a	7.7	33 a	9.9	60 b	27	38	23
N=	10		7		8		25	
Construction Task								
% Uncodable	2%	1.9	4%	3.3	2%	1.7	3%	2.4
Mean Total Acts	74 a	14	110 a	57	188 b	26	117	59
N=	12		8		8		28	
Mean Totals for Age Groups								
% Verbal	49%	20	55%	21	58%	9.4		
% Non-Verbal	5%	8.1	1%	1.3	2%	2.5		
% Combined	33%	14	24%	10	31%	7.0		
% Actions	11%ab	4.1	16% a	10	7% b	3.0		
% Uncodable	3%	2.3	3%	2.7	2%	1.3		
Mean Total Acts	98 a	18	148 a	63	248 b	41		
N=	9		7		8			

As verbally presented acts increased with age (see table 1a), there was a corresponding decrease in the proportion of gestures produced, as age increased. However, these trends were not statistically significant because the levels of within group variation were so high. In addition, whereas the 4 and 9 year olds produced similar levels of utterances and gestures combined, the 6 year olds produced fewer. In contrast, the reverse pattern is apparent for the proportions of action responses, with the 6 year olds producing more than the 9 year olds ($F=3.66$; $D.F.=(2,21)$; $P<0.05$).

Moving on to consider these measures across the task contexts (see table 1b), further differences are evident. Firstly, proportionally more communicative acts were presented verbally in the picture sequencing task than in the construction task

($F=7.55$; D.F.=(1,21); $P<0.05$). This is hardly surprising given that the latter task was manipulative in nature, whereas the former required verbal reasoning. This difference was also reflected on the measure of action responses which were higher in the construction task ($F=39.4$; D.F.=(1,21); $P<0.001$), but not on the measures of non-verbal or combined. The implication of these findings is that the construction task involved far more directing and responding in the form of an action response than the picture sequencing task which was for more verbal in nature.

Table 1b:- Mean Total Acts Across the Task Contexts Including Percentages of Total Acts According to the Presentation Form.

	Context 1		Context 2	
	% Mean Total Acts	S.D.	% Mean Total Acts	S.D.
Verbal	59%	22	46%	17
Non-Verbal	3%	7	4%	5
Combined	32%	17	28%	11
Actions	4%	8.5	19%	9
Uncodable	2%	0.5	2%	3
Mean Total Acts	38	23	117	59
N=	25		28	

There were also a number of more general qualitative observations concerning the conversational interactions. During the picture sequencing task, the 4 year old dyads tended to focus on and converse about the content of one picture in isolation from the rest. These children would then put the pictures in an arbitrary sequence indicating that they were not attempting to construct a logical story made up from a series of related events. In contrast, the 6 and 9 year old children would consider and sequence the pictures in relation to each other, often producing a logical story.

Another feature of the 4 year olds' conversations during the picture sequencing task, was that these interactions were made up of repeated sequences. For example, one child would pick up a picture, ask the other child what was happening in the picture or request confirmation that the picture came next, and then put it in the sequence next to the previous picture card considered. The sequence was then repeated with a different picture, sometimes with the other child asking the question. These interactive patterns also involved, on occasion, arguments concerning whose turn it was to ask the next question. A different type of repeated sequence was when a dyad would put all the cards in the sequence without saying anything, and then take it in turns to point to and say what was happening in each picture. This latter sort of

behaviour was also demonstrated by the 6 and 9 year old children but with the purpose of 'checking' whether the sequence of cards was correct.

In contrast to the 4 year olds, children of 6 and 9 years spent more time attempting to work out the relation between the cards so that they provided a logical series of events forming a story. For example, the picture of the boy paddling was frequently followed by the picture of the boy swimming, which was followed by the picture of the boy getting dry. This concern was reflected in the children's conversations, particularly those of the 9 year olds, by utterances such as, "...no, that can't go next because he hasn't got dried yet," or, "...is that the first thing you would do when you got to the seaside, have an ice-cream?" and so on. The 6 year olds also displayed this sort of concern for a number of the pictures but then resorted to simply putting the last few in any order, as the 4 year olds had done.

There were also a few general age differences concerning the construction tasks. Within the 4 year old dyads it was often the case that the 'director', that is the person who had the photograph, only gave instructions on where the coloured slates went, not on how the red tubes should be put together. When a child did give directions they were either provided when the 'builder' had almost completed the structure or were meaningless to the 'builder' in that they failed to identify the referents adequately. This usually involved the 'director' instructing the 'builder' that there was, "a red bit and then a black bit and then another red bit," and so on, without identifying the referents gesturally or by description. Apart from this, the builder was left to construct the object alone until the time came when the coloured slates were to be put on to the structure. The children of the older age groups, however, went to great pains to describe how to construct the object by showing and describing which bits went together.

2.3.3 Topic Management

We move now to examine the results concerning the abilities of the dyads to introduce, maintain and manipulate topics in their dialogues and further to compare these abilities across the two task contexts. Within this section the results will be presented for the measures of topic initiation, maintenance, including types of maintaining utterances, topic changes, shading and topic organisation.

2.3.3.1 Topic Initiation

As the dyads were engaged in joint attention there were few problems initiating topics. Further, as most of the referents were present in the physical context, they were easily identified either verbally and/or non-verbally. When topics were introduced verbally, the links between referents were explicitly stated. On the other hand when topics were initiated non-verbally, the hearer's knowledge of the context and the task at hand was required to provide the links between the referents. For example "[Point slate] [point bed]" The knowledge required is that the slate indicated goes on the bed where indicated.

As can be seen in table 2, there was a decrease in the percentage of topic initiating acts as age increased, from 43% to 36% to 31%, for the 4, 6 and 9 year olds respectively. Statistical analysis revealed a significant main effect of age on this measure ($F=3.93$; $D.F.=(2,21)$; $P<0.05$) the differences being between the 4 and 9 year olds. This indicates that the older children were using their time to engage in forms of topic management other than topic initiation. As will become apparent this was topic maintenance.

Table 2:- Mean Percentages of Topics Initiated Across the Age Groups and Across the Task Contexts.

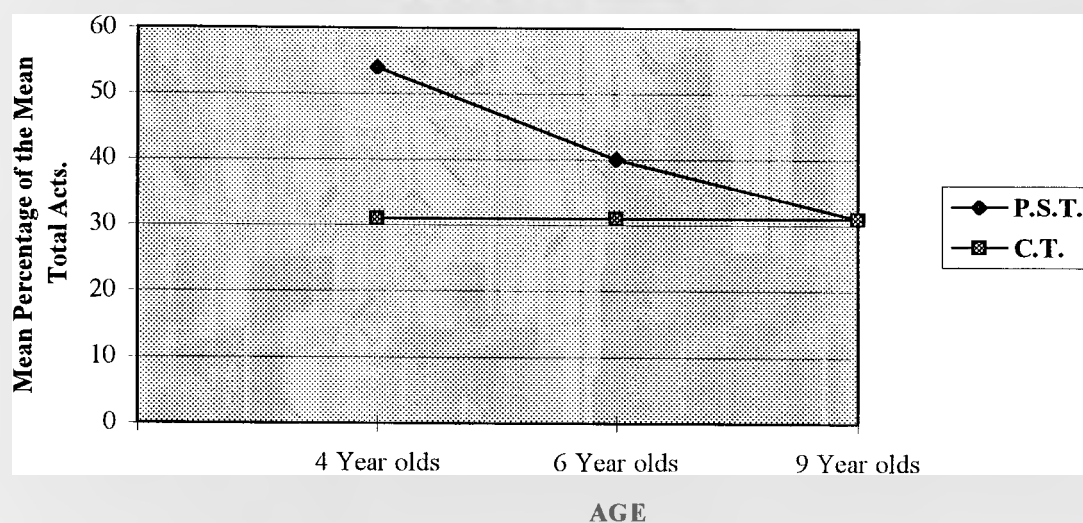
Picture Sequencing Task								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Context
	Topic Initiating Acts	S.D.	Topic Initiating Acts	S.D.	Topic Initiating Acts	S.D.	Topic Initiating Acts	S.D.
Percentage of Mean Total Acts	54% ^a	21	40% ^{ab}	13	31% ^b	11	43%	18
Mean Total Acts	22	7.7	33	9.9	60	27	38	23
N=	10		7		8		25	
Construction Task								
Percentage of Mean Total Acts	31%	6.8	31%	4.3	31%	5.0	31%	5.4
Mean Total Acts	74	14	110	57	188	26	117	59
N=	12		8		8		28	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	43% ^a	11.9	36% ^{ab}	7.2	31% ^b	3.8		
Mean Total Acts	98	18	148	63	248	41		
N=	9		7		8			

Another noticeable feature is that a higher percentage of topics were initiated in the picture sequencing task, 43%, than in the construction task, 31% ($F=10.40$;

D.F. = (1,21); $P < 0.01$). This indicates that more time was spent engaging in other forms of topic management, such as topic maintenance, in the construction task than in the picture sequencing task.

However, the picture is slightly more complex as a significant interaction between age and context for the percentages of topic initiations is evident ($F = 4.09$; D.F. = (2,21); $P < 0.05$). As can be seen from table 2 and graph 1, whereas in the construction task there were few differences between the age groups for the proportions of topic initiations, in the picture sequencing task topic initiations decreased with age ($F = 4.71$; D.F. = (2,22); $P < 0.05$). Follow up tests indicated that 4 year olds initiated a higher percentage of new topics than the 9 year olds. Of interest is the finding that in the picture sequencing task over half of the communicative acts produced by the 4 year olds were topic initiations, whereas for the 9 year olds this was less than a third of all acts.

Graph 1: Mean Percentage of Topic Initiations of the Mean Total Acts Across Age and Context.



As will become evident in the following section on topic maintenance, the contextual effect and the age by context interaction are due to the fact that in the picture sequencing task, topics were often initiated and completed in one act. This was particularly apparent in the interactions of the younger children.

2.3.3.2 Topic Maintenance

It was particularly apparent during the picture sequencing task, that different aged children varied in their ability to maintain topics. It was clear that topics were

frequently initiated but then not maintained. This was particularly evident for the younger children who were regularly observed to initiate a number of topics in subsequent utterances. For example J (4;0) produced the following -

6. J) He's doing a sand castle [puts in sequence].
7. J) And now he's having a picnic [puts in sequence].
8. J) Now he's having an ice-cream cone [puts in sequence]
9. J) Now he's going to do that [puts boy fishing in sequence]
10. J) Now he's going to (unclear) [puts boy playing with boat in sequence]

As was noted earlier it was the prevalence of this pattern in the interactions of the 4 year olds that produced the age, context and interaction effects on the measure of topic initiations outlined in the previous section, 2.3.3 1

This sort of behaviour also occurred in the 9 year old age group, although, as mentioned earlier, this occurred only after all of the pictures had been discussed, and took the form of checking over. Further, each card identified often, although not always, represented a return rather than a new topic. For example M and A (8;9 and 8;10) having completed the picture sequence:-

32. A) I think that's it [Pointing at the sequence left to right], let's see.
33. M) Car goes there [Points picture].
34. M) And then he goes [Points picture], getting undressed...

A fuller discussion of this 'checking' will be made later.

It is clear that this initiation of topics in subsequent acts of the same turn does not allow a partner to address or maintain the topic. However, this did not mean that the topics could not be maintained. Often, among the older children especially, if the hearer disagreed with or was unsure about what was being said in the topic initiating utterance, he/she would pick up on the topic by starting an act with 'hold on' or 'wait' and so on. For example N and E (9;2 and 8;6):-

35. N) Right, [point picture] comes to the seaside
36. N) [point next picture] Takes off his shoes.
37. N) [Point next picture] And sits down and has his lunch //...
38. E) // [Points picture] No wait, wait, wait.
39. E) Why would he take off his shoes if he's just going to have his lunch?
(// indicates interruption)

However, this required an interruption of the speaker's turn something that was particularly rare, especially among the younger children.

The quantitative analysis reflects these qualitative observations. This was particularly evident for topic initiations, as was noted earlier. However, these patterns were also reflected in the data concerning the proportions of topics maintained and the mean length of topics.

Table 3:- Mean Percentages of Topic Initiating acts maintained of the total topic initiating acts across the Age Groups and Task Contexts.

Picture Sequencing Task								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Context
	Topic Initiating Acts Maintained	S.D.	Topic Initiating Acts Maintained	S.D.	Topic Initiating Acts Maintained	S.D.	Topic Initiating Acts Maintained	S.D.
Percentage of Topic Initiating Acts	59%	34.5	61%	18.4	74%	17.4	65%	25.7
Mean Total Acts	22	7.7	33	9.9	60	26.7	38	23.0
N=	10		7		8		25	
Construction Task								
Percentage of Topic Initiating Acts	83%	8.1	80%	10.6	81%	8.6	81%	8.7
Mean Total Acts	74	13.7	110	57.2	188	25.6	117	58.7
N=	12		8		8		28	
Mean Totals for Age Groups								
Percentage of Topic Initiating Acts	69%	18.0	72%	9.6	78%	9.3		
Mean Total Acts	98	17.7	148	63.2	248	40.7		
N=	9		7		8			

Firstly, as can be seen in table 3, the percentages of topic initiating acts that were maintained increased with age, the percentages going from 69% to 72% to 78% of the total number of topic initiations for the 4, 6 and 9 year olds respectively. However despite this, a MANOVA did not find this trend to be statistically significant. This lack of a clear difference seems to be due to the high within group variation, as indicated by the standard deviations, for this measure. However, it is interesting to note that as the percentages of topic initiating acts increased with age, there were corresponding increases in the total numbers of topics introduced, particularly between the younger children and the 9 year olds. That is, the older children were far more inclined to initiate and maintain topics than the 4 or 6 year

olds. Further, considering contextual differences alone, the mean percentage of topics maintained was higher in the construction task than in the picture sequencing task (see table 3) ($F=10.27$; $D.F.=(1,21)$; $P<0.01$). This implies that in the picture sequencing task topic initiations were often not maintained. In contrast in the construction task the vast majority of topics were maintained.

In terms of the general age trends within each context similar patterns to the qualitative observations are evident. In the picture sequencing task there seems to be an increase between the younger age groups and the 9 year olds in the percentage of topics maintained going from 59% to 61% to 74%. In the construction task, however, the percentages remained about the same level, (see table 3). Despite this apparent age by context interaction, it was not found to be statistically significant. Once again, this is due to the very high within group variation in the picture sequencing task for this measure.

Table 4:- Mean Length of Topics and Maintained Topics Across the Age groups and Task Contexts.

Picture Sequencing Task								
	4 Year	Olds	6 Year	Olds	9 Year	olds	Totals for	Context
	Mean Acts	S.D.	Mean Acts	S.D.	Mean Acts	S.D.	Mean Acts	S.D.
Mean Length Of Topics	2a	0.6	2.6ab	0.8	3.6b	1.4	2.7	1.2
Mean Length Of Maintained Topics	2.3a	1.0	3.8ab	2.0	4.4b	1.7	3.4	1.8
N=	10		7		8		25	
Construction Task								
Mean Length Of Topics	3.3	0.6	3.2	0.4	3.3	0.6	3.3	0.5
Mean Length Of Maintained Topics	3.7	0.6	3.8	0.7	3.8	0.5	3.7	0.6
N=	12		8		8		28	
Mean Totals for Age Groups								
Mean Length Of Topics	2.7a	0.5	2.9ab	0.5	3.4b	0.5		
Mean Length Of Maintained Topics	3.1	0.7	3.8	1.3	4.1	0.7		
N=	9		7		8			

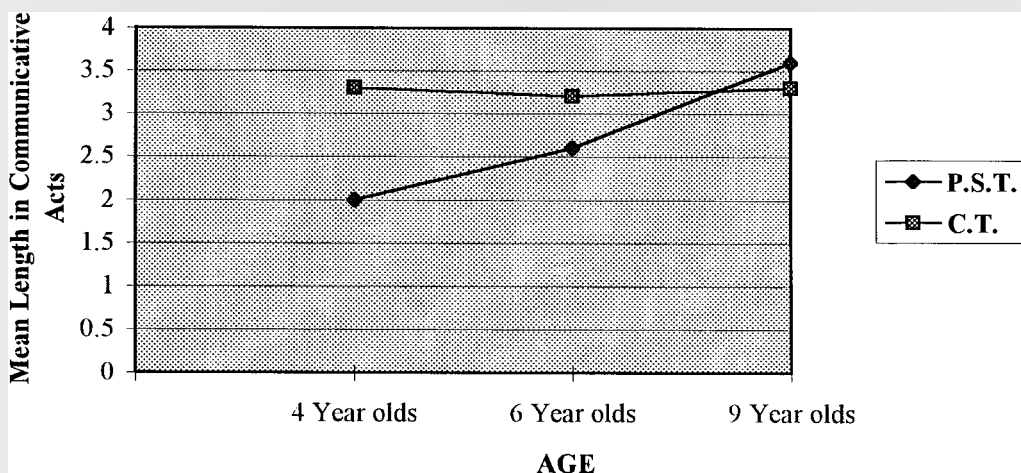
As is apparent from table 4, there were also general increases with age concerning the mean length of topics and mean length of maintained topics. Indeed, whereas the younger children only maintained topics for an average of 2.7 to 2.9 utterances, the 9 year olds maintained topics for an average of 3.4 utterances ($F=4.5$; $D.F.=(2,21)$; $P<0.05$), the differences lying between the data for the 4 and 9 year olds.

A similar trend was evident for the measure of the mean length of maintained topics although this only approached significance ($P=0.08$). However, despite fairly clear age effects, these topic lengths are not that different from each other and further are not that long. That is, the 4 and 6 year olds were only able to produce, on average, between one and two maintaining utterances in addition to the topic initiating utterance.

In terms of context alone, as table 4 indicates, the mean lengths of topics were significantly longer in the construction task, 3.3 acts, than in the picture sequencing task, 2.7 ($F=5.57$; $D.F.= (1,21)$; $P<0.05$). Again this difference can be attributed to the higher amount of topics not being maintained in the picture sequencing task. Indeed once the topic initiating utterances that were not maintained are deducted from the data the difference is reduced and is no longer significantly different.

Further, with respect to context and age, an interaction can be observed for both the mean length of topics ($F=3.97$; $D.F.= (2,22)$; $P<0.05$) and the mean length of maintained topics ($F=4.22$; $D.F.= (2,21)$; $P<0.05$). As can be seen in the table 4 and in graphs 2 and 3 there is a crossover interaction for both measures. It is clear that during the construction task all the children produced similar lengths of topics. However in the picture sequencing task, the 4 year olds produced shorter mean lengths of topics ($F=5.8$; $D.F.= (2,22)$; $P<0.05$) and maintained topics ($F=4.5$; $D.F.= (2,22)$; $P<0.05$) than the 9 year olds.

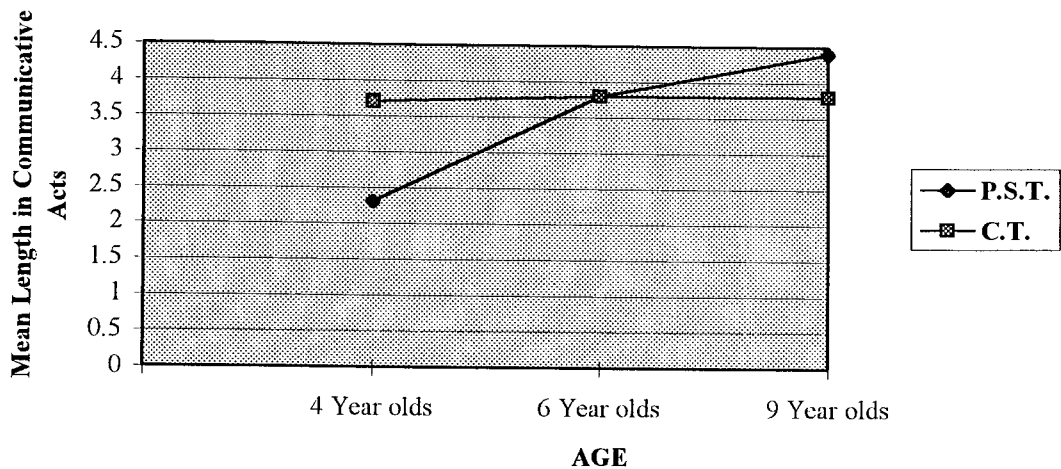
Graph 2: Mean Length of Topics Across Age and Context.



This interaction reflects the qualitative differences between the interactions of the different aged children's during the picture sequencing task, as were outlined

earlier in this section. That is, whereas the older children were concerned with negotiating the order of the pictures, the 4 year olds were not and thus did not maintain topics for as many utterances.

Graph 3: Mean Length of Maintained Topics Across Age and Context.



The lack of age differences on the measures of the lengths of topics in the construction task was surprising. Indeed, although the older children were able to deal with more complex versions of the task, it was evident that only so much was required to be said in order to complete each sub-stage and sub-purpose of the task. With this in mind it is interesting to note that all the children completed sub-stages in similar ways, that is by identifying the next piece to affix to the structure and to say where and how it went. Other reasons for the similarities between the different age groups will be discussed later with respect to minimal responding and adding information.

One particularly evident feature which goes some way to explaining the results concerning topic initiation and maintenance is the extent of mutual reliance required of the children in order to complete the tasks. In the construction task where one child was reliant on information from the other, the interactive structure involved in doing the task encouraged the maintenance of topics. That is, one child would be unable to do the task without help from the other. However, in the picture task there was no clear interactive structure in terms of the roles given to the children and therefore topic maintenance was not encouraged.

So far concerning topic maintenance it is apparent that in the picture sequencing task the 9 year old children spent more time maintaining topics than the 4 year olds, with the 6 year olds coming in-between these two age groups. However, for the construction task the levels of topic maintenance were about equal across the age groups. This similarity in performance seems to be due to certain constraining and supporting features of the task. We will move now to consider the sorts of communicative acts used to maintain topics, that is minimally related and adding information acts.

2.3.3.2.1 Minimally Related Acts

As is apparent from table 5, the total levels of minimally related acts, despite ranging between 31% to 38% of the total acts, were not that different across the age groups. This is particularly evident when the high standard deviations are also considered. However, with respect to context (see table 5) the construction task clearly elicited more minimal responses than the picture sequencing task ($F=28.32$; $D.F.=(1,21)$; $P<0.001$). This effect may have been due to the largely physical and manipulative nature of the construction task. Indeed, as was noted in section 2.3.2, the levels of action responses were particularly high in the construction task.

Table 5:- Mean Percentage of Minimally Related Acts across the Age Groups and Task Contexts.

Picture Sequencing Task								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Context
	Minimally Related Acts	S.D.	Minimally Related Acts	S.D.	Minimally Related Acts	S.D.	Minimally Related Acts	S.D.
Percentage of Mean Total Acts	26%	15	33%	9.6	23%	5.0	27%	11
Mean Total Acts	22	7.7	33	9.9	60	27	38	23
N=	10		7		8		25	
Construction Task								
Percentage of Mean Total Acts	43%	7.3	42%	7.1	40%	6.1	42%	6.8
Mean Total Acts	74	14	110	57	188	26	117	59
N=	12		8		8		28	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	34%	9.2	38%	7.2	31%	2.7		
Mean Total Acts	98	18	148	63	248	41		
N=	9		7		8			

Within each task context the patterns for minimal responses seemed to differ slightly between the age groups. However, despite the 6 year olds producing on average higher levels of minimally related acts within the picture sequencing task than the other children and despite a slight decrease as age increased within the construction task, no interaction was evident for this measure.

2.3.3.2.1.1 Types of Minimally Related Acts

One of the noticeable features of the conversational interactions was that the 4 and 6 year olds often responded to directives and indirect requests by just carrying out the requested action without passing comment. For example:- H and C (4;0 and 3;4) whilst constructing the bed.

1. H) And that one goes there. [Points at the bed]
2. C) [Picks up yellow, about to put in place indicated]
3. H) Not the yellow, the black [Shows black and where it goes] there.
4. C) [Puts in place indicated]
5. H) The blue goes there. [Points at the bed]
6. C) [Puts in place indicated]

In the above example the builder responds by just putting the piece where the informant had indicated it should go. The older children produced a similar sort of dialogue, except that the actions were more frequently accompanied by utterances such as 'Okay', 'there?', 'Yeah', 'There' or 'Mm hm' and so on, which functioned to provide feedback to the informant. For example:- N and E (8;9 and 8;10) whilst constructing the chair:-

76. N) That [Points at tube] bit [Points at chair]
77. E) There? [Puts in place]
78. N) Yeah
79. N) And then take [points at a black bit attached to a tube] that bit off.
80. E) This bit here?
81. N) Yeah.
82. E) [Takes black bit off tube] Okay.
83. N) Put that [Point at tube] in.
84. E) Mm [Puts on to the chair].

As is evident from the above two examples the younger children would not re-check or provide as much feedback as the older children. These younger children therefore often had to go back over pieces that were already put in the wrong position.

Another qualitative difference was observed in the amounts of repetition used by the different aged children. The younger children regularly repeated themselves and often what their partners had said. When it came to disputes these young children were quite persistent with this repetition. For example:- M and S (4;0 and 3;3) disputing over how a picture should be placed -

5. S) No that's the wrong way. [Turns picture so it is facing to the left]
6. M) No that's the wrong way. [Turns picture back so it is facing them]
7. S) No this way. [Turns back so it is facing left]
8. M) That's the wrong way.
9. S) [Uncodable utterance]
10. M) That's the wrong way. [Turns picture back so it is facing them again]

In contrast the older children did not repeat nearly as much as the 4 year olds. For example in terms of disputes, after an initial challenge the older children tended to resolve or continue the dispute by giving justifications or explanations rather than continuing the dispute in the above way. This will be returned to in the section 2.3.3.2.2.1.

As well as engaging in maturer disputes the older children were often observed to present feedback in the form of agreements. For example utterances 7, 12, 16 and 18 from P and T (9;1 and 8;10):-

4. P) Ah I know, those two go (unclear) [puts fishing 1 and sailboat pictures together] like that.
5. P) Because //he's going in (the water)
6. T) //No, no its these two [puts the two fishing pictures together]
7. P) Ah ha
8. T) (Uncodable)
9. T) So now after he's taken his shoes off //he makes
10. P) //What about that [show picture] one,
11. P) That one and that and that on [puts picture in between the two that are together]
12. T) Yeah
13. T) So what he does is he [points at picture] takes his shoes off
14. T) And then he maybe goes for a play in the sand
15. T) He goes, he goes to build a sand castle [Puts picture in sequence]
16. P) Mm hm
17. T) Then, then he maybe stops that and plays with his ball
18. P) [Nod] Mm.

These qualitative differences are also reflected in much of the quantitative data and it is to these that we now turn.

The data concerning the types of minimally related acts, as outlined in 2.2.2.2.3, are split across tables 6 and 7 below.

As is evident from table 6, as age increased the number of action responses, as a proportion of minimal responses, increased between the 4 and 6 year old age groups, but then decreased between the 6 and 9 year olds. This pattern was found to be statistically significant by MANOVA ($F = 3.81$; $D.F. = (2,20)$; $P < 0.05$) the difference lying between the data of the 6 and 9 year olds.

Table 6:- Mean Percentage of Types of Minimally Related Acts of the Total Minimally Related Acts Across Age and Task Context.

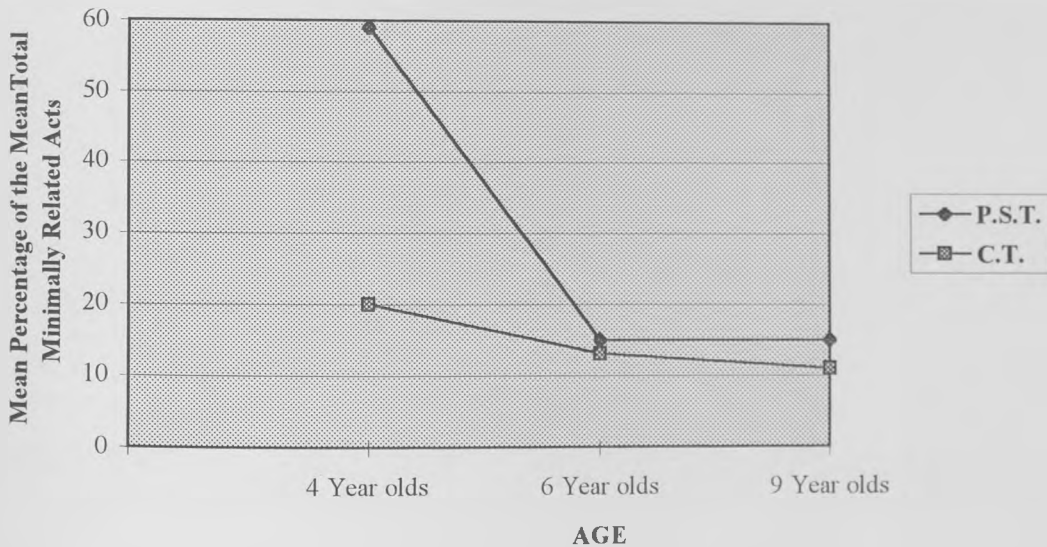
Picture Sequencing Task								
Minimal Responding	4 Year Olds		6 Year Olds		9 Year Olds		Context	
	%	S.D.	%	S.D.	%	S.D.	%	S.D.
Action	12%	19	28%	36	3%	6.3	14%	24
Repeat	59% a	34	15% b	16	15% b	15	32%	32
Agree	19% a	29	39% ab	24	59% b	22	38%	30
Disagree	6%	14	12%	12	10%	8.5	9%	11
Total Minimal Responses	7	3.4	11	2.9	14	9.5	10	6.6
N=	9		7		8		24	
Construction Task								
Action	48%	13	47%	23	33%	9.7	43%	17
Repeat	20%	11	13%	8.0	11%	6.1	15%	9.6
Agree	9%	7.7	13%	11	18%	8.3	13%	9.6
Disagree	3%	3.4	4%	4.7	4%	2.3	3%	3.5
Total Minimal Responses	32	8.7	44	16	74	8.0	47	21
N=	12		8		8		28	
Mean Total Across Age Groups								
Action	25% ab	6.6	38% a	24	17% b	6.7		
Repeat	43% a	17	14% b	12	13% b	8.0		
Agree	15% a	17	26% ab	14	39% b	12		
Disagree	5%	7.9	7%	6.6	7%	4.3		
Total Minimal Responses	19	6.1	28	7.9	44	5.6		
N=	9		7		8			

However, as noted earlier, this form of response was context specific in that proportionally it was produced far less often in the picture sequencing task, 14%, than

in the construction task, 43%, ($F=36.49$; $D F=(1,20)$, $P<0.001$). As was noted earlier, this difference seems to be due to the more manipulative and physical nature of the latter task.

The qualitative differences reported earlier on the measure of repetitions are also reflected in the data. As can be seen in table 6, as age increased the levels of this measure decreased dramatically from 43% to 14% to 13% for the 4, 6 and 9 year olds respectively. This constitutes a main effect of age ($F=13.32$; $D F=(2,20)$; $P<0.001$) the differences lying between the 4 year olds and the older children. Further, repetitions varied according to the context, being proportionally more frequent in the picture sequencing task, 32%, than the construction task, 15%. ($F=9.16$; $D F=(1,20)$, $P<0.01$). As well as these patterns, an age by context interaction is evident within the data for repetitions ($F=6.41$; $D.F.=(2,20)$; $P<0.01$). As can be seen in table 6 and graph 4, whereas the older children produced similar amounts of repetition in both tasks, the 4 year old children produced far more during the picture sequencing task than the construction task. One-way ANOVAs and follow up tests confirmed this interpretation by identifying a main effect of age in the picture sequencing task ($F=9.7$; $D.F.=(2,21)$; $P=0.001$), the differences lying between the 4 year olds and older children, but no main effect in the construction task

Graph 4: Mean Percentage of Repetitions of the Mean Total Minimally Related Acts Across Age and Context.

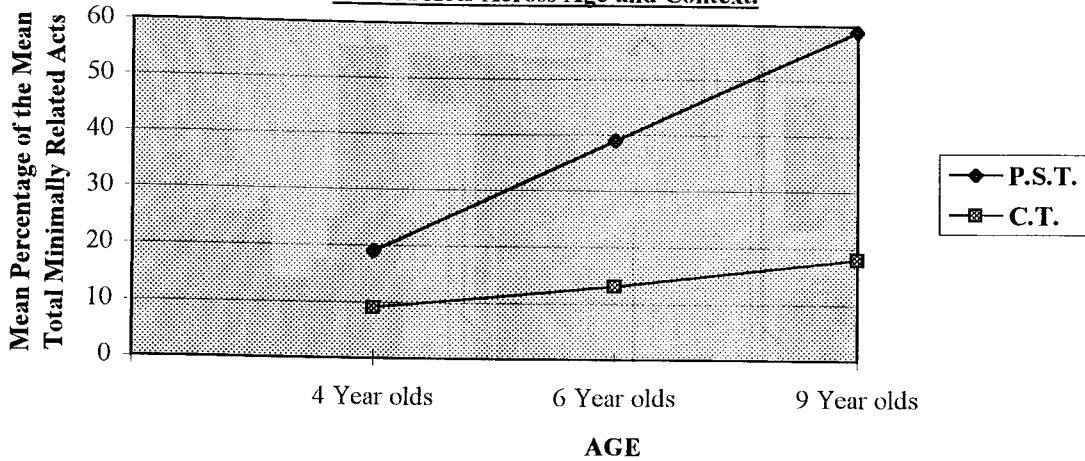


It is evident from these data that repetitions were not as widespread for the 4 year olds in the construction task as in the picture sequencing task. There are two

points that can be made to help interpret this result. It is possible that during the construction task, not as much repetition was required because the children were mutually focused on the task. A further point is that the directives produced in the construction task were easily followed as is evident from the high level of action responses and short topic sequences. This is particularly evident for the 4 year olds, as generally their conversations were restricted to, as noted earlier, a consideration of where the coloured squares were to be placed. In contrast, the 4 year olds in the picture sequencing task were not as focused on the task and regularly produced self repetitions either to maintain the joint attention of the partner, to convey an opposing opinion in a dispute or conceivably to maintain control of the activity and conversational floor.

A qualitative observation that was noted earlier was that young children often responded to their partners in the form of an action or a repetition, whereas older children seemed to try to provide feedback to their partners. One way in which this could be done was by providing agreement. As can be seen in table 6 there was an age trend on this measure whereby agreements increased with age, going from 15% to 26% to 39% for the 4, 6 and 9 year olds respectively ($F=5.12$, $D.F.=(2,20)$; $P<0.05$). This pattern seems to be the converse of the pattern of repetitions. That is, as repetitions decreased, the levels of agreement increased. Indeed, as was the case for repetitions, the level of agreements was higher in the picture sequencing task, 38%, than the construction task, 13%, ($F=27.93$; $D.F.=(1,20)$; $P<0.001$). In addition, an age by context interaction, that approached significance, was apparent for agreements ($P=0.08$). As can be seen in table 6 and graph 5, there was far more disparity on this measure between the 4 and 9 year olds in the picture sequencing task ($F=5.45$; $D.F.=(2,21)$; $P<0.05$) than in the construction task.

Graph 5: Mean Percentage of Agreements of the Mean Total Minimally Related Acts Across Age and Context.



The levels of disagreements were generally low as is evident from the data shown in table 6. Despite a slight increase in the levels of disagreements between the 4 year olds and older children no age effects were apparent on this measure. However, there were differences between the two task contexts. Indeed, a higher proportion of disagreements was produced in the picture task, 9%, than in the construction task, 3%, ($F=8.60$; $D.F.=(1,20)$; $P<0.01$). Further the different levels of disagreements between the age groups within each task context indicates an interaction effect. That is, where there were few age differences in the construction task there seemed to be age differences in the picture sequencing task with the 6 and 9 year olds producing around double the amount of disagreements as the younger children. However, owing to high levels of variance within the groups on this measure a MANOVA failed to confirm this interaction.

Table 7:- Mean Percentage of Types of Minimally Related Acts of the Total Minimally Related Acts Across Age and Task Context.

Picture Sequencing Task								
Minimal Responding	4 Year Olds		6 Year Olds		9 Year Olds		Context	
	%	S.D.	%	S.D.	%	S.D.	%	S.D.
Yes/ No Resps	2%	4.7	0%	0	0.8%	2.1	1%	3.1
Req. Repeat	0%	0	0%	0	3%	6.0	1%	3.5
Req. Reconfirm	0%	0	3%	5.0	2%	3.6	1%	3.5
Other	2%	6.7	3%	4.4	8%	11.5	4%	8.3
Total Minimal Responses	7	3.4	11	2.9	14	9.5	10	6.6
N=	9		7		8		24	
Construction Task								
Yes/ No Resps	4%	4.7	5%	4.2	6%	2.5	5%	2.4
Req. Repeat	3%	4.1	4%	2.2	3%	2.8	3%	1.4
Req. Reconfirm	5%	4.6	4%	2.5	9%	5.8	6%	3.5
Other	9%	9.2	12%	8.0	16%	7.8	13%	6.0
Total Minimal Responses	32	8.7	44	15.6	74	8.0	47	20.9
N=	12		8		8		28	
Mean Total Across Ages								
Yes/ No Resps	3%	2.5	3%	2.2	3%	1.9		
Req. Repeat	2%	2.4	2%	1.2	3%	3.6		
Req. Reconfirm	2%	2.5	3%	3.3	5%	3.8		
Other	6%	6.9	7%	5.7	12%	6.1		
Total Minimal Responses	19	6.1	28	7.9	44	5.6		
N=	9		7		8			

Concerning the data for the measures in table 7, that is yes/ no responses, requests for repetition, requests for reconfirmation and 'other' utterances, no main effects of age were evident. However, as can be seen in table 7 there was a main effect of context for all four measures of yes/ no responses, ($F=38.79$; D.F.=(1,20); $P<0.001$), requests for repetition, ($F=6.0$; D.F.=(1,20); $P<0.05$), requests for reconfirmation, ($F=14.37$; D.F.=(1,20); $P=0.001$) and 'others' ($F=10.94$; D.F.=(1,20); $P<0.01$). As is evident in table 7 there was a higher proportion of these types of utterances in the construction task. This reconfirms the observation made at the start of this section that a wider variety of minimal responses were utilised in the construction task.

To summarise, the findings concerning minimally related acts indicate a number of age and context patterns. Firstly, no age differences were found on the measure of minimally related acts in either context, although they were produced proportionally more often in the construction task. Further, despite wider usage of a variety of types of minimally related acts in the construction task there were no age differences on these measures. In contrast, in the picture sequencing task there were decreases and increases with age in the use of repetitions and agreements respectively.

2.3.3.2.2 Adding Information

The results concerning topic maintenance by way of adding information were particularly interesting and a number of qualitative and quantitative differences were evident. Firstly, as noted earlier, during the picture sequencing task the young children often just initiated topics without maintaining them. On the other hand, the 9 year olds and to a lesser extent the 6 year olds, tended to discuss the order of the pictures.

Another difference between the older and younger children concerned how much information was incorporated into one utterance. The 6 and 9 year olds were quite similar in that they frequently grouped more than one or two propositions together in to one communicative act or a couple of utterances into one turn. For example N (9;2) whilst constructing the chair -

- 165. N) There's a yellow [Points at the chair] up the top,
- 166. N) but that's facing the other wa-that's the other way

In the above example N clearly expresses a number of propositions in a single turn or two communicative acts. Generally, among the 4 year old dyads one act contained less information. For example - D and C (4;2 and 4,2) whilst constructing the bed.

- 17. C) What one now?
- 18. D) [Points at a black slate]
- 19. C) [Picks up black] Where does it go?
- 20. D) There [Points at Photo and shows C]

In this example each stage of the process of building the bed is linguistically realised in one act, that is, a certain coloured slate comes next, and that it goes somewhere. Although the 4 year old's conversations were not always this simple, the suggestion is that the older aged children were able to convey more information in

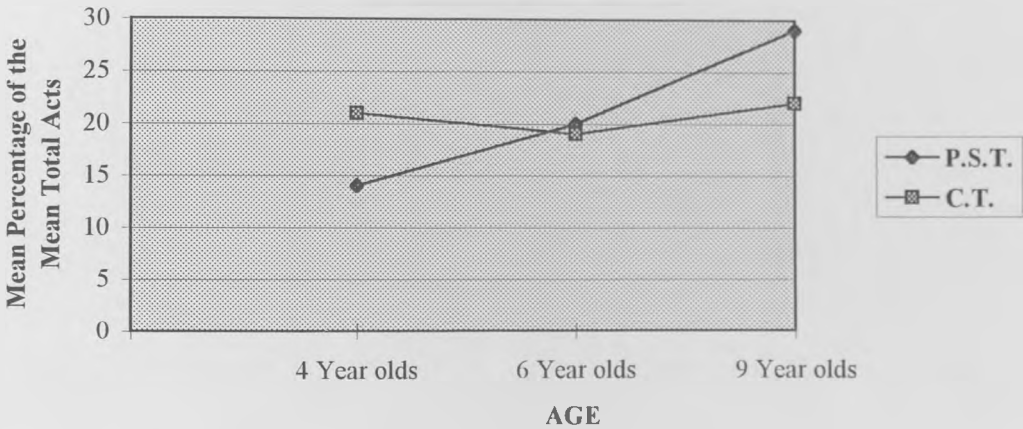
one communicative act. This is all the more important in view of the fact that younger children produced fewer communicative acts overall than the older children. Further, these observations imply that the younger children would maintain topics in the construction task for longer than the older children. However, this was not the case as noted in section 2.3.3.2 with respect to the lengths of topics. The probable reason for this was that as the age of the children increased so did task difficulty. Thus, the older children were not only required to identify which piece went where, but also which way around it went and how it was supposed to fit and so on. Therefore these older children were required to develop or expand the topic further, incorporating more ideas into an utterance than the younger children. Unfortunately, this latter point cannot be illustrated in terms of quantitative data as there was no differentiation between adding new information or the expanding of topics to consider slightly different ideas. Further, there was no category that measured the numbers or complexity of propositions expressed in an utterance. However, some of these observations were reflected in the types of adding utterances used as will be evident in the next section, 2.3.3.2.2.1.

Firstly, as can be seen in table 8, there was an increase with age in the percentages of acts functioning to add information to the topic from 18% to 19% to 26% for the 4, 6 and 9 year olds respectively. However, this trend was only found to approach statistical significance ($P=0.06$). Further, in terms of context, as can be seen in table 8, about the same percentage of acts functioned to add information in each task context and therefore no context effect was apparent. However, an age by context interaction was evident for these data ($F=3.47$; D.F.=(2,21); $P<0.05$). As is illustrated in graph 6, the different aged children produced similar levels of adding information in the construction task. In the picture sequencing task however, there were increases with age in the level of adding information, going from 14% to 20% to 29% for the 4, 6 and 9 year olds respectively ($F=3.81$; D.F.=(2,22); $P<0.05$). A follow up test indicated that the difference lay between the 4 and 9 year olds, the 6 year olds not being significantly different from either age group. This effect in the picture sequencing task seems to be the counter effect to the effect concerning topic initiations as noted in 2.3.3.1. That is, as age increased the proportions of topic initiations decreased whereas the proportions of adding information increased. Generally this finding supports the qualitative observation made earlier, that where the younger children initiated new topics the older children maintained them by adding information to the topic.

Table 8:- Mean Percentages of Adding Information Acts of the Total Adding Information Acts Across the Age Groups and the Task Contexts.

Picture Sequencing Task								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Context
	Adding Information Acts	S.D.	Adding Information Acts	S.D.	Adding Information Acts	S.D.	Adding Information Acts	S.D.
Percentage of Mean Total Acts	14% a	11	20% ab	12	29% b	11	21%	13
Mean Total Acts	22	7.7	33	9.9	60	27	38	23
N=	10		7		8		25	
Construction Task								
Percentage of Mean Total Acts	21%	10	19%	7.8	22%	5.2	21%	8.1
Mean Total Acts	74	14	110	57	188	26	117	59
N=	12		8		8		28	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	18%	6.9	19%	8.4	26%	4.5		
Mean Total Acts	98	18	148	63	248	41		
N=	9		7		8			

Graph 6: Mean Percentage of Adding Information of the Mean Total Acts Across Age and Context.



2.3.3.2.2.1 *Types of Adding Information Acts*

There were a number of qualitative differences between the age groups and the task contexts in the types of adding acts that were produced. As is evident in the examples presented in section 2.3.3.2.1.1 on the types of minimally related acts, the majority of adding utterances presented in the construction task took the form of statements and directives. This was particularly evident for the younger children probably because all they spoke about was where the different coloured tiles should

be placed. For the older children there seemed to be more variability in the types of adding utterances, in that as well as communicating where the tiles should be placed, they spoke about how the tubes fitted together. This required careful use of a variety of utterances and forms of feedback. Further, in the picture sequencing task, there were clear differences in the types of adding utterances used by the different aged children. Indeed, it was noted that whilst the 4 year olds produced statements about the content of the pictures or that a certain picture came next, the older children discussed the order of the pictures. For example E and N (8;10 and 8;9) deciding which picture should be the next in the sequence.

24. E) What now?

25. N) Erm, that one [Point fishing picture].

26. E) That one? [N goes to put the picture in the sequence]

27. E) I don't think so.

28. N) Yeah 'cos //he's [point picture]

29. E) //No wait a minute,

30. N) No 'cos he's got on er, [point fishing picture] stones (in that picture),

31. N) and he's putting [point sand castle] stones on the sand castle (in that picture)

32. E) Okay then.

In utterance 27 of the above example, E expresses disagreement with her partner. However in response, rather than just disagreeing, N attempts to explain her reasoning by initiating a justification which becomes expressed in utterance 30. Utterance 31 is another justification which continues the explanation and is accepted by E in 32. In comparison the nearest the 4 year olds came to discussing the pictures was when there were disputes. However, these disputes did not concern the ordering of the pictures. Rather they involved either how the picture should be placed, as in the example given in section 2.3.3.2.1.1, or whose turn it was to say what was going on in the picture.

Turning now to consider the data for the quantitative measures of the types of adding information acts, it is evident that these data reflect, to some extent, the qualitative observations. Firstly however, it should be noted that, as was the case in section 2.3.3.2.1.1, the data in this section are presented in two tables. Therefore the percentages in the individual tables of 9 and 10 do not total 100. However, it should be noted that the total numbers of adding information acts are low, particularly for the younger children in the picture sequencing task and therefore the interpretations should be treated with some caution.

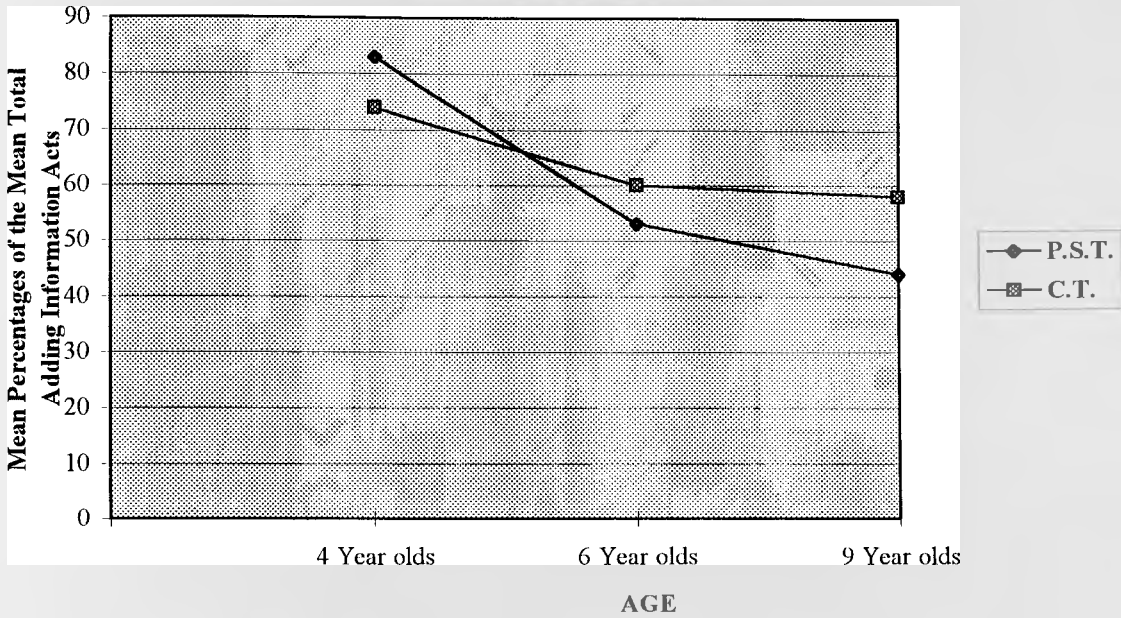
Table 9:- Mean Percentage of the Types of Adding Information of the Total Adding Information Acts Across the Age Groups and Task Contexts.

Picture Sequencing Task								
Adding	4 Year Olds		6 Year Olds		9 Year Olds		Context Totals	
	%	S.D.	%	S.D.	%	S.D.	%	S.D.
New	83% a	23	53%ab	26	44% b	19	60%	28
Justification	1% a	2.8	6% a	9.1	21% b	14	9%	13
Suggestion	4%	12	29%	31	28%	19	20%	23
Evaluation	3%	7.1	2%	5.3	2%	3.7	2%	5.3
Req. New	8%	14	10%	20	0%	0	5%	14
Total Adding	5	3.8	9	5.1	18	9.3	10	8.5
N=	8		6		8		22	
Construction Task								
New	74%a	8.8	60%ab	17	58% b	14	65%	15
Justification	1%	2.4	1%	1.9	2%	1.7	1%	2.0
Suggestion	5%	7.9	9%	8.4	6%	3.2	6%	7.1
Evaluation	6% a	6.0	22% b	21	11%ab	9.5	12%	14
Req. New	11%	8.5	4%	4.2	6%	4.4	8%	6.8
Total Adding	16	7.4	24	21	43	15	26	18
N=	12		8		8		28	
Mean Total For Age Groups								
New	76%a	16	56%ab	22	51%b	14		
Justification	0.5%a	1.3	4%a	4.3	11%b	6.8		
Suggestion	4%	10	19%	15	17%	11		
Evaluation	4%	4.6	13%	13	6%	5.5		
Req. New	11%	6.1	6%	12	3%	2.2		
Total Adding	10	3.9	16	12	30	8.7		
N=	9		7		8			

In terms of the category 'new', as can be seen in table 9, there was a general age trend whereby the levels decreased with age. That is, as age increased adding utterances increasingly took on the other functions covered by the other categories ($F=4.37$; $D.F.=(2, 18)$; $P<0.05$). Despite a lack of differences in the amounts of 'new' information produced in each context, a clear age by context interaction was evident for this measure ($F=4.18$; $D.F.=(2, 18)$; $P<0.05$). As can be seen in table 9 and the crossover interaction in graph 7, the proportion of 'new' utterances produced by the 4 year olds was higher in the picture sequencing task than in the construction task. In contrast, the older aged children produced proportionally more 'new' utterances in the construction task. One-way ANOVAs and follow up tests identified differences between the different age groups for each task, the 9 year old age group being

significantly different from the 4 year olds in both the picture sequencing task ($F=6.56$; $D.F.=(2,21)$; $P<0.01$) and the construction task ($F=4.39$; $D.F.=(2,21)$; $P<0.05$).

Graph 7: Mean Percentage of 'New' of the Mean Total Adding Information Acts Across Age and Context.

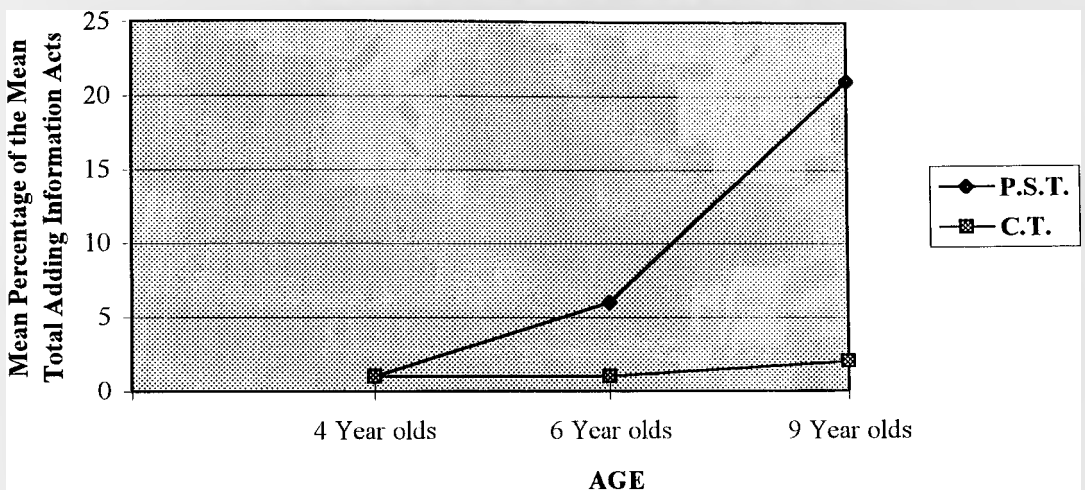


In terms of the use of justifications, the data in table 9 show a clear age trend, the older children justifying proportionally more than the younger children ($F=9.49$; $D.F.=(2,18)$; $P<0.01$). As well as this, there were clear contextual differences (see table 9) in the levels of justifications, with the picture sequencing task eliciting proportionally more, 9%, than the construction task, 1%, ($F=9.22$; $D.F.=(1,18)$; $P<0.01$). Closer analysis of the data revealed an age by context interaction for this measure ($F=6.71$; $D.F.=(2,18)$; $P<0.01$). As is illustrated in graph 8 and table 9, the different aged children showed no differences in the proportions of justifications produced in the construction task. In contrast, in the picture sequencing task the 9 year olds produced far more justifications than the younger children ($F=8.24$; $D.F.=(2,19)$; $P<0.01$) who produced equivalent or slightly higher levels in comparison to the construction task.

Suggestions, as can be seen in table 9, increased as age increased ($F=3.55$; $D.F.=(2,18)$; $P=0.05$). However, follow up tests failed to confirm that any of the groups were significantly different from each other and therefore this pattern must be treated with some caution. This seems to be due to the high within group variation on

this measure. Of further interest is the evidence of a clear main effect of context where a larger percentage of acts functioned to make a suggestion in the picture sequencing task, 20%, than in the construction task, 6%, ($F=9.23$; $D F=(1,18)$; $P<0.01$). Concerning the age differences within each context, an age by context interaction is implied by the dramatic increase in the use of suggestions in the picture sequencing task. However, this pattern was not statistically confirmed. One possible reason for the instability of this measure is that whereas some children explicitly marked suggestions through the use of 'I think...' or 'Maybe...', others seemed to use intonation to mark this form of utterance. The latter forms were coded as instances of confirmation requests rather than suggestions.

Graph 8: Mean Percentage of Justifications of the Mean Total Adding Information Acts Across Age and Context.

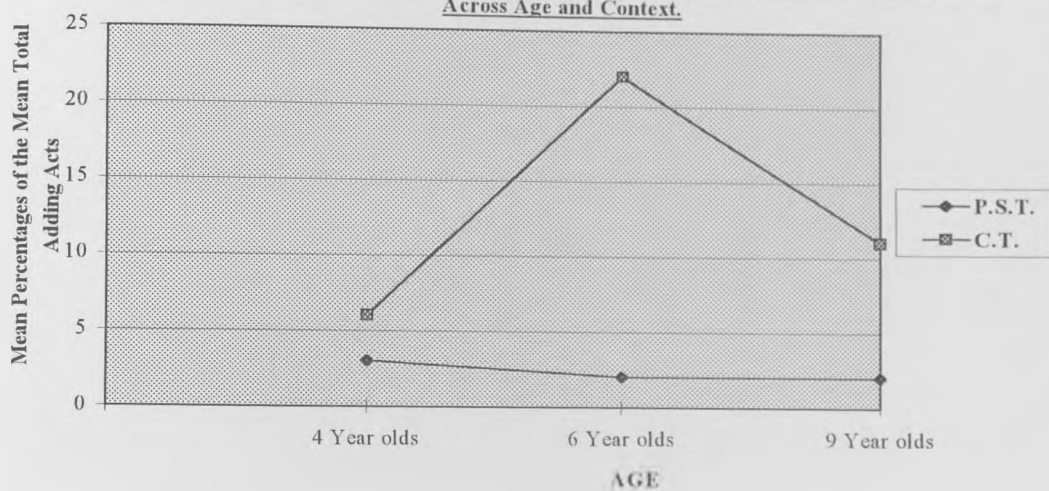


These findings concerning 'new' utterances, justifications and suggestions in the picture sequencing task reflect the qualitative observations made earlier. That is, whereas the older children tended to discuss which pictures went where, the 4 year olds sequences at best consisted of statements directives and questions. Indeed, these measures represent the major difference between the older children and younger children on the measure of types of adding information.

Evaluations also produced some interesting patterns. As can be noted from table 9, there was an increase in the percentage of evaluations between the 4 and 6 year olds and a decrease between the 6 and 9 year olds. Despite this no main effect for age was identified. The reason for this, again, is the very high levels of within group variation. Indeed, the situation for evaluations is similar to that of suggestions and therefore the data and following effects must be treated with some caution. As is

evident from table 9, there were contextual differences on this measure in that levels of evaluation were low in the picture sequencing task, 2%, and somewhat higher in the construction task, 12% ($F=12.6$; $D.F.=(1,18)$; $P<0.01$). Further, a MANOVA identified an age by context interaction that approached significance ($P=0.07$). As illustrated in table 9 and graph 9, whereas the levels of evaluations remained constant across the age groups in the picture sequencing task, in the construction task, the levels of evaluations were higher among the 6 year olds than the 4 year olds ($F=3.9$; $D.F.=(2,25)$; $P<0.05$). The instability of this measure is a result of many evaluations being carried out indirectly in the form of confirmation and reconfirmation requests rather than statements. As is notable from table 7 and 10, both of these forms of request were more regularly produced by 9 year olds than younger children in the construction task.

Graph 9: Mean Percentages of Evaluations of the Mean Total Adding Information Acts Across Age and Context.



With regard to the measure of requests for new information, despite apparent age and contextual differences a statistical analysis failed to identify any effects.

Concerning the data for the measures presented in table 10 it is clear that instances of requests for justification, suggestion, specificity and clarification were so infrequent that to apply MANOVAs would be a pointless exercise as the results would be meaningless.

Finally, as is evident from table 10, there were increases with age in the levels of confirmation requests, from around 1-3% for the 4 and 6 year olds to 8% for the 9 year olds, ($F=3.75$; $D.F.=(2, 18)$; $P<0.05$). Further, as noted earlier, levels on this

measure were also higher in the construction task than in the picture sequencing task (F=5.10; D.F.=(1,18); P<0.05).

Table 10:- Mean Percentage of the Types of Adding Information of the Total Adding Information Acts Across the Age Groups and Task Contexts.

Picture Sequencing Task								
Adding	4 Year Olds		6 Year Olds		9 Year Olds		Context Totals	
	%	S.D.	%	S.D.	%	S.D.	%	S.D.
Req. Suggestion	1.8%	4.9	0%	0	0.4%	1.1	0.8%	3.0
Req. Justific.	0%	0	0%	0	1%	1.9	0.4%	1.2
Req. Specificity	0%	0	0%	0	0%	0	0%	0
Req. Clarificati.	0%	0	0%	0	0%	0	0%	0
Req. Confirm.	0%	0	0%	0	4%	10	1%	6.2
Total Adding	5	3.8	9	5.1	18	9.3	10	8.5
N=	8		6		8		22	
Construction Task								
Req. Suggestion	0%	0	0.3%	0.7	0%	0	0.1%	0.4
Req. Justific.	0%	0	0%	0	0.5%	1.4	0.1%	0.8
Req. Specificity	0.3%	0.9	0.4%	1.1	5%	7.2	2%	4.2
Req. Clarificati.	0%	0	0.3%	0.7	0.8%	1.4	0.3%	0.9
Req. Confirm.	4% ab	7.4	2% a	3.3	11% b	8.4	6%	7.5
Total Adding	16	7.4	24	21	43	15	26	18
N=	12		8		8		28	
Mean Total For Age Groups								
Adding	4 Year Olds		6 Year Olds		9 Year Olds			
	%	S.D.	%	S.D.	%	S.D.		
Req. Suggestion	1%	2.6	0.1%	0.4	0.2%	0.5		
Req. Justific.	0%	0	0%	0	0.8%	1.1		
Req. Specificity	0.2%	0.6	0.3%	0.6	2%	3.6		
Req. Clarificati.	0%	0	0.2%	0.4	0.4%	0.7		
Req. Confirm.	3% ab	4.5	1% a	1.6	8% b	6.1		
Total Adding	10	3.9	16	12	30	8.7		
N=	9		7		8			

In sum, whereas few differences between the age groups were evident in the levels of adding in the construction task, in the picture sequencing task the older children added proportionally more information to their topics than younger children. It was also evident that where the older children were maintaining topics by way of adding information the younger children were initiating new topics. When the young children did add information, it was in the form of 'new' utterances, whereas the 9 year olds used a variety of utterance types to do this. This was particularly evident in the

picture sequencing task where the older children produced higher levels of justifications and suggestions. It was thus clear that in the picture sequencing task, where the younger children were just reporting the content of the pictures, the older children were discussing the ordering of the pictures.

2.3.3.3 Topic Changes

In the present study topic changes were frequent as is indicated by the levels of topic initiators, see section 2.3.3.1. As indicated in table 2, topics were initiated at least around 31% of the time. However, the notion of topic change is subtly different from that of topic initiation. As noted earlier, 1.3.2.2, 'topic change' refers to the closing of a topic as well as the initiation of a new topic. Although the way topics were closed down was not quantitatively measured in the present study, a number of patterns were apparent in the dialogues.

Topics were changed most frequently once a picture or piece had been put in a position that was mutually agreed as 'correct'. That is, when the purpose for engaging in the topic was satisfied a new topic was introduced. Occasionally there were situations where a topic was changed before the purpose had been satisfied. This was due to topic interruptions, subtopic initiations or situations where there was a sudden need to regress in terms of the task activity. These patterns were very similar both across the age groups and across the task contexts. However, there were a number of qualitative differences in the conversations of the different aged dyads that suggest that there was more co-operative activity in the changing of topics in the older age dyads than in the younger ones.

It was often typical among the 4 year olds that once they had finished a task one child would frequently cry out to the observer, "...look, I've done it..", or "...we've finished". Neither child made any attempt to make sure that there was nothing more to be said by the other child. This occasionally led to a child crying out, "... I've done it..," * when there were still picture cards or pieces left on the table. In contrast to the topic changes made by the 4 year olds, those made by the older children, particularly the 9 year olds, involved, on occasions, an exchange of 'rights' or 'okay, that's it' and so on at the end of doing the task. These exchanges functioned to check that the other conversational participant had nothing more to say, as suggested in the previous

* It is interesting to note that the production of 'I've done it' or 'I've won'. implies the lack of a definition of the task as a joint activity. These egocentric forms of utterances were not produced by the older children. as is apparent from the examples of topic changes presented.

chapter, section 1.4.2.3. For example :- D and J (8;7 and 9;0) on completion of the picture task.

- 101. J) Na, ah he's wearing that because it's cold.
- 102. D) Ah ha.
- 103. J) **Right?**
- 104. D) **Ah ha.**
- 105. J) I think we've got it. [To D]
- 106. D) I think we've got it. [To researcher]

In this example it seems reasonable to suggest that utterances 103 and 104 function as a pre-closing check. In this instance it was prior to the termination of the interaction concerning the task activity.

As well as occurring at the end of the tasks these pre-closing checks also occurred during the tasks. This was evident in the interactions of both the 6 and 9 year olds. For example:-N and S (5;10 and 5;5) during the picture task.

- 17. N) So that one goes there.
- 18. N) He's putting his shoes on.[Puts in sequence].
- 19. S) He's putting his shoes on at the end.
- 20. N) **Right?**
- 21. S) **OK.**
- 22. N) Yeah, we're gonna make it right.

This form of co-operation was frequently marked in the form of agreements or an exchange of 'rights' and 'okays'. This was then followed by the initiation of a new topic. This pattern only occurred during the task when there had been some disagreement between the children. For this reason the majority of these co-operative mid-task topic changes occurred in the picture sequencing task. Otherwise they were largely produced on completion of the task.

Further, in the older age groups there was a lot more negotiation at the start of the task of which topics to talk about first. These can also be considered instances of planning which will be discussed in the next section. For example :- P and T (9;1 and 8;10). While constructing the table and chair.

- 1) T) OK, right go P.
- 2) P) Right, start with the chair?
- 3) T) No, start with the table.
- 4) P) OK.

This occurred at the start of most of the conversations among the 9 year olds, less frequently among the 6 year olds, and not at all in the 4 year olds. This clearly indicates that older children were increasingly concerned with the co-operative planning of their interactions. This has the effect of making their interactions more orderly with the assignment of increased importance to certain topics as opposed to others.

In sum, topic changes usually occurred once the purpose for engaging in the topic was satisfied. This was the same for all the age groups and in both task contexts. Older children were observed to be more co-operative and organised in their dialogue by exchanging 'rights', 'okays' and so on before closing either topics. This pattern usually occurred at the ends of the task oriented dialogue but also during the dialogues, particularly when there had been some dispute concerning the task.

2.3.3.4 Topic Shading

There were no instances of topic shading within any of the conversations. This is of great interest and will be discussed later.

2.3.3.5 Topic Hierarchicalisation and Returns

There was some planning, as noted earlier, and organising of topics in the children's conversations, particularly whilst interacting in the construction task. The extent of this differed according to the age group with the older children organising their topics of conversation more frequently than the dyads in the 4 year old age group. Among the 9 year old dyads there were frequently brief discussions of the object to be made, followed by a focusing in on the sub-components. This was followed by what seemed like a return back to a comment on the object once it had been made. For example:- R and F (9;0 and 9;0).

- 10) F) How do you make the table then?
- 11) R) Get a straight bit.....
.....[constructing table].....
- 39) F) There you are [Shows the completed table]
- 40) R) And now, and now the chair, there.[Points at pieces for the chair]
- 41) F) The chair.
- 42) R) [Points at the pieces]
- 43) F) Erm, lets see now.
- 44) R) There you go take one of them [Gives F the main part of the chair]
.....[constructing chair].....
- 133) F) Right, table and chair. [Putting the chair under the table]

However, as noted earlier, only fully marked planned returns could be treated as evidence of topic hierarchicalisation and in the example none of the possible returns are marked as planned. For example intuitively utterance 39 is a return to the topic initiated by the first utterance, and the intervening topics being embedded within this topic. However the 39th utterance is not a planned return as there is no marker to indicate this. Further, in terms of the coding scheme used in the present study it is not even coded as a return as it addresses a different question of immediate concern.

However, there was some clear topic organisation at the level of connecting the pieces together. For example:- C and S (6;3 and 6;6) constructing the back of the chair.

- 25) S) Now put that [Points at half constructed back of chair] on there.
[Points at chair]
- 26) C) [picks up and is trying to put in]
- 27) S) **First** do that one. [Points at the other half
of the back of the chair] [Signals Planned Return]
- 28) C) [Puts piece in place]
- 29) S) And put that [Point at first half constructed
back of chair] on there [points at chair]. [Planned Return]
- 30) C) [Puts piece in place indicated]

In the above example in utterance 27 'S' clearly sets up a planned return and in utterance 29 this return is made.

Planned sub-topics initiated by older children were occasionally abandoned in favour of discussing another topic. This often resulted in a return not being carried out. As the coding scheme only considered topics to be hierarchically organised when a planned return was made, any topics with a signal for a later planned return that were abandoned could not be considered as the return was not made.

A planned return was only observed to occur once in the 4 year olds' conversations. J and C (4;3 and 4;4) produced the following sequence while constructing the chair.

- 7. J) [Points at photo] Der. [points at yellow slate].
- 8. C) [Picks up yellow slate, puts back down.]
We need to put this [gets back of chair and
shows J] bit on **first**. [Signals Planned
Return]

- 9. J) [Points at the little black bits which the back fits in to]
- 10. C) [Puts back of chair into black bits indicated]
- 11. J) Dat one [Points yellow slate]. [Planned Return]

In this example utterance 8 signals a possible planned return and utterance 11 provides the planned return.

Instances of topic hierarchicalisation were also evident in the picture sequencing task, although only among the older children. These were used to indicate that another picture preceded the one they had just been discussing. For example N and E (8;9; and 8;10) during the picture task.

- 21. N) And then ... and buying an ice-cream [Puts card in sequence].
- 22. E) Or maybe a swim **first**,
- 23. E) 'cos we used to have to swim [Signals Planned
before we'd go for an ice-cream. Return]
- 24. N) Yeah swim first [Puts swim picture in place].
- 25. E) [Points picture of ice-cream] This one? [Return]
- 26. N) Yeah swim first and then getting an ice-cream...

In the above example both utterances 22 and 23 signal a possible planned return and utterance 25 is the actual return.

As can be seen in table 11, planned returns were used relatively infrequently and therefore no statistical comparisons could be made across the age groups on this measure. When planned returns were used, they were always involved in communicating topic embeddedness and satisfaction precedence.

Table 11:- Mean Percentage of Planned Returns Across the Age Groups and Task Contexts.

Picture Sequencing Task								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Context
	Planned Returning Acts	S.D.	Planned Returning Acts	S.D.	Planned Returning Acts	S.D.	Planned Returning Acts	S.D.
Percentage of Mean Total Acts	—	—	0.3%	0.8	0.9%	1.8	0.4%	1.1
Mean Total Acts	22	7.7	33	9.9	60	27	38	23
N=	10		7		8		25	
Construction Task								
Percentage of Mean Total Acts	0.3%	0.6	0.3%	0.5	0.3%	0.5	0.3%	0.5
Mean Total Acts	74	14	110	57	188	26	117	59
N=	12		8		8		28	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	0.06%	0.2	0.3%	0.6	0.7%	0.9		
Mean Total Acts	98	18	148	63	248	41		
N=	9		7		8			

Unplanned returns, however, were far more frequent in the children's conversations than planned returns. They generally occurred when a picture was accidentally moved or a piece of the construction was reconsidered because it was thought to be wrongly placed. Unplanned returns were also used when one child had not finished talking about a prior topic and the other child had introduced a new topic. For example:- N and S (5;10 and 5;5) during the picture task.

29. N) No it's breakfast see, so that goes there.

[puts picnic picture in sequence]

30. N) Then it's this one [shows new picture].

31. S) No that's (picnic picture) them at the seaside, [Return to "Breakfast topic"]

32. S) So that can't go there.

[Picks up picnic picture N has just put down]

In utterance 31 of this example, S disagrees with N and therefore reintroduces the previous topic to sort out the problem. Unplanned returns were frequently observed to function in the above way.

Repeated use of returns to dominate the floor known as 'topic fights', as has been suggested by other researchers (Brinton and Fujiki, 1984; Sirois and Dorval, 1988), outlined in sections 1.3.2.5 and 1.4.2.6 of the previous chapter, were not observed to occur in the present study. This may have been because the children's attention was focused on the same activity, and further because the children had the same purpose to complete the tasks. It seems therefore, that the amount of competition to hold the conversational floor was at a minimum

Returns were also used in the context of 'checking'. In the picture task, once all the cards had been put in sequence, the sequence was checked by reintroducing the topics discussed previously, to make sure that it was correct. This sort of sequence was very common among the 9 year old dyads' conversations and occurred in a few of the conversations of the 6 year olds. For example - M and A (8;9 and 8;10) having already put the pictures in a sequence they check over in the following way

30. A) Is that right?
31. A) Yeah.
32. M) Yeah.
33. A) I think that's it. [Pointing at the sequence left to right]
34. A) Let's see.
35. M) Car, goes there [Points picture].
36. M) And then he goes [Points picture] getting undressed
37. A) What about that, do you think that goes there?
38. M) Erm, then he, yeah
39. M) because he's changed in to them (Swimming trunks) hasn't he?
40. A) Yeah, gets changed.
41. M) Then after his ice-cream [Points picture] he goes there..

In this example a checking sequence is initiated by 'A' in utterance 34 and utterances 35, 36 and 41 are topic reintroductions.

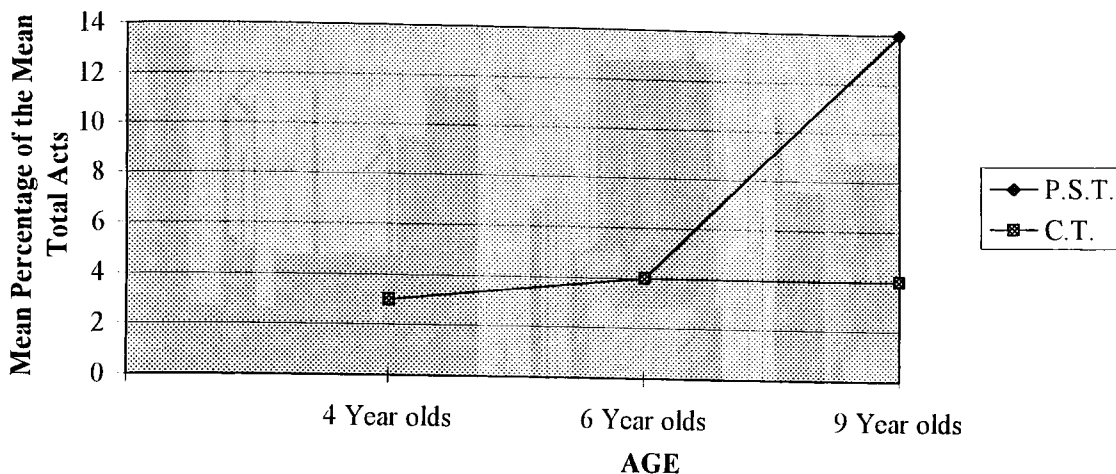
These qualitative patterns are also evident in the quantitative data. As can be seen in table 12 the proportions of unplanned returns increased with age from 3% to 4% to 9% for the 4, 6 and 9 year olds respectively ($F=6.5$; $D.F.=(2,21)$; $P<0.01$) Further, unplanned returns were used proportionally more frequently in the picture sequencing task, 7%, than in the construction task, 4% ($F=4.34$; $D.F.=(1,21)$; $P=0.05$).

Table 12:- Mean Percentage of Unplanned Returns Across the Age Groups and Task Contexts.

Picture Sequencing Task								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Context
	Unplanned Returning Acts	S.D.	Unplanned Returning Acts	S.D.	Unplanned Returning Acts	S.D.	Unplanned Returning Acts	S.D.
Percentage of Mean Total Acts	3% a	5.0	4% a	5.6	14% b	11	7%	8.8
Mean Total Acts	22	7.7	33	9.9	60	27	38	23
N=	10		7		8		25	
Construction Task								
Percentage of Mean Total Acts	3%	2.6	4%	2.3	4%	2.5	4%	2.5
Mean Total Acts	74	14	110	57	188	26	117	59
N=	12		8		8		28	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	3% a	2.7	4% a	2.7	9% b	5.2		
Mean Total Acts	98	18	148	63	248	41		
N=	9		7		8			

Moreover, focusing in on the age patterns within each context, an age by context interaction is apparent. However, a MANOVA only found this to approach significance ($P=0.07$). Indeed, as is evident in table 12 and graph 10, there were no differences between the age groups in the levels of unplanned returns in the construction task. However, in the picture sequencing task the 9 year olds produced far more unplanned returns than the other children ($F=5.4$; $D.F.=(2,22)$; $P<0.05$). The 4 and 6 year olds produced similar levels in both task contexts. It is clear from the table and graph 10 that the age, context and interaction effects are due to the phenomenon of 'checking over' that was evident in the dialogues of the 9 year olds. This 'checking' at the end of the task may not have occurred during the construction task for two main reasons. Firstly because the completion of the construction task was reliant on each stage being correct and therefore required consistent evaluations during the task. Indeed, this seemed to be the case as was noted earlier, 2.3.3.2.2.1, as there were higher levels of evaluations, confirmation and reconfirmation requests in the construction task. And secondly, because once the dyad had made the objects the 'informer' could check with one look whether the object was exactly the same as in the photograph rather than having to check the relation of each piece to every other piece.

Graph 10: Mean Percentages of Unplanned Returns of the Mean Total Acts Across Age and Context.



In sum, despite a little topic planning in the older children's dialogues, the majority of conversations consisted of sequences of topics in series. Indeed topic hierarchicalisation could not be inferred as planned returns were rarely made. Unplanned returns, however, were more frequent and were found to be used for a number of functions. One function in particular that differentiated the older children from the younger children was the phenomenon of 'checking-over' at the end of the picture sequencing task. However, this pattern was not evident in the construction task.

2.3.4 Summary

Overall the results imply a complex interplay between the factors of age and context on topic management performance. The general picture concerning the effects of context is that despite higher numbers of communicative acts in the construction task, the picture sequencing task involved proportionally more verbal acts. In contrast, the construction task involved far more manipulative activity expressed in the form of minimal responses and in particular action responses to directives. In addition, in the construction task, a higher proportion of topics were maintained and for longer than in the picture sequencing task. The overall patterns presented by the different age groups on this task were remarkably similar.

In contrast, the picture sequencing task elicited different topic management patterns from the different aged children. In this task, the 4 year olds produced short but frequent topic sequences consisting of high levels of minimal responding in the form of self repetition. When these children added to the topic it was in the form of

'new' utterances. In contrast, the older children, but primarily the 9 year olds, produced longer topic sequences made up of agreements and adding of information. These older children also produced large numbers of 'new' utterances but also high levels of suggestions and justifications. The main difference between the different aged dyads was that the older children discussed the order of the picture cards in relation to each other, whereas the younger children only reported the content of each individual card. Further, as well as a complete lack of shading from all of the children generally, the older children were evidently more concerned with co-operating and planning their conversations than the 4 year olds. Finally, as was evident on the measure of unplanned returns, the 9 year olds participated in 'checking-over' sequences to make sure they had put the picture cards in the correct sequence.

2.4 DISCUSSION

2.4.1 Overview

This section will consist of three sub sections. The first will look at the results found in the present study in terms of previous research and an attempt will be made to assess what was going on in the conversations. The second section will look at the research in terms of general theories of child development. The final section will consist of a general discussion and interpretation of the overall findings.

2.4.2 Topic Management Skills

The present study looked at the effects of age and task context on children's topic management abilities. Overall the results indicated that both task context and age are vital factors in determining the topic management patterns produced by children. The patterns presented by the different aged children can be interpreted either in terms of different levels of understandings of, or an ability/ willingness to respond to, the requirements of the task contexts. Further, it will be argued that it is adjustments in the ability and ways of maintaining topics that explains many of the age differences concerning topic initiation and maintenance. Moreover, that as age increases the ability to plan, organise and negotiate topics of conversation also increases along with an ability to make increasingly complex contributions to the topic.

Firstly, the results revealed clear differences in the patterns of topic management expressed across the two contexts. This is in concordance with the claims made by a number of researchers (Ervin-Tripp, 1984; Pellegrini, 1982;

Schober-Peterson and Johnson, 1989; Sigman, 1983; Wanska and Bedrosian, 1986; Wanska et al. 1986). It was further evident that age differences on the measures were dependent on the context for their expression, as suggested by a number of researchers (Ervin-Tripp, 1984; Schober-Peterson and Johnson, 1989). However, the present findings go further by giving some insights into the way context may affect the topic management performances presented by different aged children.

2.4.2.1 Topic Initiation and Change

The children had few problems achieving each of Keenan and Schieffelin's (1976) stages of topic initiation, as outlined in section 1.4.2.1, these being carried out over one or more communicative acts. Indeed, the children were attempting to design their topic initiations for a partner to understand, a finding which stands in contrast to Piaget's (1959) claim that children around the age of 4 to 4;6 have difficulties initiating topics of conversation. However, there were limitations to this ability. In the construction task the 4 year olds, on occasion, had difficulties in explaining how the tubes should fit together. However, this difficulty may reflect the complexity of the task rather than an inability to take their partner's view. This latter interpretation is supported by the fact that the children were able to take their partner's perceptual view when it came to putting the coloured slates on to the structure.

The high levels of topic initiating acts, constituting just less than one third to half of the total acts, is consistent with the research from Brinton and Fujiki (1984) and Dorval and Eckerman (1984) who also found high levels of topic initiation and change. However, it seems that in the present study topics were initiated more frequently than has been reported previously. Moreover, the lack of age differences in the proportions of topics initiated during the construction task is also consistent with the findings from Brinton and Fujiki (1984). However, in contrast is the result that in the picture sequencing task there were age differences between the 4 and 9 year olds (although Brinton and Fujiki (1984) studied 5 and 9 year olds), on this measure. The vastly inflated levels of topic initiations among the 4 year olds suggests an unwillingness or inability, on their part, to maintain topics.

These high levels of topic initiation and change might be interpreted, as it has been in the past, as evidence of a lack of co-operation between children (Brinton and Fujiki, 1984; Dorval and Eckerman, 1984; Sirois and Dorval, 1988). Indeed, the high levels of topic change in previous research were interpreted as attempts on the part of individual children to maintain control of the conversational floor (Brinton and Fujiki,

1984; Sirois and Dorval, 1988). However, this interpretation does not hold for the present study because if this had been the case, the children would have had difficulties completing the task. In addition, it was clear that, on the whole, topics were only changed once a piece/ picture had been put in a 'correct' position. That is, topic changes were not abrupt, unexpected or necessarily unco-operative. Indeed, there were no instances of 'topic fighting', as outlined in 1.4.2.6. Topics only became changed when the purpose for engaging in the topic in the first place was satisfied. In addition, it was evident that the 9 and, to some extent, the 6 year olds were explicitly co-operating in the closings of topics, as has been observed in the conversations of adults (Goodenough and Weiner, 1977; Maynard, 1980). This increase in the co-operative activity between children was also observed by Sirois and Dorval (1988), but only from the age of 10-11 years. The present findings therefore suggest that when children have a convergent goal, topic changes may not be unco-operative. Furthermore, that with age, children become increasingly aware of the need to be co-operative when making topic changes. This behaviour being particularly required when there has been some controversy or when an overall dialogue is being terminated.

2.4.2.2 Topic Maintenance

The findings concerning the measure of the proportions of topics maintained are generally similar to the findings of Brinton and Fujiki (1984) in that the majority of topics introduced were maintained. Further, despite slight age trends, there were no statistical differences between the different aged children. However, the proportions of topics maintained varied according to task context. It was evident that a higher proportion of topics were maintained in the construction task than in the picture sequencing task. This variance between the two tasks seems to be due to differences between the contexts in terms of the distribution of knowledge between the participants, as determined by the presence or absence of interactive rules. In the construction task, the simple set-up that the builder was reliant on the informer, and vice versa, in order to complete the task goal and the purpose for engaging in each topic, seems to have led to high levels of topic maintenance as well as a certain topic length. On the other hand, in the picture sequencing task both children in the dyad had access to all the pictures and the children were not reliant on each other in order to reach the task goal. Thus in this task it was up to the children to maintain topics if they felt this was required.

In further concordance with the Brinton and Fujiki study was that the topics produced by the different aged children were particularly short. Indeed, in the present study topics were maintained for even fewer utterances than in the Brinton and Fujiki study. These findings might be taken to indicate that the difficulties children have maintaining topics for very long is a major shortcoming (Brinton and Fujiki, 1984). It has been suggested that children's short topic sequences stem from problems with short attention spans, high distractibility and an inability to identify the topic (Keenan and Schieffelin, 1976). However, it is evident that these interpretations do not fully apply in the present study. There are a number of reasons for this.

Firstly, it was evident that the children were able to maintain topics long enough to satisfy the purpose for engaging in the conversational topic in the first place. This was particularly apparent in the conversations during the construction task. Once the informant had told the 'builder' where a specific piece went and the 'builder' had put the piece in the position indicated, the next purpose was dealt with. All the children in the present study had few problems indicating where each piece went and achieved each local purpose and overall task goal. This point can also be made concerning the picture sequencing task. That is, the children were able to put the pictures into a sequence, as instructed.

A second point is that, within the construction task at least, effective and efficient communication would not involve extended topic sequences. Indeed, adults doing this task would also be expected to produce short exchanges on the satisfaction of each topic purpose. The main point here is that topic management skills should not be regarded as simply being able to maintain topics for extended periods, which previous literature has assumed (Brinton and Fujiki 1984; Schober-Peterson and Johnson, 1989). Rather, it should involve efficiency and clear communication in order to satisfy a purpose, two central concerns in the area of pragmatics. These features are emphasised by Grice (1975) in the maxims of quantity and manner and by Sperber and Wilson (1986) in their principles of minimal effort and relevance. That is, conversationalists should be as informative and clear as required with as minimal effort as possible.

It is evident that if the children had had problems with attention and distractibility, as suggested by Keenan and Schieffelin (1976), the topic sequences produced would have been chaotic with some topics being based on the task and others concerned with other themes. Clearly, even the younger children did not have these problems. However in contrast to the present study, Keenan and Schieffelin's

(1976) claims were based on non task based conversations. In the present study, the existence of a common goal may have overcome this problem. It appears that the present findings have more in common with those reported by Schober-Peterson and Johnson (1989) who observed that pre-schoolers in natural play situations sometimes did have lengthy conversations around one topic domain or play activity.

Despite the evidence of short topic sequences across all age groups, it was apparent in the picture sequencing task that the 4 year olds maintained topics for fewer utterances than the 9 year olds. In interpreting this finding it seems sensible to suggest that the picture sequencing task is not as constrained to the same extent, or in the same way, as the construction task. This is evident when we consider that within the picture sequencing task the children were not mutually reliant to succeed at the task. Indeed, it is conceivable that one child could do the task alone. It was therefore up to the children to organise the conversational interaction themselves. It may have been the case that the children did not feel that the longer interactions typical among the older children was required to do the task. We will return to this point in section 2.4.4.

Another interesting finding was that the construction task elicited a higher proportion of minimal responses than the picture sequencing task. This was evidently due, as noted in the results section, to the physical and concrete nature of the former task. This interpretation is supported by the finding that in the construction task, the largest proportion of minimal responses consisted of action responses. In contrast the picture sequencing task was more of a verbal task in that it involved the manipulation of ideas. Indeed, in this context the majority of minimal responses took the form of agreements and repetitions.

With respect to the types of minimal responses there were a number of findings that are consistent with prior research. It was notable generally, but particularly in the picture sequencing task, that the levels of repetitions decreased between the 4 year olds and the older children. This finding is congruent with prior research suggesting that young children produce a lot of repetitions (Brinton and Fujiki, 1984; Dorval and Eckerman, 1984; Eisenberg and Garvey, 1981; Genishi and Di Paolo, 1982; Keenan, 1974; Keenan and Klein, 1975). In the past, repetition as used by 3 to 4 year olds, has been considered to be a form of acknowledgement, that is that the young children respond relevantly to the prior utterance (Keenan, 1974; Keenan and Klein, 1975). However, the problem with the usage of repetition in this

way is that, although it acknowledges the repeated utterance, it does not necessarily communicate to the partner that this utterance has been understood. On the other hand, back channel responding in the form of agreements is used to communicate comprehension or at least some sense of active processing. Thus it could be argued that as children get older they begin to use agreement rather than repetition because it is more informative. However, in the present study, it was noted qualitatively that the majority of repetition was self repetition. There are at least three possible functions for this self repetition. Firstly, it may have been used to keep control of the conversational floor, that is to dominate the activity and talk. The second function may be that repetition was used to gain and maintain a sense of joint attention focus. Indeed, a number of other techniques were used to do this in the picture sequencing task, including asking the other child or stating with a tag question, what was happening in the picture. A third possible function of repetition, is that it was used to ensure that the child's partner understood what was being said.

In contrast to the high levels of repetition produced by the younger children, the 6 and 9 year olds actively communicated a sense of mutual attention and understanding through the use of agreements. Indeed, in the picture sequencing task, as the use of agreements increased with age the use of repetitions decreased. This higher level of agreement use by the 6 and 9 year olds is consistent with the finding from Edmonds and Haynes (1988) who also found a relatively high proportion of back channel responding in 5;11 to 7;11 year olds.

The increase with age in the adding of information is, tentatively*, in accordance with the findings from Brinton and Fujiki (1984) who found that the presentation of novel information increased with age. However, this effect was only the case for the picture sequencing task, the levels of adding in the construction task remaining similar across the age groups. This suggests that in the former task context, the younger children were less willing or unable to maintain topics by adding information. Indeed, where the older children added information to the topic, the 4 year olds initiated a new topic.

* This is only tentative because in the Brinton and Fujiki (1984) study, novel information referred to everything except repetitions. Therefore, it is unclear whether the reported difference between the age groups on this measure, was due to differing amounts of adding information or other types of utterances, as measured in the present study.

Looking more closely at the types of adding utterances, further age and context trends were evident. Of particular interest were the findings that, whereas the levels of 'new' decreased with age, the levels of evaluations and confirmation requests increased with age in the construction task and the levels of suggestion and justification increased with age in the picture sequencing task. These patterns indicate that the older children have a variety of utterance types at their disposal and were more capable, or willing to engage in other types of communicative activity other than informing, requesting and directing. The findings that the older children produced far more suggestions and justifications than the 4 year olds, is of major interest. These findings are not fully consistent with previous literature that has examined children's disputes (Dunn, 1988; Eisenberg and Garvey, 1981; Genishi and Di Paolo, 1982; Phinney, 1986). These researchers found that reasons and justifications are regularly produced by preschoolers. In contrast, in the present study, justifications although occurring within the dialogues, were rare among the conversations of the 4 year olds. This was to the extent that only one justification was produced during the 4 year olds' dialogues centred on the picture sequencing task. The present findings are more supportive of the Dorval and Gundy (1990) study, which found that justifications were rarely used by second graders (7-8 year olds) but were increasingly used as age increased. However, in contrast to the dispute literature, although the picture sequencing task happened to elicit a few disputes, on the whole it was free of conflict. Indeed, the older children used justification, not to engage in disputes but rather in collaborative discussion. We will return to this point in the general discussion, section 2.4.4.

2.4.2.3 Topic Shading

One of the aims of the present study was to examine the phenomenon of shading. However, throughout all the conversations not one communicative act functioned to shade the discourse topic. This is completely at odds with the findings from previous research. That is, Dorval and Eckerman (1984) found that shading occurred very frequently in the conversations of 7 year olds, and Brinton and Fujiki (1984) and Edmonds and Haynes (1988) also reported some evidence of shading in children's conversations, although not as frequently as in adult dialogue. There are two possible reasons for the lack of shading in the present study. Firstly it may have been due to differences in the definition of shading, see section 2.2.2.2.1. Alternatively, it may have arisen from the existence of shared goals. Indeed, this latter interpretation is consistent with the claim from Goodenough and Weiner (1977) that in contexts where conversation has some immediate purpose, shading is an inefficient

form of topic change. This suggests that even very young children are aware that shading is an inappropriate form of topic change in certain task contexts. However, this may not be the case in all task contexts and therefore further research is required in this area. For example, in more informal settings where there is no urgency for task completion, shading may occur more frequently. The present findings suggest that shading may be a phenomenon only appearing in informal settings and casual conversations, but further research is required to confirm this. In support of this point is the observation that during the rapport building stage there were frequent examples of topic shading produced by the children.

2.4.2.4 Topic hierarchicalisation and Returns

A number of patterns were apparent in terms of topic returns and topic hierarchicalisation. Firstly with respect to topic hierarchicalisation the data were generally in concordance with previous observations from Hobbs (1990), Reichman (1990) and Sirois and Dorval (1988) that children do not organise their discourse topics hierarchically. However, it was apparent in the construction task that the older children were planning and organising their discourse. However, this planning did not constitute topic hierarchicalisation as although a plan for a return was set up, the return itself was never made. However, the fact that there was little topic hierarchicalisation in the construction task, particularly in the older children's dialogues, was unexpected. This may have been due to these older children de-constructing the part built object, and re-building it from scratch, encouraging a serial sequence of topics. Further, as the task involved very similar pieces, it was difficult to identify whether some communicative acts were returns or the introduction of new topics. This was probably a problem for the children as well. In a task where the pieces are easily differentiated and have set positions topic hierarchicalisation may occur more frequently.

One feature that is indicative of hierarchicalised topic sequences is in the use of justifications. According to Schiffrin (1987), as noted in 1.4.2.5, justifications can be considered subordinate to the topic and therefore subtopics. However, justifications can only be considered to be subtopics if they become an actual topic for conversation, that is they become maintained in some way. Otherwise, they should only be considered as 'inserts' or 'asides'. In the present study, the fact that the older children were able to produce justifications suggests that they are beginning to acquire the rudimentary skills required for the hierarchical organisation of topic

sequences. It is evident however, that further research is required concerning children's developing ability to engage in the hierarchicalisation of discourse.

In terms of unplanned returns generally, the present findings are contrary to those found in previous research by Sirois and Dorval (1988) and Brinton and Fujiki (1984) who suggested that returns were used to control the conversational floor, as noted in section 2.4.2.1. In the present study, returns were used rarely and when they were used it was to either regress back to a prior topic after an interruption, error or subtopic, when one participant felt the topic was unfinished or when the participants were checking over to see if what they had done was correct.

Further, both Sirois and Dorval (1988) and Brinton and Fujiki (1984) found that the use of returns decreased as age increased. Again this is the opposite to that found in the present study, returns being used far more regularly by the 9 year olds than by the 4 year olds. This was particularly the case in the picture sequencing task where the 9 year olds used returns to check over the sequences of pictures. In contrast, in the construction task the children were required to evaluate during the task and this was reflected in the data concerning the types of adding acts. The lack of concordance between the present and previous research may be attributed to differences in the contexts studied and in the functions given to returns.

2.4.3 Theoretical Implications

This section will consider the findings in terms of the theories from Piaget (1959), outlined in section 1.4.1.1, and Vygotsky (1962; 1978), outlined in section 1.4.1.2.

2.4.3.1 Piagetian Theory

The results for the present study, are partly inconsistent with Piaget's (1959) view of the developing child's ability to converse with peers. Firstly, in contrast to Piaget's (1959) claims, 4 year old children were able to engage and co-operate in socialised speech, being able to address a topic initiated by another child. This was particularly apparent in the construction task, although half of the topics were maintained in the picture sequencing task. However, in the latter task, the extent of this was limited in that topic maintenance usually involved repetition with limited signs of adding information. In further contrast to Piaget's stages of socialised speech development, children of 4 and 6 years did not produce topics that focused on themselves, and few attempts were made to change or shade the topic so that they

could. Indeed, the 4 year olds were able to co-ordinate and co-operate on a task activity, something Piaget suggested would not be possible until between at least 5 and 7 years.

Consistent with Piaget's ideas was that in the picture sequencing task, the 4 year olds did not partake in discussion-like discourse, involving the use of suggestions and justifications, as the 9 and, to some extent, the 6 year olds had done. Indeed, Piaget suggested that these forms do not appear until abstract thought begins to develop, around the age of 7 to 7;6. However, in these interactions the 4 year olds were not even engaging in simple disputes or expressing much disagreement with each other and for this reason little justification would be expected, even if it was an ability they had.

The patterns for the 6 and 9 year olds were more consistent with Piaget's claims. Both the 6 and 9 year olds, like the 4 year olds, demonstrated an ability to co-operate in the construction task. However, unlike the 4 year olds, both the 6 and 9 year olds were also able to co-operate and, to some extent, collaborate in discussion during the picture sequencing task. Indeed, the 9 year olds were frequently observed to express agreement, make suggestions and regularly produced justifications to explain their reasoning. Further, the dialogues for the 6 year olds were quite similar to those of both the 4 and 9 year olds. That is, they showed some repetition but also agreement, regularly added 'new' information to the topic, made suggestions and on occasions produced justifications. Clearly these patterns presented by the 6 and 9 year old children are consistent with Piaget's claims. That is the 9 year olds displayed evidence of collaboration in abstract thought as evidenced by their high use of justifications, and the 6 year olds showed evidence of a developing ability to engage in abstract thought as indicated by the production of some collaborative discussion.

2.4.3.2 Vygotskian Theory

The present findings are also, to some extent, consistent with Vygotsky's view of the developing child. However, it is harder to make comparisons simply because Vygotskian theory says very little about the development of dialogue or topic related talk. However, it is notable that although the performances of the 4 year olds were inconsistent with Piaget's (1959) model of dialogue development, they are consistent with the gradual process of development as well as the claim that children are sociocentric, suggested by Vygotsky (1962; 1978). Indeed, Vygotsky further

suggested that children are increasingly able to plan and organise their own activity as well as that of others and are aware of social norms involved in taking part in social interaction. There were some indications of these elements in the children's interactions. In contrast to the construction task, the picture sequencing task did not require the children to interact to complete the task. It was clear that whereas the older children organised and co-ordinated themselves as well as their partners to engage in collaborative discussion, the 4 year olds did not engage in discussion-like dialogue. However, the 4 year olds showed attempts to organise themselves as well as their partners to engage in interaction and joint activity. Moreover, there was also some sense of an increasing ability to plan activity, as was evidenced by the 9 year olds during the construction task. Finally, the evidence of the explicit co-operation showed by the older children during the tasks generally but particularly in the closings of topics suggests that these children have an increased understanding of the norms involved and behaviours required when engaging in dialogue.

2.4.4 General Discussion

Overall the results imply a complex interplay between the factors of age and context on topic management performance. It is clear that the social and physical features of the task contexts functioned to constrain the patterns of topic management that were displayed. However, performance of these patterns depended somewhat on the age of the children.

In the construction task, where the children were mutually reliant, had a common goal, and where one child was required to communicate the available information to his/ her partner, similar topic management patterns were evident across the different aged children. Further, despite these children receiving increasingly complex tasks, similar amounts of information were required for consideration in order to satisfy the purpose for engaging in each topic. That is, although complexity produced increases in the numbers of communicative acts and the numbers of topics, the length and characteristics of topics remained much the same.

In contrast, in the picture sequencing task, although the children had a common goal, they were not mutually reliant and it was up to them as to how and whether, to organise and regulate their conversational interactions. In addition, to complete the task, the children were required to use their reasoning to decide the ordering of the pictures. It was evident that whereas the 9 year olds did this at a social level, engaging in collaborative discussion, the 4 year olds produced short repetitive

topic sequences where one child would decide the order of the pictures. That is the decision would not be made at the social level. The 6 year olds exhibited a mixture of the two patterns.

There are a number of possible interpretations of these differences between the 4 and 9 year olds in the picture sequencing task. Firstly it could be suggested that younger children are **unable**, because they do not have the socio-cognitive abilities, to engage in the discussion-like discourse required by the task.

This interpretation is in concordance with Piaget's model of the child's increasing ability to engage in dialogue. Indeed, Piaget would suggest that the 4 year olds did not produce discussion because they were still dominated by egocentric, rather than abstract, thought. Piaget felt that as children under the age of 7 were still socially and cognitively egocentric, the provision of logical relations involved in justifying, despite being in the child's mind, are not communicated.

On the other hand Vygotsky might have contended that the 4 year olds would be unable to use discussion skills because these skills are not fully internalised at this stage and therefore not a tool for thought.

Out of the two possible interpretations from the Piagetian and a Vygotskian perspectives, the former argument is not consistent with the previous research literature, outlined earlier, that preschoolers are able to justify during disputes (Dunn, 1988; Eisenberg and Garvey, 1981; Genishi and Di Paolo, 1982; Phinney, 1986). On the other hand the latter argument, from Vygotsky, might suggest that justifications and the like would initially be used to engage in argument before being used to engage in goal directed thinking and problem solving. That is, initially these skills will be used and developed in one particular social context, as the children gain control and internalise these skills, they become a tool for thought and thus available for use in other contexts and other functions.

However, an alternative and simpler interpretation for the age differences in the picture sequencing task, is that the 4 year old children may have been **unwilling** to engage in discussion-like discourse. There are two possible explanations that would indicate this. The first is that the 4 year olds felt that discussion was not necessary to succeed at the task, as after all success was conceivable with minimal interaction. The second possible explanation is that the 4 year old children took the picture sequencing

task to mean and involve something completely different than did the older children. While this is certainly a possibility not least because there was no single 'correct' answer to the task but rather a variety of possibilities which could be made up of relatively interchangeable orderings of chains of pictures, this does not seem to be the case for two reasons: firstly, because many of the 4 year olds would narrate the story either during the placing of the pictures in a sequence or afterwards, and secondly because it was apparent that the children were making the decisions individually, without the help of their partner, concerning which card to place in the next position.

Evidently before full conclusions can be drawn concerning the present findings, there is a need for further research to clarify the issue of whether young children have the socio-cognitive skills required for engaging in discussion. It is important that in following up these findings, as the next two studies in this research attempt to do, a more concrete task, that all the children can do, is utilised, as well as a task that requires the use of discussion-like discourse for its completion.

2.4.4.1 Summary

In sum, the present study looked at the effects of task context and age on topic management performance.

As was expected, topic management performance did vary according to the task context. Indeed, it was evident that the patterns were constrained by a number of features of the task. It is important that further research concerned with topic management should consider the physical and social constraints of tasks when describing individuals' abilities.

The absence of topic shading from the interactions implies that as the children had a shared goal, shading may have been considered an inappropriate form of topic change. This interpretation requires confirmation from further research.

Despite some evidence of planning among the conversations of the older dyads, topic hierarchicalisation was particularly rare. However, it was noted that the use of justification among the older children's conversations indicates a rudimentary ability to hierarchicalise topic sequences.

The measures of topic initiation and maintenance were found to vary greatly with age and context. It was indicated that it was the simplicity and constraints of the

construction task along with the presence of interactive rules that functioned to produce similar patterns of topic management across the different aged children. In contrast, it was unclear as to why there were age differences in the ability to maintain topics and engage in discussion-like dialogue in the picture sequencing task. Two possible interpretations were identified that might explain this result. It was suggested that young children are either unable to engage in discussion-like dialogue because they lack the socio-cognitive skills required to do this, or they are just unwilling to, when not required. Further research is required to distinguish between these two possibilities and therefore provide a fuller explanation of the present findings.

CHAPTER 3: STUDY 2:

The Effects of a Jigsaw and an Information Gap Task on Children's Topic Management and Discussion Skills.

Overview

This chapter will report the methodology, which was very similar to that of study one, and the findings for the second study in this research. The aim of this second study was to determine whether 4 year olds are unable or just unwilling to engage in collaborative discussion. After brief introduction and method sections, the results will be reported and discussed.

3.1 INTRODUCTION

The second study aimed to address and distinguish between the two possible interpretations given to account for the findings of study one. It was argued that the lack of discussion like discourse exhibited in the picture sequencing task by the 4 year olds may have been due either to an inability or alternatively an unwillingness on the part of these children to engage in this genre of dialogue.

It was suggested that the ability to engage in collaborative discussion required the use of certain socio-cognitive skills. Before moving on to outline the present research the following will, firstly, briefly consider what these socio-cognitive skills might be and secondly consider whether 4 year olds have the capability to engage in discussion.

In the preceding chapter use was made of the terms 'co-ordination', 'co-operation' and 'collaboration' to characterise some of the differences between the interactions of the different aged children. These terms are used regularly in the literature to characterise different social and cognitive patterns of interaction (Damon and Phelps, 1989; Forman and Cazden, 1985; Garton, 1992; Parten, 1932; Piaget, 1959). However, these terms are used with slightly different meanings depending on the theoretical approach taken. As in the present study the meaning behind these terms is slightly different it is useful to characterise them, particularly as this will provide some idea of the socio-cognitive skills that they refer to. The terms co-ordination, co-operation and collaboration refer to different aspects of interaction which are of increasing complexity and specificity, collaboration involving the skills of co-operation which involves the skills of co-ordination.

The term 'co-ordination' refers to an ability to adjust one's own behaviour, including communication, in order to interact with another. It involves many of the basic elements of engaging in conversation including the co-ordinating of turns at talk and topic maintenance. There are varying degrees of co-ordination which will not be explored here but suffice to say that 'topic fights', as outlined in section 1.4.2.6, imply a lack of co-ordination whereas the taking of turns to speak on different topics with the same overall goal, can be considered to involve some co-ordination. The notions of co-operation and collaboration require increasingly complex forms of co-ordination.

Co-operation can be considered as involving sensitivity to the needs of other speakers/ listeners, as well as the requirements of the joint goal, if present. The term generally incorporates the following behaviours:- explicit provision of support and feedback, the giving and sharing of information, guidance, clarification and so on (Damon and Phelps, 1989; Garton, 1992). Although, in the past, co-operation has implied a sense of equality between the participants (Damon and Phelps, 1989), in the present study the term is more generally applied and can refer to unequal relationships with regard to differences in knowledge or status.

Finally the term 'collaboration' refers to interactants working jointly as a unit on a problem, but is more specific in meaning than the Vygotskian notion of collaboration. The ability to collaborate involves interactants jointly pooling ideas, reasoning, perspective taking, and mutually weighing up these ideas and is generally characterisable in terms of the notion of discussion to solve a problem. More explicitly, the terms 'collaborative discussion' or 'discussion-like dialogue', as used in this thesis, are characterisable as a form of dialogue used when speakers are faced with a problem and attempt to devise and agree on a solution jointly. This involves a process of generating suggestions, hypotheses or explanations which may then be either agreed upon or mutually evaluated by both speakers through the use of justifications, counter arguments, conditionals and so on. This notion does not include 'argument' because it involves a conflict of interests rather than common interests.

Central to the differing levels of sophistication implied by the terms of co-ordination, co-operation and collaboration are the notions of decentration (Piaget, 1959) and increased knowledge and use of the social conventions involved when taking part in conversation (Vygotsky, 1978).

As was noted in section 2.4.4 of the previous chapter, some of the research literature focusing on children's disputes suggests that children are able to use justifications and counter arguments from an early age (Dunn, 1988; Eisenberg and Garvey, 1981; Genishi and Di Paulo, 1982). It was also noted that this literature favours the interpretation that young children are unwilling to engage in discussion like dialogue when not required to complete a task. However, the findings from the dispute literature does not refute the interpretation that 4 year olds are unable to engage in collaborative discussion. Indeed, as implied earlier in this section, collaborative discussion involves more than the presentation of an argument for or against a state of affairs, rather it involves a variety of other socio-cognitive skills. However, more recent research concerned with young children's causal talk suggests that children initially use justifications and counter arguments in contexts where there are conflicts of self interest (Dunn, 1988; Dunn and Brown, 1993). Further, between the ages of 3 and 4, children begin to use causal talk in order to reflect (Dunn and Brown, 1993). This ability to reflect independently of self interest represents the rudiments of engaging in discussion-like dialogue, and thus it is quite possible that 4 year olds begin to engage in collaborative discussion from this early age. It is evident, however, that this form of discourse does not become regularly used in dialogues until late childhood (Dorval and Gundy, 1990).

In the present study, to distinguish between the two possible explanations for the results of the previous study, a task was needed that required the use of discussion to achieve task completion. In order to design such a task, reference was made to a recent paper from Pica, Kanagy and Falodun (1993), which outlines a typology of tasks in terms of their interactive rules, goals and outcomes. The authors distinguish between a number of types of task, most notably jigsaw, information gap, decision making and opinion exchange, which have different interactive rule relationships and types of goals (convergent or non-convergent). Pica and colleagues indicate when the knowledge and ability to do the task is not split between the participants and then, even if there is a convergence in their goals, interaction is not necessary to succeed at the task. Tasks typical of this format are decision making tasks and opinion exchange tasks. As the children during the picture sequencing task of the previous study had access to all the pictures, this task was therefore typical of a decision making task. In contrast to these types of task, Pica and colleagues note that when the interactants' have a convergent goal and the knowledge and ability to do the task is split between them, then interaction is required in order to complete the task. Two types of task are

presented which hold these characteristics. The first is termed an information gap task, where one participant holds all the information and is required to convey this to another participant for task completion. Tasks based on the 'Glucksberg-Krauss' paradigm, including the construction task of the previous study, are typical of information gap tasks. Pica et al. (1993) indicate that although interaction is guaranteed in this type of task, this interaction is one sided in that one participant informs while the other gives feedback. Thus there is a unidirectional flow of information between participants. The second task presented, termed a jigsaw task, is similar to information gap tasks but as participants hold only half of the information required for task completion, this information must be pooled and shared. This produces a dual directional flow of information between speakers. This implies that jigsaw tasks require a certain amount of discussion-like dialogue for task completion. For this reason, the jigsaw task format was utilised in the present study.

For comparison, a second task was employed which was almost identical to the jigsaw task, except that it took the form of an information gap task. Any variance between the tasks in the topic management patterns produced could be attributed to the differing interactive rules. The tasks used involved the children constructing pictures of a seaside situation (the information gap task) and of a house and garden (the jigsaw task), from predrawn pieces.

Completion of both tasks would indicate that young children are unwilling to engage in discussion-like dialogue when not required to do so. However, a failure to complete the jigsaw task along with completion of the information gap task would signify an inability to engage in discussion when required.

Despite a primary interest in distinguishing between the two explanations concerning children's ability to engage in discussion, an interest remained in the effects of different task contexts on topic maintenance, shading, hierarchicalisation as well as topic management generally. In order to encourage topic maintenance particularly by way of adding, the tasks were designed so that the satisfaction of the purpose for engaging in a topic required the consideration of a number of variables. In addition, through the provision of topics and themes that the children could relate to personally, a further attempt was made to elicit topic shading. This approach was also taken in the picture sequencing task of the previous study, although with little success. However, in the picture cards used, although interesting to the children, the main focus was on the boy involved in a number of activities at the seaside. In contrast, in

the present study, it was felt that by providing interesting objects, possibly similar to those owned by the children, shading might be encouraged. Finally, a further attempt was made to elicit topic hierarchicalisation by providing a task structure that took a hierarchical format.

3.2 METHOD

3.2.1 Data Collection

3.2.1.1 Design

The design for this study was almost identical to that of the first study outlined in the previous chapter. As in the previous study, observations were made of children in same aged and same gender dyads interacting in two slightly different task contexts. Each dyad consisted of children of 4, 6 and 9 years of age. The design therefore consisted of a between variable of age and a within variable of task context. The task contexts were identical to each other in that they both required children to copy a picture by placing predrawn pieces onto a background. However, they differed in terms of the distribution of knowledge between the children, required to do the tasks. The order in which the dyads worked on the tasks was counterbalanced.

3.2.1.2 Subjects

A sample of children from the three age groups was gathered from six pre-schools and three primary schools in the Glasgow area. As in the previous study, permission was sought from the relevant authorities, including the children themselves, to allow the children to take part. The children were from mixed socio-economic, cultural and religious backgrounds.

The resulting samples consisted of 86 children who were divided into 3 age groups of 4 (mean = 4;0: S.D = 0;5), 6 (mean = 6;7: S.D = 0;5) and 9 (mean = 8;10: S.D = 0;3) year olds. Children who were familiar with each other were paired in to same sex and age dyads, resulting in 14, 16 and 13 dyads in each age group respectively. There were equal numbers of male and female dyads in the two younger groups. However, in the oldest age group there were only four male dyads. Moreover, for two of the 4 year old dyads the interactions were not recorded in one of the contexts. Thus, for the 4 year olds, comparisons regardless of and between contexts were based on the data from 12 dyads only. For comparisons respective of context 13 dyads were used.

3.2.1.3 Materials

Once again a 'camcorder' with an external microphone was used to record the interactions between the children. The camera was used for the same reasons as in the previous study, essentially to allow a full analysis of the conversational interactions within each task context. As in the previous study, most of the children became so engrossed in the tasks that they failed to notice the camera or the researcher.

The children were given two almost identical tasks, one which took the form of an information gap task, where one child had to communicate all the information required to complete the task to the other child. The other took the form of a jigsaw task, as outlined earlier, where both children had different portions of the knowledge required to do the task.

3.2.1.3.1 The Information Gap Task

The information gap task consisted of an A4 sized picture of a seaside scene, a bag of plastic cut out pieces which corresponded to most of the features on the A4 scene and an A3 sized background picture on which to put the pieces. This A3 background had some of the features of the A4 scene already drawn on such as hills, fences and a shop. The plastic pieces were the exact same shape as, although slightly larger than, their equivalents on the A4 scene. The A4 picture was given to one child and the bag of pieces to the other. (The A4 picture and the A3 background given to the children are shown in Appendix 2).

3.2.1.3.2 The Jigsaw Task

The jigsaw task was very similar to the information gap task in that it required children to copy a scene by putting plastic cut out pieces on to an A3 background. The only difference was that each child had a version of the A4 scene of a house and a garden. Each version, drawn from the same view point, had some overlaps and some differences which when recreated would produce **one** complete picture (See Appendix 2 for copies of the scenes and A3 background and see 'Pilot Study' for a vital alteration made to this task). The other difference to the information gap task was that each child had a bag of pieces of which half corresponded to the items on the child's own scene, whilst the remaining pieces corresponded to the other child's scene.

A number of adjustments were made to increase the complexity of both tasks. Firstly, a few extra pieces were introduced that either did not have an equivalent in the A4 scene, were identical but the wrong colour, or had some feature missing which

made them incorrect. The number of these extra items was increased to make the task slightly harder for the older aged children. Secondly, a number of the objects in the scene were split up into component pieces, for example, the ice cream van from the information gap task was split into a van piece, two individual wheels, an ice cream man and an ice cream logo sign. This functioned to make the task hierarchical in structure, that is the children were required to put the ice cream van on the A3 background before the wheels, ice cream logo, the ice cream man and so on. Finally, in order to make the task slightly harder for the older children, a few of the items that were already on the A3 background for the 4 year old children were removed and made into plastic pieces.

3.2.1.4 Pilot Study

A pilot study was carried out with a small sample of 3 to 4 year olds, as this was the age group expected to have difficulties with the tasks. As it turned out, the children did not find the information gap task too problematic. However, the jigsaw task was conceptually over demanding. The children were unable to understand how two slightly different pictures could be combined to produce one picture. The jigsaw task was therefore adjusted to account for this. Rather than having two versions of the scene, the complete scene was re-drawn and then cut in half from top to bottom to produce a left and right side to the scene. Each child was then given half of the complete scene. This alteration made all the difference, the younger children showing few problems with the adjusted jigsaw task. (The second version is also displayed in Appendix 2). Further, in an attempt to elicit more dialogue children were encouraged to take it in turns to take a piece out of their bags. This had the effect of directing the children's attention to each piece in turn rather than only their own pieces.

One particular problem was that the young children were unable to grasp the idea that some pieces could go on top of others. These children often attempted to find a space on the background in which to put each piece. In order to overcome this problem two practice tasks were introduced. The first required the children to copy one small picture. In the second the children were given two versions of a small scene which they were required to copy. In both tasks both children could see the pictures that were to be copied. During these tasks, the researcher helped the children understand that pieces could go behind or in front of other pieces. By the end of the first practice task the majority of the children had managed to grasp this concept. The practice tasks and the jigsaw and information gap tasks are shown in Appendix 2.

3.2.1.5 Procedure

Similarly aged children of the same sex and who were familiar with each other, were asked by their teacher and the researcher if they would like to play some games which the researcher had set up in another room. The children who assented (two 4 year olds refused) were accompanied by the researcher to a quiet room in the school that had been set aside for the study. The researcher introduced himself and chatted generally so as to build up a rapport with the children. The children were asked to sit next to each other at a table and the video camera was discreetly switched on. The 4 year olds were given two small practice pictures which, as noted earlier, were similar to the experimental tasks that were to follow. The researcher then gave the children one of the tasks. Once the dyad had finished this task they were given the other task.

3.2.1.5.1 The Information Gap Task

The A4 scene was given to one of the children of the pair who was told that he/ she, firstly, must not let the other child see the scene, and secondly, must direct the other child as to where the pieces should be placed in order to make an exact copy of the A4 scene. The children were informed that some other pieces had accidentally been mixed in with the pieces for the picture. It was suggested that they could put these extra pieces to one side, when they came across them. The A3 background picture was placed in front of both children. The bag of pieces was given to the child who did not have the A4 scene and this child was then directed to put the pieces on to the A3 background where the child with the A4 scene said they should go. The children were allowed to decide who would take the A4 scene and who would put the pieces on the A3 background.

3.2.1.5.2 The Jigsaw Task

Each child was given half of the A4 scene and instructed that they must help each other to identify where the pieces should be placed on the A3 background, so as to make one exact complete copy of the scene. The children were directed to take it in turns to take a piece out of the bag, not to touch the other person's pieces until they were on the A3 background and not to look at their partner's scene. Again, as in the information gap task, the children were directed to put any spare pieces not in the A4 scene to one side.

When the children had finished playing the games they were thanked and accompanied back to their classroom. At this point the completed tasks were scored according to their completeness, positioning and hierarchical positioning with regard

to the A4 scene. In order to judge the completeness of the picture, one point was awarded for each piece that was on the A3 background, regardless of positioning, that was supposed to be on the background. Where a similar but different coloured or different shaped piece had been used, the children were awarded half a point. Pieces that were in the exact spot with regard to the A4 scene, give or take two centimetres in each direction, were awarded one point. If the pieces were judged to be more than two centimetres away from this spot, then half a point was given. Finally, if it was applicable, the pieces were judged according to their hierarchical positioning. If a piece was correctly positioned on top of another piece (or two pieces), then one point was awarded. If the piece was supposed to be on top of two pieces but was only on top of the lower of the two, then only half a point was awarded. Finally, if a piece was absent, then a zero mark was given for that piece under all measures. As the numbers of pieces given to each age group varied, the resulting scores were expressed as percentages of the total number of pieces that could be considered under each category. The resulting scores are displayed in section 3.3.2 of the results.

3.2.2 Transcription and Coding

The conversational interactions were transcribed in the same way as for the first study, as outlined in section 2.2.2.1. These transcripts were then coded using the topic and utterance level schemes, outlined in section 2.2.2.2. However, as the presentation form of each utterance, (i.e. whether an utterance was presented verbally, as a gesture or a combination of the two) was no longer considered of central interest to the research, this part of the coding scheme was dropped in the present study. However, non-verbal acts were still considered as being communicative and as able to initiate or maintain topics.

In the present study, three additional categories were introduced, one at the topic level and two at the level of types of adding acts. The additional category at the topic level was introduced to distinguish between the two different types of adding information acts that were observed qualitatively in the previous study, section 2.3.3.2.2. That is, to distinguish between those acts that just functioned to add information to the topic and those that also functioned to expand the topic. However, to allow comparisons to be made between the present and previous study, the category of topic expanding was treated as a subcategory of adding acts. This means that the category of adding remains unchanged, consisting of those utterances functioning to add information to the topic and those functioning to expand the topic.

Here are two examples of the difference between adding to the topic and 'adding and expanding' the topic:-

- | | |
|---|--------------------|
| 1. A) What time is it? | Topic initiation |
| 2. B) It's between 9 and quarter past. | Adding |
| 3. A) I need to be at the doctor's for half past. | Adding + Expanding |
| 4. B) Why the doctor's, are you ill? | Adding + Expanding |
| 5. A) No its my work experience placement. | Adding |

Another example is:-

- | | |
|-------------------------------|--------------------|
| 1. A) What colour comes next? | New Topic |
| 2. B) Blue. | Adding |
| 3. A) Where does it go? | Adding + Expanding |
| 4. B) There. | Adding |
| 5. A) Which way around? | Adding + Expanding |

The 'adding and expanding' category is very similar to the main function of the category of incorporating discourse topic that was introduced by Keenan and Schieffelin (1976). Expanding utterances presuppose and build on the topic addressed by the preceding utterances. However, unlike Keenan and Schieffelin's category, the category of 'adding and expanding' does not include shading, as outlined in section 2.2.2.2.1.

The other two additional categories were introduced at the level of types of adding information utterances in order to map, in more detail, any changes in discussion like discourse. In the previous study, these types of utterances were coded as instances of 'new'.

The first of these two categories was that of 'counters'. These types of utterances provide opposing information, evidence or positions to a suggestion or statement that has been already presented. These are often marked using the connective 'but' (Schiffrin, 1987) although this is not always the case. For example:-

1. A) The speed boat goes there.
2. B) But that's upside down.
3. A) It can't go the other way,
4. A) because it would crash into that boat.

Counter
Counter

The second new category introduced at this level was termed 'results'. Utterances that take this form represent a position or course of action taken as a result of taking other information into account. This type of utterance is often fronted by the cue word 'so', although this is not always the case as this cue word often has other functions as well (Schiffrin, 1987). For example:-

1. A) The speed boat goes there.
2. B) But that's upside down,
3. B) so it must go there.
4. A) No because that's in the way,
5. A) so it must go like that.

Counter
Result
Justification
Result

3.2.2.1 Inter-Observer Reliability

An inter-rater reliability check was not carried out in this study as the coding scheme used was identical, except for the three additional categories, to that used in the previous study.

3.2.3 Data Analysis

As in the previous study, the present investigation was more interested in the relative patterns produced by the children than the absolute patterns of frequencies and therefore the data were converted into proportional data, as outlined in section 2.2.3. As mentioned earlier, to allow the comparison of the levels of adding between the present and previous studies, topic expansions were calculated as a percentage of the total numbers of adding acts. In addition, as the new categories of counters and 'results' were introduced at the type of adding information level, the proportions for these categories were also calculated from the total adding acts.

As in the previous study, the analysis of the data involved the use of mixed design MANOVAs to analyse the data generally and oneway ANOVAs to analyse the data within each context when required. Tukey hsd follow up tests were used to identify the source of difference between the different age groups. Finally, it should be noted that the use of I.G.T. and J.T. in graph legends, in the results section, refer to the patterns for the information gap and jigsaw tasks respectively.

3.3 RESULTS

3.3.1 Overview

This section will consist of a quantitative and qualitative analysis of the data. Firstly, the overall frequencies of communicative acts will be considered and some qualitative observations will be made. This will then be followed by a consideration of the data at the topic level, according to the measures outlined in the previous chapter. That is, topic initiation, maintenance, change and shading, and, topic hierarchicalisation and returns. Embedded within the section on topic maintenance will be a consideration of the data in terms of the lower level categories of types of minimally related and adding acts. For each section qualitative observations will be reported first followed by descriptive and inferential statistics.

3.3.2 Conversational Interactions

Once again the children's conversations focused almost exclusively on the tasks at hand. There were occasional interruptions, but on the whole all the topic sequences were in some way related to the tasks. It was also evident that the tasks themselves were enjoyable for the children. Indeed, all the children completed both tasks. This was quite a feat, particularly for the 4 and 6 year olds as they sometimes had to concentrate on the tasks, including the practice tasks, for up to one hour.

As can be seen in table 1, there were large age differences concerning the total frequencies of communicative acts. Across the two task contexts the 4 year olds produced fewer communicative acts than the older children ($F=9.16$; $D.F.=(2,38)$; $P<0.01$). However, the amounts of communicative acts produced by the children represents a dramatic increase on the totals produced in the previous study. Further, more communicative acts were produced during the jigsaw task, than the information gap task ($F=4.34$; $D.F.=(1,38)$; $P<0.05$). This suggests that the former was more complex than the latter task. Moreover, an age by context interaction was evident on the total numbers of communicative acts ($F=6.06$; $D.F.=(2,38)$; $P<0.01$). Indeed, as can be seen in table 1 and graph 1, the 4 year olds produced significantly fewer

communicative acts in the jigsaw task than the older children ($F=14.0$; $D.F.=(2,39)$; $P<0.001$). In contrast, for the information gap task, differences between the age groups were less apparent particularly when the levels of within group variance are taken into account. Indeed, in this task a oneway ANOVA failed to find age differences in the total numbers of communicative acts. Once again, as is evident in table 1, there was a lot of within group variance in the total numbers of acts produced. However, it is interesting to note that during the information gap task equivalent levels of within group variation were evident across the age groups, whereas for the jigsaw task these levels were higher for the older children.

Table 1:- Mean Total Acts Across the Age Groups and Task Contexts.

Information Gap Task								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Context
	Uncodable Acts	S.D.	Uncodable Acts	S.D.	Uncodable Acts	S.D.	Uncodable Acts	S.D.
Percentage of Mean Total Acts	2%	1.2	2%	1.6	1%	1.1	2%	1.4
Mean Total Acts	166	78	209	79	234	76	203	81
N=	13		16		13		42	
Jigsaw Task								
Percentage of Mean Total Acts	2%	1.2	2%	3.3	2%	1	2%	2.2
Mean Total Acts	127 a	65	258 b	72	318 b	135	236	120
N=	13		16		13		42	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	2%	1.1	2%	2.1	2%	1		
Mean Total Acts	305 a	127	467 b	121	552 b	185		
N=	12		16		13			

A number of interesting patterns were evident in the conversational interactions produced by the children in the different contexts. However, it was apparent that these varied more between the task contexts than between the different aged children. Firstly, interactions in the information gap task often proceeded in the following fashion. One child would take a piece out of the bag and show it to the other child. Both children would then try to identify what the piece was, one child with the help of the A4 scene. The child with the A4 scene would then indicate where the piece went and the child with the piece would put it where indicated. Often after this a certain amount of adjustment occurred to get the piece in the exact position. Sometimes the person with the picture would request a certain piece and this would disrupt the interaction as the child with the bag would then try to find the piece by

going through the whole bag. Despite this however, the majority of the interactions followed the first pattern with only slight variations.

The interactive patterns for the jigsaw task were more complex. Firstly, the children would decide whose turn it was to take a piece out of their bag. One child would then take a piece and this same child would try to identify it by referring to his/her own picture. If the piece was identified then it would be put on the A3 background, otherwise the piece would be shown to the other child, who would look in his/her half of the A4 scene. Once the piece was identified, it would then be put on the A3 background and then some time would be spent adjusting its position. Thus, in the jigsaw task there was a variety of both short and long topic sequences.

Graph 1: Mean Totals of Communicative Acts Across Age and Context.

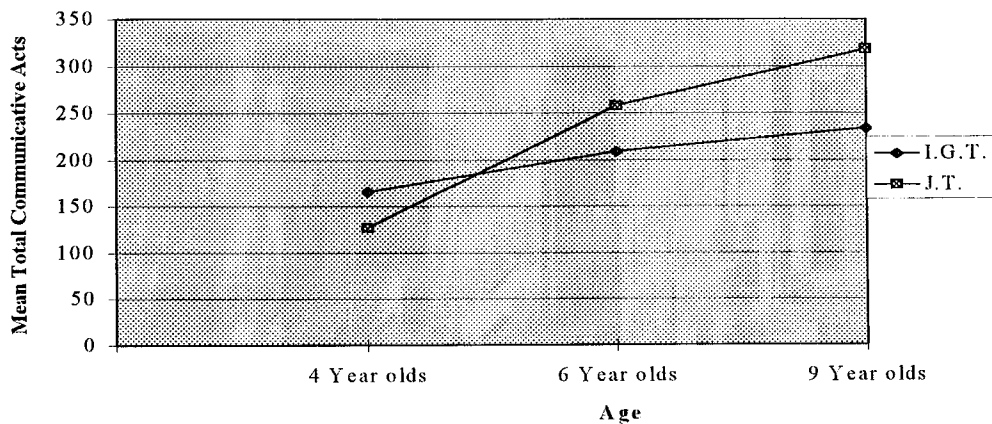


Table 2:- Mean Scores, in Percent, for Completeness, Positioning and Hierarchical Positioning Across the Age Groups and the Task Contexts.

Information Gap Task						
	4 Year Olds		6 Year Olds		9 Year Olds	
	%	S.D.	%	S.D.	%	S.D.
Completeness	94%	4.6	91%	2.8	93%	1.4
Positioning	72%	6.9	90%	2.7	95%	1.3
Hierarchical Positioning	52%	3.1	76%	1.8	85%	1.7
Jigsaw Task						
Completeness	94%	1.8	82%	3.1	83%	4.1
Positioning	57%	3.8	82%	2.5	85%	3.9
Hierarchical Positioning	25%	1.6	73%	2.2	73%	2.8
N=	13		16		13	

In view of the scores for completeness, positioning and hierarchical positioning, as presented in table 2, it is apparent that the tasks were not too simple for the children. Indeed, few children managed to get the tasks completely correct. However, as is plain from the completeness scores in table 2, the children had few problems determining which pieces went on to the A3 background and which pieces were extra. This was particularly the case for the information gap task, where all of the age groups achieved scores of around 92%. However, the older children seemed to find the jigsaw task harder than the younger children, as indicated by the decrease with age in the completeness scores. It should be recalled, however, that the older children received a more complex version of the task.

As can be seen from table 2, the younger children were not as accurate at positioning the pieces as the older children, particularly in the jigsaw task. This clearly suggests that the jigsaw task was particularly demanding for the 4 year olds. This was also reflected in the dialogues in that, whereas the 4 year olds were not that bothered about putting the pieces in their exact positions, the older children spent some time trying to get pieces in their correct places. Indeed, these older children often had to go back over pieces because they kept being knocked out of position.

Finally, the element of hierarchical positioning represented a major problem for the 4 year olds. Indeed, whereas the older children got the majority of the hierarchical positioning of the pieces correct, the 4 year olds got around half correct in the information gap task but only a quarter correct in the jigsaw task. This reinforces the point that the younger children were less vigilant about the exact positioning of the pieces.

Generally, these results indicate that the jigsaw task was more demanding, particularly for the 4 year olds, than the information gap task. Further, despite achieving high scores on the measure of completion, the low scores for positioning and hierarchical positioning suggest that the younger children had problems completing the task correctly. In contrast the older children achieved high scores on all the measures of task completion.

3.3.3 Topic Management

A number of patterns were evident concerning the way the children initiated, maintained, changed and reintroduced discourse topics and it is to these result that we now turn.

3.3.3.1 Topic Initiation

A number of qualitative patterns were apparent in the way new topics were introduced. These however, varied between the two contexts, although there were some slight differences between the age groups. In the information gap task new topics were introduced once a piece had been put in the 'correct' position, as determined by the informant. For example S and E (3;11 and 4;0):-

- 99. S) Where does that go [show fresh fish sign]?
- 100. E) Let me see in my picture.
- 101. E) Oh on top of the roof [point A4 scene].
- 102. E) Oh here [point A3 background].
- 103. S) There we go [puts sign where indicated].
- 104. S) Where does this go [show lady at ice cream van]?

In the above example utterance 103 represents the end of the topic as the purpose of putting the piece in the 'correct' place is satisfied. Utterance 104, therefore, represents the introduction of a new topic. This sequence was typical of those produced by all the children. On occasions, the topic sequences were separated by an intervening topic where the informant told the constructor of the picture to take another piece out of the bag.

In the jigsaw task, the sequence was similar except that, more often than not, an intervening topic concerning the taking of turns to take pieces from their bags, was initiated. For example A and J (4;3 and 4;3):-

- 176. J) I haven't got a dog.
- 177. J) You haven't either.
- 178. J) He's chasing the ball.
- 179. J) He's going in the goals [puts dog in goals].
- 180. J) Its your turn.
- 181. A) [Show slide].
- 182. J) What's that?

In the above example utterance 180 introduces a new topic concerning whose turn it is next and then utterance 181 initiates yet another new topic. Sometimes these 'turn' topics were maintained when the children could not remember or argued about whose turn it was. The dialogues for the older children in the jigsaw task followed a similar pattern. However, as they were better at remembering whose turn it was, turn taking topics were rarely maintained and sometimes not initiated at all.

The quantitative data concerning topic initiations, confirm the pattern which has emerged from the qualitative observations. As is evident from table 3, there were few overall differences between the different aged children or the contexts, in the proportions of new topics initiated, the levels remaining around 21% to 22%. Further, despite a slightly higher proportion of topics being initiated by the 4 year olds in the jigsaw task, the levels for the different aged children remained relatively constant across both contexts. Indeed, statistical analyses of these data revealed no significant effects. This indicates that proportionally equivalent amounts of utterances functioned to maintain topics across the age groups and contexts.

Table 3:- Mean Percentages of Topics Initiated Across the Age Groups and Across the Task Contexts.

Information Gap Task								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Context
	Topic Initiating Acts	S.D.	Topic Initiating Acts	S.D.	Topic Initiating Acts	S.D.	Topic Initiating Acts	S.D.
Percentage of Mean Total Acts	21%	6.6	22%	7.3	21%	5.1	21%	6.3
Mean Total Acts	166	78	209	79	234	76	203	81
N=	13		16		13		42	
Jigsaw Task								
Percentage of Mean Total Acts	24%	5.8	21%	4.2	21%	5.5	22%	5.2
Mean Total Acts	127	65	258	72	318	135	236	120
N=	13		16		13		42	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	22%	5.7	21%	4.5	21%	4.7		
Mean Total Acts	305	127	467	121	552	185		
N=	12		16		13			

3.3.3.2 Topic Maintenance

There were also some interesting qualitative and quantitative patterns evident in the way topics were maintained. Firstly, as was apparent from the examples of dialogue outlined in the previous section, 3.3.3.1, some topics were not maintained. This was particularly those indicating whose turn it was in the jigsaw task and those telling the partner to take a piece out of their bag in the information gap task. However, as noted above, the older children did not initiate or maintain intervening topics concerned with turn taking as frequently as the younger children. Indeed,

whereas the older children were more able to remember whose turn it was, the younger children tended to forget, and arguments were a regular result.

In the jigsaw task, it was apparent that the 4 year olds were less focused than the older children. Indeed, the younger children were observed, on occasion, to pay more attention to their own activity and pieces, than to the activity of their partner. For example S and E (3;11 and 4;0) during the jigsaw task.

18. S) Where does [show garage] this go?
19. S) On your picture?
20. E) No the cloud goes here like this [putting cloud in a new position].
21. E) Like on my picture.
22. S) It (garage) goes in there doesn't it?
23. S) It goes [puts garage on A3 picture].
24. E) Its (cloud) hiding the sun, the clouds.
25. S) Where does this go [shows and then gives garage to E]?
26. E) Er, it (garage) goes here where the car stays [puts garage on A3 picture].
27. E) That's where the car stays.

In the above example the children talk on separate topics and this could be considered an example of a topic fight*. In utterance 18, S initiates a topic concerning the garage but at line 20, E responds by reintroducing a previous topic. At line 22, S maintains the topic that he has initiated (coded as an unplanned return) and at line 24, E also maintains his topic (coded as an unplanned return). However, clearly S cannot satisfy the purpose of his topic until he has E's attention which he finally gets at line 26. The mutual reliance in the tasks tended to prevent talk on separate topics and thus the example was the exception rather than the rule. There were, however, more subtle instances of this lack of joint focus, which were more frequent. Indeed, while one child was taking his/ her turn, the other would be rifling through his/ her bag attempting to find an 'interesting' or particular piece. On other occasions, one child might ignore comments produced by the partner on the same topic. Unfortunately, the coding scheme generally failed to pick up this lack of joint attention because the topic sequences were not disrupted enough.

* The term 'topic fight' seems an inappropriate characterisation of the example as the children were not intentionally battling for the conversational floor. Rather it seemed more like a struggle by S to get E to pay attention. Indeed, it is noticeable that whereas E develops his topic with each additional utterance, S repeats his topic initiating statement. If the children had been battling, then topic returns might be more repetitive, produced with increased amplitude and would overlap with each other's utterances.

The quantitative analysis however, did reflect some of these qualitative observations. As can be seen in table 4, the older children maintained a higher percentage of topics, 83%, than the 4 year olds, 78% ($F=4.57$; $D.F.=(2,38)$; $P<0.05$). As is further evident in table 4, this age trend was apparent in both tasks, although less so in the jigsaw task.

Moreover, topics were maintained more regularly in the information gap task than in the jigsaw task ($F=26.81$; $D.F.=(1,38)$; $P<0.001$). This is not surprising, given the different interactive patterns observed between the two task contexts, as outlined earlier. That is, the presence of topics concerned with turn taking, and the fact that half of the pieces in a child's bag referred to his/ her own picture.

Table 4:- Mean Percentages of Topic Initiating Acts Maintained of the Total Topic Initiating Acts Across the Age Groups and Task Contexts.

Information Gap Task								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Context
	Topic Initiating Acts Maintained	S.D.	Topic Initiating Acts Maintained	S.D.	Topic Initiating Acts Maintained	S.D.	Topic Initiating Acts Maintained	S.D.
Percentage of Topic Initiating Acts	80% ^a	11	86% ^{ab}	7.1	89% ^b	4.1	85%	8.6
Mean Total Topic Initiating Acts	32	9.2	41	10	46	7.4	39	11
N=	13		16		13		42	
Jigsaw Task								
Percentage of Topic Initiating Acts	75%	9.7	79%	7.6	77%	4.4	77%	7.5
Mean Total Topic Initiating Acts	28	9.8	53	13	63	16	48	19
N=	13		16		13		42	
Mean Totals for Age Groups								
Percentage of Topic Initiating Acts	78% ^a	3.4	83% ^b	5.8	83% ^b	2.1		
Mean Total Topic Initiating Acts	30	9.6	47	13	54	15		
N=	12		16		13			

The data concerning the mean length of topics, as can be seen in table 5, were quite encouraging in that topics were maintained for a few utterances. Further, as is evident from the lower portion of table 5, there were only very slight differences between the age groups in terms of the mean length of topics. Indeed, the lengths of topics increased only slightly with age from 4.7 to 4.9 to 5.0 for the 4, 6 and 9 year olds respectively. Once the topics that were not maintained were excluded from these

data, the lengths of maintained topics were about equivalent across the age groups. Not surprisingly statistical analyses of these data failed to find any age effects.

As is evident from table 5, the information gap task seemed to encourage slightly longer topic lengths than the jigsaw task. However, a MANOVA only found this pattern to approach significance ($P=0.087$). Further, once the topics that were not maintained are extracted from the data this effect is no longer apparent, that is the mean lengths of maintained topics were almost equivalent.

Table 5:- Mean Length of Topics and Maintained Topics, in Communicative Acts, Across the Age Groups and Task Contexts.

Information Gap Task								
	4 Year	Olds	6 Year	Olds	9 Year	olds	Totals for	Context
	Mean Acts	S.D.	Mean Acts	S.D.	Mean Acts	S.D.	Mean Acts	S.D.
Mean Length Of Topics	5.0	1.5	5.0	1.4	5.0	1	5.0	1.3
Mean Length Of Maintained Topics	6.0	1.8	5.6	1.7	5.5	1.2	5.7	1.6
N=	13		16		13		42	
Jigsaw Task								
Mean Length Of Topics	4.3	1.1	4.8	0.9	4.9	1.4	4.7	1.1
Mean Length Of Maintained Topics	5.4	1.3	5.9	1.1	6.1	1.7	5.8	1.4
N=	13		16		13		42	
Mean Totals for Age Groups								
Mean Length Of Topics	4.7	1.2	4.9	0.9	5.0	1		
Mean Length Of Maintained Topics	5.7	1.5	5.7	1.1	5.8	1.3		
N=	12		16		13			

Looking more closely at the age patterns within each context for the lengths of topics and maintained topics, there are some interesting trends. Indeed, whereas in the jigsaw task the 4 year olds produced shorter topics than the older children, the topic lengths were equivalent in the information gap task. However, once the topics that were not maintained are excluded from the data, the 4 year olds produced lengthier topics, 6.0, in the information gap task than the 6 or 9 year olds who produced maintained topic lengths of 5.6 and 5.5 respectively. older children. In contrast, in the jigsaw task the lengths of maintained topics increased with age. These trends imply an age by context interaction, however this was not statistically significant.

In order to consider how topics were maintained we shall now focus on the measures of minimally related, adding information and adding and expanding acts as well as the types of utterances that make up these topic level categories.

3.3.3.2.1 Minimally Related Acts

Firstly, in terms of the amounts and types of minimal responses, there were a number of qualitative differences in the dialogues of the different aged children. The 4 year olds tended to be very repetitive, as was also evident in the previous study. For example R and J (4;2 and 4;6) whilst interacting in the jigsaw task:-

- 100. R) Whose turn is it now?
- 101. J) Yours.
- 102. R) Its mine.
- 103. J) No its mine.
- 104. R) Its my turn.
- 105. J) Mm no its my turn.
- 106. R) Its my turn.
- 107. J) No its my turn.
- 108. R) You said its my turn so.
- 109. J) No its my turn first.
- 110. R) Oh.

The above example clearly shows how repetitive the interactions could be, to the extent that 6 out of the 11 utterances were repetitive. It should also be emphasised that the majority of repetitions were self repetitions. In comparison, not only did the older children produce fewer, but also a variety of types of minimally related acts. For example S and L (8;6 and 8;11) interacting in the jigsaw task:-

- 587. L) Your turn.
- 588. S) What did you take out?
- 589. L) I took out the flower [Point] bed.
- 590. S) Oh right.
- 591. S) [Show fence].
- 592. L) Is that on yours?
- 593. S) No.
- 594. L) It's the other way around S.
- 595 S) Ah ha.
- 596. S) Oh yeah.
- 597. S) This goes here [puts fence on A3 background].
- 598. S) This goes here.

These qualitative differences indicate that the older children, in contrast to the 4 year olds, were utilising minimal responses to provide responsive feedback to a partner. On the other hand, the majority of minimal responses produced by the 4 year olds were not responses to a partner, rather they were self repetitions.

In terms of the quantitative data for minimally related acts, presented in table 6, similar patterns were evident in comparison to the qualitative observations. Overall the 4 year olds produced more minimally related utterances than the 6 or 9 year olds. Despite this representing a significant main effect ($F=4.16$; $D.F.=(2,38)$; $P<0.05$), follow up tests indicated that the differences were between the 4 and 6 year olds. However, from the data in the table it is evident that the 9 year olds were more similar to the 6 year olds than to the 4 year olds. As is further evident from table 6, the levels of minimal responses produced in the two task contexts were equivalent. Moreover, as the age trends were very similar between the two task contexts, although more widely spread in the jigsaw task, no interaction effect was evident.

Table 6:- Mean Percentage of Minimally Related Acts Across the Age Groups and Task Contexts.

Information Gap Task								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Context
	Minimally Related Acts	S.D.	Minimally Related Acts	S.D.	Minimally Related Acts	S.D.	Minimally Related Acts	S.D.
Percentage of Mean Total Acts	38% ^a	7.6	30% ^b	8.8	31% ^{ab}	6.5	33%	8.4
Mean Total Acts	166	78	209	79	234	76	203	81
N=	13		16		13		42	
Jigsaw Task								
Percentage of Mean Total Acts	35%	6.2	31%	6.3	32%	7.0	33%	6.5
Mean Total Acts	127	65	258	72	318	135	236	120
N=	13		16		13		42	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	37% ^a	5.9	31% ^b	5.6	31% ^{ab}	5.8		
Mean Total Acts	305	127	467	121	552	185		
N=	12		16		13			

3.3.3.2.1.1 *Types of Minimally Related Acts*

As was the case in the previous chapter, the data for the types of minimally related acts are split across two tables and therefore it is the percentages from both tables that total 100.

Table 7:- Mean Percentage of Types of Minimally Related Acts of the Total Minimally Related Acts Across Age and Task Context.

Information Gap Task								
Minimal Responding	4 Year Olds		6 Year Olds		9 Year Olds		Context Totals	
	%	S.D.	%	S.D.	%	S.D.	%	S.D.
Action	7%	11	3%	7.1	3%	7.2	4%	8.6
Repeat	47% a	19	35% b	10	33% b	10	38%	14
Agree	5% a	4.5	11% b	8.0	8% ab	5.0	8%	6.6
Disagree	6%	5.2	8%	5.0	6%	5.1	7%	5.1
Total Minimal Responses	66	³⁹	66	³⁵	74	³¹	69	³⁵
N=	13		16		13		42	
Jigsaw Task								
Action	5% a	3.8	1% b	1.1	0.4% b	0.6	2%	3.0
Repeat	45% a	18	36% ab	10	24% b	8.5	35%	15
Agree	8%	9.8	11%	4.3	10%	6.9	10%	7
Disagree	11%	10	12%	7.1	9%	4.7	11%	7.6
Total Minimal Responses	46	²⁸	83	³¹	105	⁶³	78	⁴⁸
N=	13		16		13		42	
Mean Totals for Age Groups								
Action	6% a	7.0	2% b	3.6	2% ab	3.5		
Repeat	49% a	12	35% b	9.1	28% b	7.8		
Agree	5% a	5.0	11% b	5.2	9% ab	4.5		
Disagree	8%	6.8	10%	5.0	7%	4.0		
Total Minimal Responses	116	⁶²	149	⁵³	179	⁸⁴		
N=	12		16		13			

As can be seen in table 7, the 4 year olds produced proportionally more actions than the older children ($F=3.83$; $D.F.=(2,38)$; $P<0.05$). In other words actions were increasingly accompanied or replaced by utterances. Further despite slight differences in the levels of actions between the contexts and across the age groups in each context no context or interaction effects were apparent.

Further, as can be seen in table 7 the data for repetitions, like that for actions and in concordance with the qualitative observations made earlier, decreased as age increased. Indeed, repetitions made up 49% of the total minimal responses produced by the 4 year olds whereas for the 6 and 9 year olds the levels were only 35% and 28% respectively ($F=13.96$; $D.F.=(2,38)$; $P<0.001$). Post-hoc tests indicated that this difference was between the 4 year olds and the older children. As this age effect was evident within both contexts and the levels of repetitions were equivalent between the contexts statistical tests revealed no significant context or interaction effects.

In comparison, agreements were higher among the 6 year olds than the 4 and 9 year olds, ($F=4.23$; $D.F.=(2,38)$; $P<0.05$). A post hoc analysis revealed that the difference lay between the 4 and 6 year olds. Once again, despite slight differences in the data, no context effect or age by context interaction was evident for the measure of agreements. These findings are surprising given that the expression of agreement is a central element involved in discussion-like dialogue and therefore suggests little was evident in either task.

Similarly, few age effects were evident on the measure of disagreements. However, of interest was that disagreements were higher in the jigsaw task, 11%, than in the information gap task, 7%, ($F=10.85$; $D.F.=(2,38)$; $P<0.01$). This implies that there was more conflict between the children during the jigsaw task.

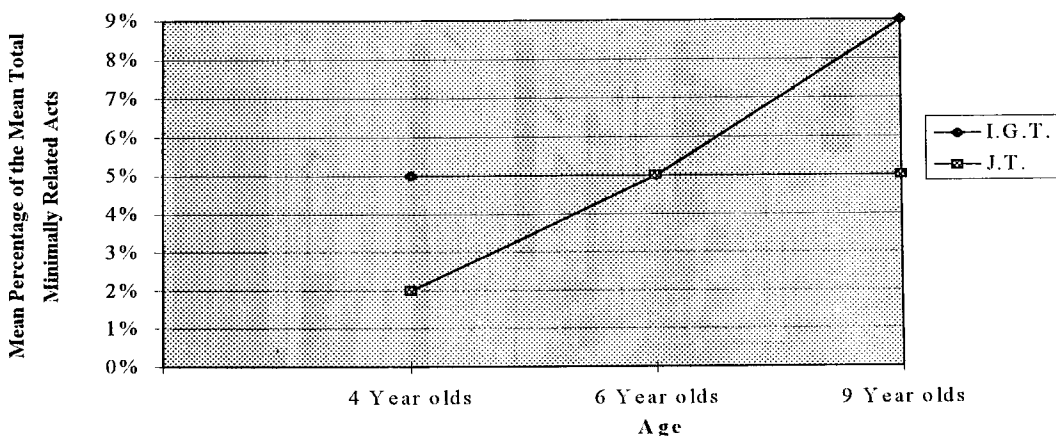
Table 8:- Mean Percentage of Types of Minimally Related Acts of the Total Minimally Related Acts Across Age and Task Context.

Information Gap Task								
Minimal Responding	4 Year Olds		6 Year Olds		9 Year Olds		Context Totals	
	%	S.D.	%	S.D.	%	S.D.	%	S.D.
Yes/ No Resps	6%	6.1	13%	13	14%	6.4	11%	10
Req. Repeat	2%	2.3	1%	2.4	3%	3.5	2%	2.8
Req. Reconfirm	5% ^a	3.5	5% ^a	4.4	9% ^b	6.1	6%	5.1
Other	18%	10	23%	9.5	23%	8.1	21%	9.4
Total Minimal Responses	66	³⁹	66	³⁵	74	³¹	69	³⁵
N=	13		16		13		42	
Jigsaw Task								
Yes/ No Resps	7% ^a	5.8	16% ^b	9.5	22% ^b	8.5	15%	9.9
Req. Repeat	1%	2.1	1%	1.7	2%	2.3	2%	2.0
Req. Reconfirm	2% ^a	2.7	5% ^{ab}	4.4	5% ^b	2.5	4%	3.6
Other	15% ^a	7.6	19% ^a	4.4	27% ^b	6.3	20%	7.9
Total Minimal Responses	46	²⁸	83	³¹	105	⁶³	78	⁴⁸
N=	13		16		13		42	
Mean Totals for Age Groups								
Yes/ No Resps	7% ^a	5.3	15% ^b	7.8	18% ^b	6.2		
Req. Repeat	2%	2.1	1%	1.7	3%	2.8		
Req. Reconfirm	3% ^a	2.7	5% ^{ab}	3.5	7% ^b	3.4		
Other	16% ^a	8.2	21% ^{ab}	6.0	25% ^b	5.5		
Total Minimal Responses	116	⁶²	149	⁵³	179	⁸⁴		
N=	12		16		13			

Yes/ no responses were particularly prevalent, as can be seen in table 8, in the interactions. Regardless of the task context, the older children produced more of these responses, 15 to 18%, than the 4 year olds, 7%, ($F=8.88$; $D.F.=(2,38)$; $P=0.001$). Furthermore, higher levels of yes/ no responses were apparent in the jigsaw task than the information gap task ($F=4.41$; $D.F.=(1,38)$; $P<0.05$). These results suggest that children regularly sought confirmation, either through reconfirmation and confirmation requests or evaluations with a tag question. This in turn implies that the children treated both tasks as involving the sharing/ communication of factual knowledge, rather than the discussion and evaluation of possible ideas. The higher level of these forms in the jigsaw task may have come from one child asking the other whether a particular piece was in their picture or not.

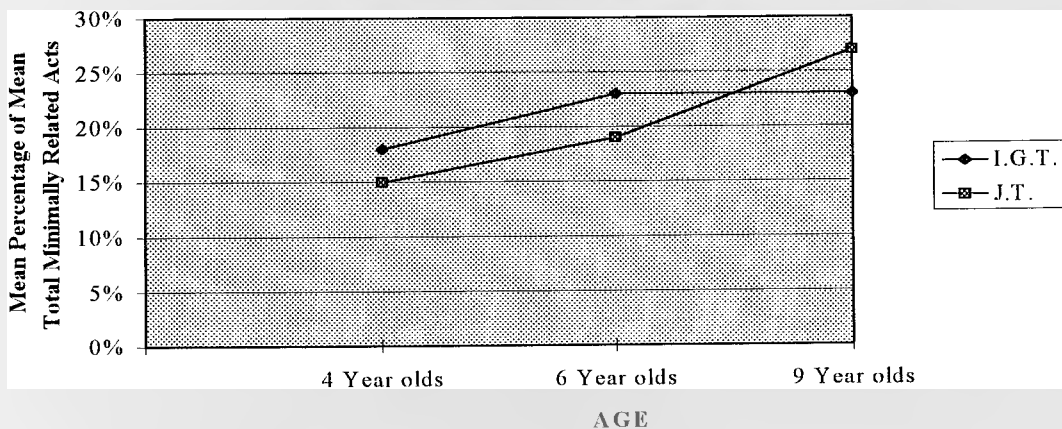
The levels of repetition requests, as can be seen in table 8, remained fairly constant across the age groups and the contexts. In contrast, however, reconfirmation requests were higher among the 9 year olds than the younger children ($F=4.8$; $D.F.=(2,38)$; $P<0.05$). Further, although reconfirmation was sought slightly more often in the information gap task than in the jigsaw task, a MANOVA found this effect to be statistically significant ($F=6.63$; $D.F.=(1,38)$; $P<0.05$). Moreover, an age by context interaction on this measure was observed to approach significance ($P=0.082$). Indeed, as is evident from table 8 and graph 2, despite similar patterns between the different aged children in each context, in the information gap task the 4 and 9 year olds produced more reconfirmation requests than they did in the jigsaw task. In contrast the 6 year olds produced similar amounts of reconfirmation requests in both contexts.

Graph 2: Mean Percentage of Reconfirmation Requests of the Mean Total Minimally Related Acts Across Age and Context.



Finally, as is evident from table 8, the 9 year olds produced more 'others' than the 4 year olds, ($F=5.88$; $D.F.=(2,38)$; $P<0.01$). Further, despite similar levels of 'others' in the two task contexts, a significant age by context interaction was evident ($F=4.34$; $D.F.=(2,38)$; $P<0.05$). As can be seen in table 8 and graph 3, in the information gap task there were only slight differences between the age groups on this measure, particularly if the standard deviations are taken into account. In contrast in the jigsaw task the levels of responding by way of 'others' increased whereas for the other two age groups they decreased. A oneway ANOVA found this effect to be statistically significant ($F=14.6$; $D.F.=(2,38)$; $P<0.001$) the 9 year olds producing significantly more 'others' than the 4 or 6 year olds. This suggests that there is a marked increase in the use of another form of linguistic category other than those coded in the current study.

Graph 3: Mean Percentage of Others of the Mean Total Minimally Related Acts Across Age and Context.



In sum, the 4 year olds produced higher levels of overall minimal responses than the older children. Further the majority of these minimal responses took the form of repetitions. In contrast, the older children produced a wide variety of types of minimal responses such as yes/ no responses, agreements, requests for reconfirmation and 'others', although repetitions still formed the majority. Further the jigsaw task elicited higher levels of disagreements, yes/ no responses and 'others', whereas for the measure of reconfirmation requests the levels were higher in the information gap task. The general lack of agreements and slightly higher levels of yes/ no responses suggests that the children were not engaging in much discussion, rather they were giving and requesting what they considered to be 'factual' information. However, to get a more accurate picture of the interactions, we will now consider the data for adding information.

3.3.3.2.2 Adding Information

A number of qualitative differences were apparent between the age groups in the adding of information to the topic. Firstly, adding was produced regularly by all the children and in both task contexts. However, when the younger children added information they often repeated it later. For example A and N (4;1 and 4;6) in the jigsaw task:-

- 140. N) Where does this basket go, ball go? [Show ball]
- 141. N) Its on //my (picture)
- 142. A) //I haven't got a basket ball.
- 143. N) I have
- 144. A) Look oh.
- 145. A) Who's got a chute?
- 146. A) Who's got a chute?
- 147. N) Me.
- 148. N) I've got a chute [puts chute on A3 picture].
- 149. A) Who's got that [show shed]?
- 150. A) Who's got that?
- 151. N) Not me.
- 152. N) Not me.
- 153. N) Not me.
- 154. A) Yes me.
- 155. A) Yes me.

In this example the young children clearly repeated a lot of the information that they added to the topic. It is unclear why these children did this so much. However, it is possible that the children were attempting to maintain joint attention focus or to make sure that their peer partner heard what they were saying. In contrast, the older children seemed to add more information to the topic than the younger children. Further, they seemed to consider a larger number of variables, that is expanded the topic in different directions. For example K and J (8;10 and 8;4) during the jigsaw task.:-

- 210. K) Is there another one of [show ice cream man] these?
- 211. J) I wonder is that it [give fish monger]?
- 212. K) Ah that's good.
- 213. K) That's a good one.
- 214. K) That's exactly what we need.

- 215. K) That goes just there [point A3].
- 216. K) Just in front, there.
- 217. J) A dog?
- 218. K) No that's a woman.

In the above example utterances 212, 214, 215 and 217 expand the topic in different directions. For example, utterance 215 expands the topic to involve where the piece goes and utterance 217 expands it to a question of its identity.

Further, there was evidence of the use of justifications, counters, suggestions and results among all the different aged children, particularly in the jigsaw task. For example A and J (4;3 and 4;3) in the jigsaw task:-

- 52. A) [Shows tree] Is it in your picture?
- 53. J) Yep.
- 54. A) Where does it go?
- 55. A) There [puts on A3 background]?
- 56. J) No there [point A3 background].
- 57. A) No 'cos there's one...(there already).
- 58. J) (Uncodable)
- 59. A) There [puts on A3 background]?
- 60. J) Yep, no [moves tree a bit].
- 61. A) No it doesn't.
- 62. A) because there's [point A3] one tree there (already).
- 63. A) But this tree doesn't go there [i.e. the trees are the wrong way around].
- 64. J) It goes there [point].
- 65. A) [Puts tree 2 where indicated].

In the above example, utterances 57 and 62 are instances of justifications and utterance 63 a counter.

The 9 year olds produced similar sorts of dialogues, although there were more instances of justifications, suggestions, and so on. For example S and L (8;6 and 8;11) in the jigsaw task:-

- 116. L) [Puts roof on A3 background] Now that is simple problem solving.
- 117. S) (Uncodable)
- 118. L) Its quite simple this,
- 119. L) but it gets tricky.
- 120. L) Right it's my turn.

121. S) Oh didn't you just take that green, that [point green roof] out?
122. S) Didn't you just take that green bit out?
123. L) Yeah but I put it on top of the purple thing.
124. L) So we have the bird.
125. L) and we have the aerial.
126. S) Yeah but didn't you just take this green bit out [point].
127. L) Yeah but // we took it off.
128. S) //So it's my turn.
129. S) It's my turn now.

As is apparent from the above example, justifications, counters, and results were presented in sequences concerning the taking of turns as well as in disputes more generally. Although, these types of utterances were used elsewhere in the dialogues, this was usually in relative isolation. In disputes these types of utterances often appeared in sequences, as in utterances 121, 123, 126, and 127 in the above example. That is, there appeared to be very little discussion like dialogue in the children's conversations in either task. Indeed, the closest children came to discussion was when the children were faced with an ambiguity, i.e. two of the same piece, neither of which seemed correct, see the example in section 3.3.3.4.

The levels of adding information, as can be seen in table 9, were high consisting of between 32% and 41% of all communicative acts. Further, the older children produced more adding than the 4 year olds ($F=8.33$; $D.F.=(2,38)$; $P=0.001$). Follow up tests indicated that the 4 year olds were significantly different from the 6 and 9 year olds. As this age trend was evident in both task contexts and similar levels of adding were produced in each context, no age by context interactions or context effects were apparent.

Table 9:- Mean Percentages of Adding Information Acts of the Total Communicative Acts Across the Age Groups and the Task Contexts.

Information Gap Task								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Context
	Adding Information Acts	S.D.	Adding Information Acts	S.D.	Adding Information Acts	S.D.	Adding Information Acts	S.D.
Percentage of Mean Total Acts	32% a	4.5	38% b	5.9	41% b	5.6	37%	6.3
Mean Total Acts	166	78	209	79	234	76	203	81
N=	13		16		13		42	
Jigsaw Task								
Percentage of Mean Total Acts	32% a	7.6	38% b	5.4	38% b	6.1	36%	6.9
Mean Total Acts	127	65	258	72	318	135	236	120
N=	13		16		13		42	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	32% a	5.5	38% b	4.8	39% b	4.8		
Mean Total Acts	305	127	467	121	552	185		
N=	12		16		13			

In addition to these findings and in support of the qualitative patterns outlined earlier, a higher proportion of the adding acts produced by the 9 year olds also functioned to expand the topic. Indeed, the levels of adding and expanding increased between the younger children, and the 9 year olds ($F=4.25$; $D.F.=(2,38)$; $P<0.05$). This was the only significant effect evident on this measure, the levels remaining much the same between the two task contexts.

Table 10:- Mean Percentages of Adding and Expanding Acts of the Total Adding Information Acts Across the Age Groups and the Task Contexts.

Information Gap Task								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Context
	Topic Expanding Acts	S.D.	Topic Expanding Acts	S.D.	Topic Expanding Acts	S.D.	Topic Expanding Acts	S.D.
Percentage of Mean Total Acts	48%	18	50%	16	61%	13	53%	16
Mean Total Adding Acts	55	30	81	36	96	33	78	37
N=	13		16		13		42	
Jigsaw Task								
Percentage of Mean Total Acts	52%	15	51%	9.7	61%	8.1	55%	12
Mean Total Adding Acts	43	27	99	30	121	52	88	49
N=	13		16		13		42	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	50% ^a	17	51% ^a	13	61% ^b	11		
Mean Total Adding Acts	102	50	180	55	216	77		
N=	12		16		13			

3.3.3.2.2.1 *Types of Adding Information Acts*

Once again, the data for the types of adding information acts are split across two tables (11 and 12) and therefore only percentages from both tables total 100.

As is evident from table 11, the younger children produced higher proportions of 'new' acts than the older children ($F=5.14$; $D.F.=(2,38)$; $P<0.05$). A follow up test revealed that the significant differences were between the 4 and 9 year olds. Further, higher levels of 'new' information were produced in the information gap task than in the jigsaw task. Although this difference is negligible, particularly when the standard deviations are considered, this effect approached significance ($P=0.062$). However, most importantly, an age by context interaction was evident for this measure ($F=3.62$; $D.F.=(2,38)$; $P<0.05$). As is illustrated in graph 4, despite similar age trends in the two task contexts, the data in the jigsaw task are more widely separated. In support of this was the evidence of a main effect of age in the jigsaw task ($F=12.96$; $D.F.=(2,39)$; $P<0.001$) the 4 year olds being different from the older children, but no comparable effect in the information gap task. This indicates that in the jigsaw task, a larger proportion of the older children's utterances held different functions, other than those incorporated in the general category of 'new', than for the 4 year olds.

Table 11:- Mean Percentage of the Types of Adding Information of the Total Adding Information Acts Across the Age Groups and Task Contexts.

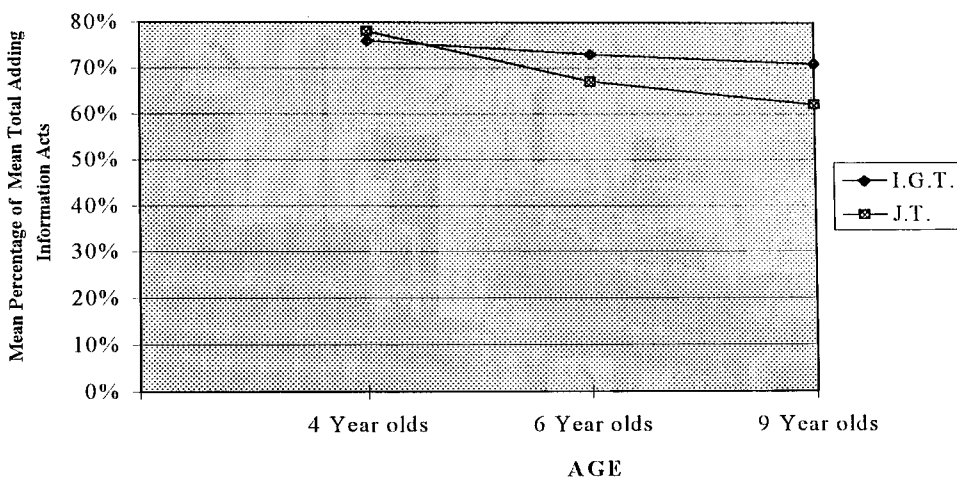
Information Gap Task								
Adding	4 Year Olds		6 Year Olds		9 Year Olds		Context Totals	
	%	S.D.	%	S.D.	%	S.D.	%	S.D.
New	76%	11	73%	11	71%	11	73%	11
Justification	2%	3.0	2%	1.9	2%	1.6	2%	2.2
Suggestion	1% a	2.3	2% a	2.1	5% b	4.4	3%	3.4
Counters	1%	1.1	1%	1.6	2%	2.0	1%	1.7
Results	1%	1.7	1%	1.2	1%	1.2	1%	1.3
Evaluation	3%	4.0	5%	3.2	6%	5.2	5%	4.2
Total Adding	55	30	81	36	96	33	78	37
N=	13		16		13		42	
Jigsaw Task								
New	78% a	12	67% b	6.3	62% b	6.0	69%	10
Justification	4%	4.1	5%	3.0	6%	3.1	5%	3.5
Suggestion	2% a	1.7	4% b	2.7	5% b	2.7	4%	2.9
Counters	2% a	3.2	3% ab	3.7	5% b	3.3	4%	3.6
Results	1%	2.3	2%	1.8	2%	1.1	2%	1.8
Evaluation	1% a	1.9	4% ab	2.9	4% b	3.4	3%	3.0
Total Adding	43	27	99	30	121	52	88	49
N=	13		16		13		42	
Mean Totals for Age Groups								
New	77% a	10	70% ab	6.6	67% b	6.1		
Justifications	3%	2.7	3%	2.0	4%	1.6		
Suggestions	1% a	1.5	3% ab	2.1	5% b	3.2		
Counters	2% a	1.9	2% ab	2.5	4% b	1.7		
Results	1%	1.4	1%	1.2	1%	0.8		
Evaluation	2%	2.8	5%	2.5	5%	3.9		
Total Adding	102	50	180	55	216	77		
N=	12		16		13			

In the previous section it was noted qualitatively that the older children produced more justifications than the 4 year olds. Although this was the case in terms of the absolute frequencies, in terms of proportions, the levels between the age groups were almost equivalent, see table 11. This result is, to some extent, encouraging as the 4 year olds were able to produce justifications during their dialogues and at a similar level to that of 9 year olds. Moreover, as was expected, higher levels, though only slightly, of justifications were produced in the jigsaw than in the information gap task

($F=25.00$; $D.F.=(1,38)$; $P<0.001$). In addition, as the age trends were similar in both contexts, no interaction effect was apparent.

Overall the levels of suggestions were particularly low and the one effect for this measure was an increase with age, the 9 year olds suggesting more often than the 4 year olds ($F=8.14$; $D.F.=(2,38)$; $P<0.001$). As suggesting is an integral part and in many ways a defining element of discussion, the clear lack of a difference between the two task contexts for this measure further implies that discussion like dialogue was rare in the jigsaw task.

Graph 4: Mean Percentage of 'New' of the Mean Total Adding Information Acts Across Age and Context.



Generally the levels of counters were also low, as is evident from table 11. However, the 9 year olds produced higher proportions of this measure than the 4 year old children ($F=3.63$; $D.F.=(2,38)$; $P<0.05$). Further, despite only slight differences between the contexts in the levels of counters, the jigsaw task elicited a significantly higher proportion of counters than the information gap task ($F=15.12$; $D.F.=(1,38)$; $P<0.001$). No age by context interaction was evident for this measure.

The data for the category of 'results' were also very low and despite the lack of age differences on this measure, slightly higher levels of results were produced in the jigsaw task than in the information gap task ($F=7.62$; $D.F.=(2,38)$; $P<0.01$). Once again no significant interaction effect was found.

Generally the data for the types of adding that indicate discussion-like dialogue were a lot lower than expected. Moreover, despite the evidence of statistically significant effects on some of these measures these results must be treated with caution as the differences between the different aged children were only slight. However in terms of the frequencies, the levels of these measures are higher for the children, particularly the 4 year olds, than in the previous study. Indeed, each 4 year old dyad produced on average 4.1 justifications and 2.3 suggestions, see table 11a. This contrasts with the previous study where the 4 year olds produced on average 0.3 justifications and 1.2 suggestions in each interaction overall (for the 6 and 9 year olds, the averages were 1.1 and 4.3 for justifications and 3.8 and 8.1 for suggestions, respectively). Despite the higher levels on these measures in the present study, they were rarely used to engage in collaborative discussion, rather as noted in earlier, they were used during disputes and often in isolation to provide explanations, clarify points and make suggestions when an ambiguous piece was encountered.

Table 11a: Mean Frequencies of Justifications, Suggestions, Counters and Results, Across the Age Groups, but Regardless of Task Context.

	4 year olds	6 year olds	9 year olds
Justifications	4.1	4.9	9.6
Suggestions	2.3	6.7	10.9
Counters	1.5	5.2	8.3
Results	1.3	2.8	3.9

There were also low levels of evaluations, (see table 12), but there was a slight increase between the 4 year olds, 2%, and the older children, 5%, on this measure. Despite this trend a MANOVA failed to obtain a statistically significant result. However, there was a main effect of context, with more evaluations being produced in the information gap task than in the jigsaw task ($F=10.34$; $D.F.=(1,38)$; $P<0.01$). That is as both children in a dyad were able to adjust pieces on the A3 background during the jigsaw task, there was less of a need to produce evaluations. As the age trend was evident in both contexts, no age by context interaction was identified.

As is evident from table 12, the levels of requests for suggestion, justification, specificity and clarification all involved very low amounts of data and for this reason statistical tests were not applied to these measures. Further, despite acceptable frequencies for the measures of requests for new and requests for confirmation MANOVAs failed to find any age, context or interaction effects for these measures.

Table 12:- Mean Percentage of the Types of Adding Information of the Total Adding Information Acts Across the Age Groups and Task Contexts.

Information Gap Task								
Adding	4 Year Olds		6 Year Olds		9 Year Olds		Context Totals	
	%	S.D.	%	S.D.	%	S.D.	%	S.D.
Request New	9%	5.8	6%	4.4	6%	2.5	7%	4.6
Req. Suggestion	0.1%	0.5	0.1%	0.2	--	--	0.1%	0.3
Req. Justific.	0.3%	0.6	0.5%	0.9	0.1%	0.5	0.3%	0.7
Req. Specificity	0.1%	0.3	--	--	0.5%	0.7	0.2%	0.4
Req. Clarificati.	--	--	0.1%	0.2	0.3%	0.6	0.1%	0.4
Req. Confirm.	6%	7.7	8%	12	5%	3.2	6%	8.5
Total Adding	55	30	81	36	96	33	78	37
N=	13		16		13		42	
Jigsaw Task								
Request New	7%	5.4	7%	3.8	5%	2.9	6%	4.1
Req. Suggestion	0.1%	0.3	0.1%	0.3	--	--	0.1%	0.3
Req. Justific.	0.2%	0.8	0.4%	0.8	0.3%	0.6	0.3%	0.7
Req. Specificity	--	--	0.2%	0.5	0.4%	0.5	0.2%	0.5
Req. Clarificati.	0.2%	0.8	--	--	0.5%	1.4	0.2%	0.9
Req. Confirm.	4%	4.4	8%	4.0	7%	3.6	6%	4.3
Total Adding	43	27	99	30	121	52	88	49
N=	13		16		13		42	
Mean Totals for Age Groups								
Adding	4 Year Olds		6 Year Olds		9 Year Olds			
	%	S.D.	%	S.D.	%	S.D.		
Request New	8%	4.0	7%	2.7	6%	2.3		
Req. Suggestion	0.1%	0.3	0.1%	0.2	--	--		
Req. Justific.	0.3%	0.5	0.4%	0.6	0.2%	0.4		
Req. Specificity	0.04%	0.1	0.1%	0.3	0.5%	0.5		
Req. Clarificati.	0.1%	0.4	0.03%	0.1	0.4%	0.8		
Req. Confirm.	5%	5.0	8%	5.6	6%	1.9		
Total Adding	102	50	180	55	216	77		
N=	12		16		13			

In sum, there were a number of interesting results concerning the adding of information and the types of utterances used to add information. Overall, despite increases with age, the levels of adding information were quite high across all the age groups. It was also apparent that all the children expanded the topic sequences with the 9 year olds doing this most frequently. Although the data were generally low for the measures of discussion-like dialogue, the levels were higher in the jigsaw task than

the information gap task, and increases with age were evident for some of these measures. These results in conjunction with the finding that the children completed the tasks adequately, as noted in section 3.3.2, suggest that collaborative discussion was not required to complete either of the tasks. Indeed, the qualitative observations indicated that although there was little discussion evident in the children's interactions, justifications and counters were used either during disputes or in relative isolation in the rest of the task based dialogues. However, the frequencies of justifications, suggestions, counters and results indicate that the 4 year olds are able, to some extent, to produce these types of utterances.

3.3.3.3 Topic Changes

As in the previous study and as noted earlier, topics were changed either when a piece was put in position or when a mutually agreed decision concerning the next turn had been made. The taking of turns, which was evident within the dialogues of all the children during the jigsaw task, implies that the interactions were co-operative. Although topics concerned with turn taking were less evident among the older children, it was apparent that they did take turns and were more vigilant about this than the younger children.

There were also some instances of co-operative topic closings, although only among the 9 year olds, for example C and S (8;9 and 8;9) in the information gap task:-

17. C) Is that right?
18. S) [Nod]
19. C) **Okay.**
20. S) **Mhm.**

As was the case in the previous study, this was also apparent at the end of the task oriented dialogues. However, this was only for the 9 year olds, the 4 and 6 year olds tended just to state that they had finished without checking with each other first.

3.3.3.4 Topic Shading

Table 13:- Mean Percentage of Topic Shadings of the Total Communicative Acts Across the Age Groups and Task Contexts.

Information Gap Task								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Context
	Shading Acts	S.D.	Shading Acts	S.D.	Shading Acts	S.D.	Shading Acts	S.D.
Percentage of Mean Total Acts	0.1%	0.4	0.1%	0.3	0.1%	0.2	0.1%	0.3
Mean Total Acts	166	78	209	79	234	76	203	81
N=	13		16		13		42	
Jigsaw Task								
Percentage of Mean Total Acts	0.1%	0.6	0.2%	0.3	0.05%	0.1	0.1%	0.4
Mean Total Acts	127	65	258	72	318	135	236	120
N=	13		16		13		42	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	0.2%	0.3	0.1%	0.2	0.06%	0.1		
Mean Total Acts	305	127	467	121	552	185		
N=	12		16		13			

In the present study, as is evident from table 13, there were very few instances of topic shading. This result will be considered in more depth in the discussion. Of interest however, was that as well as functioning to report on personal experiences, shading was used in a co-operative manner to work on the task. Although this was rare, it was apparent, to some extent, in the interactions of the older children. For example J and A (9;0 and 8;6) during the jigsaw task:-

181. A) In your picture has it got just a plain roof?
182. J) It's just grey.
183. J) It's grey.
184. A) Is it just a roof?
185. J) Yeah it's just a roof with an aerial.
186. A) Well it must go in there [point]. (A refers to the blue roof in his hand)
187. A) It must just go there.
188. A) It doesn't matter about the colour.
189. A) Look there's a roof [show blue roof].
190. A) It must go there [point] J.
191. A) 'Cos look [give blue roof].
192. J) But this [point blue roof] roof has no chimney.

In this example, although J may not realise at the time, A shades the topic from the roof in J's picture to the blue roof, a different roof, in line 186. This shading becomes explicit in utterance 189 and the dialogue moves to this topic. It is evident that this form of shading is co-operative in that the topic remains central to the task activity and represents a natural progression from the topic that was shaded. That is, using the picture to help decide which piece to put on the background. It should also be noted that the above sequence was about the closest the children ever came to engaging in discussion like dialogue.

3.3.3.5 Topic Hierarchicalisation and Returns

The levels of planned returns were very low, as can be seen in table 14, and thus there was little evidence of topic hierarchicalisation. This was the case despite the fact that the task activity required some pieces to be placed on top of other pieces. However, as the children had little control over which pieces were selected, there was little opportunity for topic planning and attempts to do this were more disruptive than helpful.

Table 14:- Mean Percentage of Planned Returns of the Total Communicative Acts Across the Age Groups and Task Contexts.

Information Gap Task								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Context
	Planned Returning Acts	S.D.	Planned Returning Acts	S.D.	Planned Returning Acts	S.D.	Planned Returning Acts	S.D.
Percentage of Mean Total Acts	0.03%	0.1	0.2%	0.3	0.2%	0.3	0.1%	0.3
Mean Total Acts	166	78	209	79	234	76	203	81
N=	13		16		13		42	
Jigsaw Task								
Percentage of Mean Total Acts	0.03%	0.1	0.04%	0.1	—	—	0.03%	0.1
Mean Total Acts	127	65	258	72	318	135	236	120
N=	13		16		13		42	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	0.03%	0.08	0.1%	0.2	0.1%	0.1		
Mean Total Acts	305	127	467	121	552	185		
N=	12		16		13			

Despite the lack of topic planning, as was noted in sections 3.3.2, the children organised their interactions into turn taking sequences. It should be emphasised, however, that this was not spontaneous, indeed all the children were instructed to take

turns. What is of interest though, is that even the younger children were, much of the time, co-operative in the taking of turns and managed to regulate their interactions in this way.

In contrast to the low levels of planned returns, unplanned returns were used regularly by all the children. However, the functions given to these returns varied across the age groups, the younger children during the jigsaw task used them to maintain the topic that they were interested in and attending to. This resulted in sequences of utterances on two separate topics rather than topic fights, as there was no conscious effort to battle to hold a single topic on the floor. These patterns seemed to develop from a lack of joint attention and a concern with their own activity but were short lived as the children had to engage in joint attention in order to satisfy the topic and task purposes. In contrast to this usage, the 4 year olds in the information gap task and the 6 and 9 year olds during both tasks, used unplanned returns to make adjustments to pieces and topics already considered.

Unfortunately these qualitative differences are not reflected in the quantitative data. Indeed, as can be seen in table 15, despite slight age and contextual differences on the measure of unplanned returns a MANOVA failed to identify any significant age, context or interaction effects.

Table 15:- Mean Percentage of Unplanned Returns of the Total Communicative Acts Across the Age Groups and Task Contexts.

Information Gap Task								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Context
	Unplanned Returning Acts	S.D.	Unplanned Returning Acts	S.D.	Unplanned Returning Acts	S.D.	Unplanned Returning Acts	S.D.
Percentage of Mean Total Acts	6%	2.5	9%	4.3	6%	2.5	7%	3.5
Mean Total Acts	166	78	209	79	234	76	203	81
N=	13		16		13		42	
Jigsaw Task								
Percentage of Mean Total Acts	7%	2.9	8%	2.7	8%	2.9	8%	2.8
Mean Total Acts	127	65	258	72	318	135	236	120
N=	13		16		13		42	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	6%	2.1	8%	2.9	7%	2		
Mean Total Acts	305	127	467	121	552	185		
N=	12		16		13			

3.3.4 Summary

In sum, there were few differences between the age groups or task contexts on the measures of topic initiation, the mean lengths of topics, shading and returns. However, whereas minimal responses decreased with age, the levels of adding information and the proportions of topics maintained increased with age. Further, of particular importance was the observation that, on occasions, the interactions of the 4 year olds during the jigsaw task were lacking in joint attention.

Whereas the levels of repetition were particularly high for the 4 year olds, they were lower for the older children who also produced a variety of forms of feedback including yes/ no responses and some agreements. Furthermore, as age increased there was a decrease in the levels of 'new' and an increase in a variety of types of adding information, most notably suggestions and counters.

The data for the types of utterances used in discussion, although higher in the jigsaw task, were unexpectedly low. This implies that, given that the children completed the tasks satisfactorily, little discussion was required for completion of the jigsaw task. Indeed, it was observed that discussion was rare in the interactions, these types of utterances being used more frequently during disputes and to provide isolated explanations. This said, the 4 year olds were clearly capable of producing some justifications, suggestions, and the like. Moreover, the frequencies of these types of utterances were higher for all the children in the present study, than the previous study.

3.4 DISCUSSION

3.4.1 Overview

This section will consist of four subsections. The first will consider the results of the present study in terms of the findings of prior research and study one. The second will consider the data in terms of the theories of child development that were outlined in chapter one. The third subsection will involve a general discussion concerning the results with respect to the interpretations, outlined in section 3.1, for the findings of the previous study. Finally, the chapter will be concluded with a summary.

3.4.2 Topic Management Skills

The aims of this second study were two fold. Firstly, it was our intention to examine the effects of age and task context on children's discourse topic management performance. A number of similarities and differences were evident in these performances and it will be suggested that these resulted from the constraining and supportive nature of the tasks as well as qualitative differences in the abilities held by the different aged children.

The second aim, which was of primary interest, was to determine whether young children are able to engage in discussion-like dialogue when required, to achieve task completion. Unfortunately, although all children were considered to adequately complete the task, discussion-like dialogue was rare. Despite this, it will be argued that the results represent more of an optimistic picture of young children's capabilities to engage in discussion-like discourse than those of the previous study.

Overall, the tasks elicited large numbers of communicative acts and a number of topics, the majority of which were all linked to the task activity, from all the children. These findings represent a better picture of children's conversational skills than those presented by prior research (Brinton and Fujiki, 1984; Dorval and Eckerman, 1984; Schober-Peterson and Johnson, 1989). In addition, consistent with the claims from prior research was the presence of some differences in the topic management patterns elicited by the different tasks (Ervin-Tripp, 1984; Schober-Peterson and Johnson, 1989; Sigman, 1983; Wanska and Bedrosian, 1986; Wanska et al. 1986).

3.4.2.1 Topic Initiation and Change

The quantitative and qualitative analyses indicated that the initiation and change of topics by the children, particularly the older dyads, were co-operative in that topic changes were unlikely to be made until the piece considered was put in a 'correct' position. These findings are consistent with those of the previous study, but inconsistent with those of prior research that indicate that children are easily distracted, make abrupt topic changes and engage in topic fights (Brinton and Fujiki, 1984; Dorval and Eckerman, 1984; Sirois and Dorval, 1988). There was, however, some evidence during the jigsaw task that the young children did not maintain joint attention, rather their individual attention was focused on their own pieces or bags. However, as the children were mutually reliant, these sequences were short lived and joint attention had to be re-established in order to succeed at the task.

In addition, the lack of age differences in the levels of topic initiations is an identical result to that for children in the construction task of the previous study where children were also mutually reliant. This suggests, as was indicated in the previous study, that these contexts require or constrain certain patterns of topic management from the children to the extent that all the children show similar patterns. That is, the presence of mutual reliance supports the young children's interactions but constrains those of the older children. This ultimately depends on whether the participants have the skills required by the task and clearly this was the case in the present study. However, the actual amount of topic initiations produced does not depend on this knowledge distribution. This is indicated by the similar proportions of topic initiations elicited by the tasks of the present study, which were identical, and the higher level, by 10%, elicited by construction task of the previous study which was very different by comparison. The higher levels of topic initiations for the construction task of the previous study implies that a higher proportion of communicative acts in the tasks of the present study functioned to maintain topics.

3.4.2.2 Topic Maintenance

In concordance with Brinton and Fujiki (1984) was the finding that the majority of topic initiations were maintained. However, the slight increase with age on this measure, although only marginal, suggests an increased ability among the older children to maintain topics once initiated. This pattern reflects the observation that the younger children were, on occasions, less mutually focused than the older children. However, as the older children rarely maintained topics concerned with the taking of turns, this trend was less evident in the jigsaw task than the information gap task. In addition, in view of the fact that half of the pieces in a child's bag corresponded to that same child's picture it is not surprising that the proportions of topics maintained were lower in the jigsaw than the information gap task. That is, topics were not always required to be maintained as the child already knew where a piece should go. This clearly indicates that the higher level of mutual reliance in the information gap task led to higher proportions of topics maintained. In further support of this is the finding that the levels of this measure were equivalent between the information gap task and the construction task of the previous study.

The lengths of topics produced by the children were almost as long as those reported in the Brinton and Fujiki (1984) study, which were of between 5 and 6 utterances in length. Further, in comparison to the previous study the lengths of topics

were much longer. However, as was noted in section 2.4.2.2, it is not the actual lengths of topics that is important, it is whether they are long and efficient enough to satisfy the purpose for engaging in the topic. It was evident, as noted earlier in relation to topic initiations, that this was the case, topics not being changed until the purpose for engaging in the topic was achieved.

Of interest was the lack of differences, either between the age groups or the task contexts, in the lengths of topics. The former pattern was also evident in the construction task of the previous study, although the topic lengths were shorter. These patterns indicate, as was noted earlier regarding topic initiations, that some feature of the task determines the actual length of topics. It is probable that this feature is related to the number of variables that must be considered before the purpose for engaging in the topic can be satisfied. Moreover, the fact that the children are mutually reliant functions to constrain or encourage the children to produce similar topic lengths. That is, as all the children were capable of informing and requesting information, similar patterns were evident. However, in the jigsaw task, where the levels of mutual reliance were slightly lower, it was noticeable that the topic lengths were slightly shorter, particularly for the 4 year olds.

A number of patterns were evident on the measures of minimal responses and adding acts. The similar levels of both minimal and adding acts across the two task contexts indicates that it was the task that determined the levels of minimal and adding acts that were produced. This is further apparent as although the children were mutually reliant in the construction task lower levels of adding but higher levels of minimal responses were produced. In addition to this pattern, increases and decreases with age were evident on the measure of adding and minimal responding respectively. That is, whereas the older children considered more information before putting a piece in a position, the younger children considered less and produced more minimal responses. This might explain part of the discrepancy between the different aged children in the measures of task completion. Unfortunately, it is unclear whether the young children were less motivated or simply had problems considering all of the relevant information.

Of the variety of different types of minimally related acts, repetitions made up the largest proportion for all children, particularly the 4 year olds, a finding which is congruent with the results from prior research (Brinton and Fujiki, 1984; Dorval and Eckerman, 1984; Eisenberg and Garvey, 1981; Genishi and Di Paulo, 1982; Keenan,

1974; Keenan and Klein, 1975; Pellegrini, 1982), including the previous study. However, as was the case in the previous study, the qualitative analysis revealed that repetitions were usually self repetitions. Indeed, the younger children were frequently observed to repeat information they had just added to the topic. However, the function of repetition is unclear, it may be used to maintain joint attention, to make sure a partner has understood what has been said, to control the conversational floor, a combination of these functions, or it may have no real function at all.

In contrast to the findings from the previous study, despite an increase with age in the levels of agreements, levels on this measure did not increase dramatically as repetitions decreased. Indeed, the levels of agreements were slightly lower than in the construction task of the previous study. However, the levels of yes/ no responses and 'others' increased as repetitions decreased. Both categories involve functionally similar types of utterances to agreements, particularly the latter category which included 'okays' and 'rights'. As these utterance types communicate attention and acknowledgement or understanding of an utterance, and as the 4 year olds used them very rarely, it is not surprising that young children repeat what they have already said. That is, as these children have little idea whether a partner has understood an utterance or not, it is repeated.

The higher levels of yes/ no responses and 'others' than agreement, in both tasks, suggests that the children were not engaging in discussion-like dialogue. Indeed, as was noted in section 3.3.3.2.1.1, yes/ no responses as well as 'okays' and 'rights' (only part of the category of 'others') are generally used to respond to statements with tag questions, directives or indirect requests. All of these utterance types are typical of information giving and directive discourse but not discussion-like dialogue where possible ideas are evaluated. In addition, the higher level of yes/ no responses in the jigsaw task, particularly among the older children, seems to have developed from the initiation of topics with yes/ no questions, that is whether or not a piece was referred to in the partner's half of the A4 scene. In contrast, the younger children checked their own A4 scenes first.

Of further interest was that the levels of disagreement were higher in the jigsaw task than the information gap task. This indicates that in the jigsaw task the children questioned the validity of statements, suggestions and claims made by the partner in the dyad. This is hardly surprising given that children firstly had to decide whose turn it was and further had access to half the information involved in

completing the task and therefore had their own ideas about where certain pieces went.

Before considering the measures of the types of adding utterances, we will briefly consider the measure of topic expansions. Topic expansions were regular occurrences in the topics of all the children, a similar result to that reported by Kertoy and Vetter (1995) for 3 to 4 year olds for the category of incorporating discourse topic. Further, in concordance with the claim from Keenan and Schieffelin (1976), slight increases with age in the levels of expansions were observed. This suggests that the differences reported for adding were, at least, partly a function of the differences in the levels of topic expansions between the children. In addition, similar levels of this measure between the contexts implies that both tasks required the consideration of similar numbers of variables.

A number of interesting findings were evident in the data concerning the types of adding utterances. As was the case in the previous study, the levels of 'new' information were higher than for any other type of adding utterance and decreased with age, particularly in the jigsaw task. This implies that the older children produced a wider variety of types of adding utterances. Indeed, the older children were found to produce higher levels of suggestions and counters as well as higher but not significantly higher levels on other measures.

However, the finding that the 4 year olds produced a similar level of justifications as the older children was surprising. This result contrasts with that of the picture sequencing task of the previous study, where the 4 year olds produced very few justifications and an increase with age was apparent. Indeed, in the previous study, a total of only 3 justifications were produced by the 4 year olds, whereas in the present study the total was 49. The present results are more consistent with those from prior research concerned with disputes (Dunn, 1988; Eisenberg and Garvey, 1981; Genishi and Di Paulo, 1982; Phinney, 1986). This prior research has suggested, see section 3.1, that children initially use justifications to get their own way in arguments. Further, Dunn and Brown (1993) indicate that at around 3 to 4 years of age children begin to use justifications reflectively. A post hoc examination of the data in the present study confirms these findings. Of all the justifications produced by the 4 year olds, 42% were used in a dispute setting. Further, almost three quarters of this percentage were produced during the negotiation of turn taking during the jigsaw task. The remaining 58% of justifications used by the 4 year olds were either

inappropriate or were used to inform/ explain certain facts to their partners, such as why the fishmonger piece for the information gap task has no legs, or why a child decided to put a certain piece back in her bag and take a different piece. This is identical to the usage termed 'commentary/ reflection' (by children of 3;4) as reported by Dunn and Brown (1993). In contrast to these patterns, of the justifications produced by the 9 year olds (those of the 6 year olds were not examined) only 9% were used in situations of conflict, the remaining 91% being used to inform/ explain and occasionally in the form of collaborative discussion. This latter finding implies, that not only was it the case that the jigsaw task promoted a higher use of justifications because of conflict during turn taking but also during the pooling of information about pieces. Overall, these findings indicate that the 4 year olds can use justifications to explain or inform, as might be used in collaborative discussion. However, as was mentioned during the qualitative analysis of adding information, section 3.3.3.2.2, collaborative discussion was very rare in the children's dialogues only being produced when an ambiguous piece was encountered. We will return to these issues in section 3.4.4.

3.4.2.3 Topic Shading

Topic shading was particularly rare in all of the children's conversations, a finding which is inconsistent with the higher levels reported by prior research (Brinton and Fujiki, 1984; Dorval and Eckerman, 1984; Edmonds and Haynes, 1988). As was suggested in the previous chapter, section 2.4.2.3, this inconsistent finding may be due to an unwillingness to shade topics on the part of the children, as it might detract from reaching the joint goal. However, in contrast to the claim that shading is an unco-operative form of topic change (Goodenough and Weiner, 1977), shading was observed to be used, on occasions, co-operatively and as an integral feature of engaging in task-related topic talk. Thus it seems that whether shading is considered as co-operative depends very much on the relevance of shaded topic and the relationship to the previous topic and the ongoing activity.

3.4.2.4 Topic Hierarchicalisation and Returns

Once again, as in study one and in accordance with prior research (Hobbs, 1990; Reichman, 1990; Sirois and Dorval, 1988), the proportions of planned returns were very low indicating that topic hierarchicalisation did not occur frequently in the children's discourse.

Some planning or organising of the discourse was evident in the jigsaw task through the distribution of turn taking. However, as this was something the children were instructed to do they cannot be credited with the organisation of this pattern. Yet it was clear that despite a few problems the 4 year olds, like the older children, were capable of regulating this pattern. It seems that the orderly conversations of the 4 year olds during the jigsaw task may not have been quite so orderly if turn taking had not been enforced. Indeed, turn taking was a vital addition made in response to the complete lack of joint attention in the pilot study, see section 3.2.1.4. This was further evident when turn taking broke down. Indeed, although the children continued to co-operate to complete the task, the lack of co-ordination in their contributions to a single topic indicated a lack of joint attention. As the children were mutually reliant, these sequences were short lived indicating that this also functioned to keep the interactions orderly.

In the present study, the levels of unplanned returns were slightly higher than in the previous study. However, of interest, was the observation that in the jigsaw task, whereas the older children used unplanned returns to make corrections, they marked alternating talk on different topics by the 4 year olds. These sequences of alternating talk could not be considered instances of topic fighting as outlined by Sirois and Dorval (1988) because they were not conscious attempts to control the conversational floor. These patterns emphasise the co-operative nature of the older children's dialogues and the lack of joint attention among the young children's interactions. Unfortunately, these different patterns were not reflected in the data and therefore it is unclear how prevalent these differences were.

3.4.3 Theoretical Implications

The results of the present study are, to some extent, inconsistent with the model of dialogue development presented by Piaget (1959), as outlined in section 1.4.1.1. Indeed, the 4 year old children were capable, despite an occasional faltering in joint attention, of initiating and maintaining topics in a socialised and co-operative manner equivalent to Piaget's stage 2 type 2 dialogue. In addition, these young children were able to use justifications and counters, elements not expected to begin developing until the age of 7;6. Further, apart from the occasional use of justifications and counters, like the 4 year olds, there was little evidence of the older children engaging in stage 3 dialogue.

In comparison, the abilities presented by the 4 year olds are more consistent with the gradual process of development outlined by Vygotsky (1962; 1978). However, the patterns presented by the older children, although slightly better than those by the 4 year olds, were not that different; a feature not in keeping with this gradual process. However Vygotsky would stress, as has also been emphasised throughout this discussion, the findings must be viewed in terms of the context within which they were produced. Clearly, the task contexts were both supportive and constraining of the children's topic management skills. The presence of mutual reliance and a common goal seemed to support the interactions of the young children but constrained those of the older children. That is, despite showing little evidence of discussion-like dialogue in the tasks of the present study, 9 year olds are clearly capable of engaging in this discourse form as evidenced by the use of collaborative discussion during the picture sequencing task of the previous study. The supportive and constraining nature of the context is highly consistent with the spirit of the Vygotskian approach.

3.4.4 General Discussion

The present study was designed so as to compare the two possible interpretations of the results of the previous study. These interpretations were that young children did not engage in discussion-like dialogue either because they were unable to do so or because they were unwilling to when these skills were not required to complete the task. In the present study it was indicated that if the children were unable to participate in discussion-like dialogue then they would not complete the jigsaw task.

Despite evidence indicating that the 4 year olds were not as accurate or exact as the older children in the completion of the jigsaw task, all the children could be considered as having completed this task satisfactorily. Unexpectedly, however, the levels of discussion-like sequences, although higher in the jigsaw task than the information gap task, were very low in both tasks for all the children. Thus, in contrast with the original reasoning, the completion of the jigsaw task did not require the use of discussion-like dialogue. Indeed, if it had, then the 9 year old children would have produced similarly high amounts of agreements, suggestions and justifications, as was evident in the picture sequencing task of the previous study. The present findings, however, do indicate that all the children were able to use these types of utterances and this was particularly evident when the frequencies were taken into account. As was noted earlier in section 3.4.2.2, far more justifications and

suggestions were produced by all the children in the present study than in the previous study. Despite these fairly optimistic findings, it is still unclear whether young children are unable or unwilling to engage in discussion-like discourse when required. There are two reasons for this conclusion.

Firstly, justifications, counters, and so on, were not used by the children to engage in collaborative discussion as the older children had in the picture sequencing task of study one. The closest the 4 year olds came to this form of dialogue was in the context of arguments concerning the taking of turns where reasoning had to be provided to argue for or against a point of conflict.

The second reason for this conclusion is that, unexpectedly, discussion-like dialogue was not required for completion of the jigsaw task. This is evident in that, if it had been required, then the older children would have engaged in this form of discourse as they did in the picture sequencing task of the previous study. This lack of discussion-like discourse stems from the fact that the children were copying pictures. The children did not have to go beyond the information available to complete the task, that is generate and evaluate ideas and hypotheses.

The feature of the tasks that was most likely to elicit collaborative discussion concerned topics about the ambiguous pieces, that is the pieces that were the wrong colour or slightly wrong shape to the equivalents in the A4 scene. It appears that these pieces required the children to go beyond the information available and to use reasoning in order to decide which piece went in which position.

There is a clear need for further research to settle the issue of whether young children are unwilling or unable to engage in discussion-like dialogue. However, constructing a task that is both simple for the 4 year olds, involves mutual reliance and requires the children to go beyond the available information is no easy matter. The original jigsaw task (prior to piloting) contained all of these elements and therefore, had the task not been too difficult for the 4 year olds, may have encouraged discussion-like dialogue.

Although it is worthwhile continuing in an attempt to construct a task that requires discussion-like dialogue, a simpler approach might be to use an intervention procedure to elicit it more directly. The next study in this research attempts to follow both of these directions.

3.4.5 Summary

In sum, the findings from the present study in comparison to those of the previous study, indicate that topic management patterns vary with alterations in the type of task context. Further, the different interactive rules, information gap or jigsaw, produced different interactive patterns particularly affecting the proportions of topics maintained, the amounts of joint attention and the types of adding utterances used to maintain topics. The jigsaw task was more demanding of the younger children than the information gap task and this was apparent in that there were occasional lapses in joint attention and co-operative behaviour.

Overall, the older children presented slightly more advanced topic management skills than the 4 year olds. Indeed, their topic sequences were more likely to be maintained. They also involved more topic expansion, as well as adding through the use of suggestions and counters and less minimal responding and repetition.

Contrary to expectation, the jigsaw task did not elicit or require collaborative discussion from the children. However, the simple fact that the 4 year olds could produce a number of justifications, suggestions, counters and results, along with the observation that justifications were used to inform and explain, suggests that they might be able to engage in discussion-like dialogue (as defined in section 3.1). That is, the findings could be read as favouring the interpretation that 4 year olds are unwilling to partake in discussion-like dialogue when not required. However, further research is still required to confirm this.

CHAPTER 4: STUDY 3:

Topic Management and Collaborative Discussion Among Children: An Intervention Study.

Overview

This chapter will report the findings from the third study which aimed to elicit discussion-like dialogue from children through the use of a scaffolded intervention. After a brief introductory section, the details of the intervention procedure will be presented. In addition, details of some changes made to the coding scheme will be discussed. The following sections will outline and discuss the results.

4.1 INTRODUCTION

The final study was designed to examine children's capacity and willingness to engage in collaborative discussion. The rationale for this study developed out of the findings and rationale for the previous two studies. To recap briefly, in the first study it was found that 4 year olds differed from the 6 and 9 year olds in that they did not engage in discussion-like dialogue in the picture sequencing task. The second study attempted to determine whether the 4 year olds were unable or just reluctant to produce this form of dialogue. Unfortunately, the study was unable to distinguish between these two explanations as, rather unexpectedly, collaborative discussion was not required in order to complete the task. Despite this, it was indicated that the frequencies of justifications and suggestions were higher for all the children than they had been in study one. This implies that the 4 year olds may be able to engage in collaborative discussion, or at least that this ability might be in these children's zones of proximal development

It was proposed at the end of the previous study, section 3.4.4, that a more direct method, such as a scaffolded intervention, may be fruitful in determining whether the children have the capacity for collaborating in discussion or whether it is more a matter of preference. Thus, the present study aimed to employ a scaffolded intervention procedure to elicit and encourage the use of agreements, justifications, counters, suggestions and results in a collaborative discussion format, from children aged 4, 6 and 9 years.

To elicit and encourage discussion a task was required that would definitely warrant the use of this discourse form to aid in task completion. Obviously, in view of

the partial failure to do this in the previous study, this is no easy matter. However, given the knowledge gained from the design and running of the previous two studies, this might be easier at this stage in the research.

In terms of an intervention procedure, a number of different methods and approaches are available. However, the method used depends very much on the theoretical point of view taken as well as the rationale behind implementation. Early forms of language intervention strategy have tended to take a behavioural approach, involving the use of directing, shaping and reinforcing of a child's linguistic abilities. These approaches have been altered into what are now termed the 'milieu' therapies. These procedures are more 'naturalistic' than the earlier versions in that they involve more attention to the child's environment and the need to teach the use of skills in a number of different contexts (Warren and Kaiser, 1986; see also Kirchner, 1991). However, despite some success, particularly with language impaired children, it was felt that for the present purposes this approach would be overly formal. Indeed as Kirchner (1991) notes, the 'milieu' therapies are not totally 'naturalistic' as they are not interactive or discourse based.

Recent intervention strategies have adopted a more interactive, discourse based and social constructivist approach. These draw on theoretical ideas from Vygotsky (1962; 1978) and Wood, Bruner and Ross (1976), and stress that intervention should take the form of 'scaffolding' directed to the upper bounds of a child's zone of proximal development. An intervention strategy taking this approach has been developed and used quite successfully by Brown, Campione, Ferrara and colleagues to encourage various cognitive abilities (see Brown and Ferrara, 1985). Recently, strategies of this type have been emphasised as being particularly effective for language intervention (Brinton and Fujiki, 1989; Kirchner, 1991; McTear, 1985; McTear and Conti-Ramsden, 1992; Mentis, 1994). However, as Kirchner (1991) emphasises, the success of the intervention depends very much on how creatively the child can use the skills developed during interaction.

For the purposes of the present study, it seemed that a scaffolded intervention focusing on the elicitation of collaborative discussion, would represent the best method for identifying the full extent of children's capacities to engage in this form of discourse.

An element of further interest was whether the children could continue to engage in collaborative discussion without prompting and the aid of scaffolding. Thus in the present study, after an initial period of intense scaffolding, there was a period of gradual withdrawal, followed by a period of no scaffolding. Despite not representing two distinct periods where the after effects of intervention could be examined, there would be some indication of what the children could achieve without prompting.

Although this study was not primarily concerned with the effect of intervention on 6 and 9 year old's discussion skills, as they are already capable of discussion, children of this age were also studied. This would enable us to see whether the task used does warrant/ elicit collaborative discussion, would identify if these children (in particular the 6 year olds) can also benefit from scaffolding and would allow comparisons to be made between the performances of 4 year olds and older children.

As was noted in 3.1, central to an ability to engage in collaborative discussion is the knowledge that others have different perspectives and that this can be utilised to solve a problem. According to Selman (1976; 1980), cited by Flavell (1985), social perspective taking develops through 5 stages (0 to 4). Between the ages of 3 to 6 years (stage 0), children are unable to distinguish clearly, their own conceptual perspectives from those of others. At the next level (5 to 9 years) children begin to understand that others have different ideas, conceptions and understandings of the same things. With further development to stage 2 (7 to 12 years), children are able to take different views of their own actions and thoughts and are aware that their peers can also do this. At the final two levels (10 to 15 and 12 to adult) individuals begin to consider more generalised and abstract perspectives.

This increasing ability to take other's perspectives can be considered in terms of whether justifications and counters are used to address one's own ideas or those of another. Justifications and counters that address an idea presented by another do not reflect the knowledge that others might have different perspectives on the same thing. Alternatively, their usage to explain one's own point of view implies an awareness that others might have different perspectives and understandings.

In the previous study, the finding that 4 year olds used justifications to explain suggests that these children have some awareness that others do not share their understanding. However the extent of this is unclear and therefore in the present

study justifications and counters were coded as to whether they addressed ideas presented by others, or one's own ideas.

The final aim of the third study, continuing on the theme of the previous studies, was to examine the effects of a different task context, designed to warrant and/ or encourage the use of discussion skills to aid task completion, on the topic management abilities of 4, 6 and 9 year olds. This will allow comparisons to be made between the effects of the new task with those of earlier tasks used in this research.

4.2 METHOD

4.2.1 Data Collection

4.2.1.1 Design

In the present study, observations were made of same age and gender dyads interacting on the same task in either an intervention or a non-intervention situation. Following on from the previous two studies, the dyads were either 4, 6 or 9 years of age. However, in contrast, both age and situation were between subject variables. Dyads in the non-intervention situation were left to work on the task unaided. However, from the start of the activity in the intervention situation, a semi-structured intervention that aimed to promote discussion-like dialogue, scaffolded the children's interactions. In order to assess the effects of the intervention, scaffolding was gradually withdrawn to provide a period where there was little or no intervention present. This created a within subjects variable for dyads in the intervention situation which allowed the comparison of utterances that were produced in response to direct intervention with those that were not. The task used was designed, using the knowledge gained from the previous two studies, so as to encourage conversational interaction and discussion-like discourse.

4.2.1.2 Development of Task and Intervention Scheme

In this section the following will be outlined:- firstly, the development of three possible tasks, one of which was to be used in the main study; secondly, the development of the semi-structured intervention scheme; thirdly, brief details of a pilot study employed to determine which of the three tasks should be used in the main study and to test the intervention prior to implementation in the main study; finally, a summary of the resulting changes made to the intervention scheme will be presented.

4.2.1.2.1 Tasks

In the present study an attempt was made to design a task where the children were mutually reliant but required to go beyond the information available to complete the task. That is, the task was required to consist of features of both jigsaw and decision making tasks, as outlined in the typology of tasks presented by Pica et al. (1993). It was felt that a task of this kind would require and encourage topic maintenance and collaborative discussion in order to complete the task.

A number of possible tasks were developed that satisfied at least some of these requirements. Three tasks were chosen according to their ability to provide enjoyment for the children and simplicity, both in the problem they posed for the children and their construction. Given the success and simplicity of the tasks in the previous study, the three tasks also involved the construction of a picture by the placing of plastic pieces onto a background.

The first task required children to construct a sequence of pictures by copying two partial versions of this sequence, distributed between the dyad, which when combined would produce part of the complete sequence of the pictures. The children were then required to work out where the other pieces went, using the information available.

The second task was almost identical except that the children were only required to construct a single picture, although far more detailed, from two different partial versions of the picture. Again the children were required to identify where the extra pieces went using the information available in the pictures. That is, a certain amount of information was missing from both versions of the scene and this was made apparent to the children by blanking out sections of the picture.

The third task required children to take it in turns to put pieces onto an A3 background picture. The pieces and background scene were the same as those used for the information gap task in the previous study, except that the children were not required to copy an A4 scene. The task was presented to the children as a problem solving task, where they had to decide together the best place for each piece to go. Some extra pieces were incorporated to make the task more problematic for the children, these included:- a bath, a small lorry, a television set, a wheelbarrow, a traffic light, a second sun and a lion. In order to make the children mutually reliant, they were given separate bags containing half of the pieces. In contrast to the tasks of

the previous study, this task was far more open ended and was essentially a decision making task in terms of the typology outlined by Pica et al. (1993).

To familiarise the children with the task materials, the practice tasks used in the previous study, see section 3.2.1.4, were utilised again.

4.2.1.2.2 Intervention

For the present purposes, a fully structured intervention would be unworkable as it would induce boredom and artificiality and lack sensitivity and adaptability to the children's needs. Thus, a semi-structured intervention strategy involving the principles of scaffolding, that is, sensitivity, flexibility and adaptability to the children's differing zones of proximal development and the ongoing communicative interactions (Brinton and Fujiki, 1989; McTear and Conti-Ramsden, 1992; Mentis, 1994) was appropriate. However, a certain amount of structure was required in terms of the forms of utterances used to elicit discussion-like dialogue. For this reason a variety of standard questions and directives were developed. These were designed so as to get the children to provide suggestions, justifications, agreements and so on to each other, rather than in response to the researcher. This was to prevent the interactions from becoming centred around the researcher rather than, most importantly, between the children themselves. The following question/ directive formats were used to encourage discussion-like dialogue.

In order to encourage the use of suggestions:-

"Ask ___ what he/ she thinks." or " Say to ___ what you think."

"Ask ___ what he/ she thinks it is." or "Say to ___ what you think it is."

"Ask ___ where he/ she thinks it might/ could go." or "Say to ___ where you think it might/ could go."

In order to encourage the use of justifications:-

"Ask ___ why he/ she thinks it is a ___." or " Say to ___ why you think its a ___."

"Ask ___ why he/ she thinks it might go there." or "Say to ___ why you think it might go there."

"Ask __ why he/ she thinks you are wrong." or "Say to __ why you think he/ she is wrong" or "Say to __ why you think you are right."

"Can you think of anything wrong with what he/ she has said?"

"Can you think of any reason why he might be wrong?"

"You explain to __ why you think that shouldn't/ should go there."

In order to try and elicit an overall sequence or argument:- of justification, counter, result and so on:-

"What can you say to __ to persuade him/ her that you are right?"

In order to elicit agreement/ disagreement:-

"Ask __ whether he/ she thinks you are right." or " Say to __ whether you think he/ she is right."

"Ask __ whether he agrees with you." or "Say to __ whether you agree with him/ her."

To encourage the use of results:-

"So what is it?"

"So what do you think it is?"

"So where do you think it should go?"

"So who is right?"

To explain why the use of justifications is useful:-

"If you say why you think it is a __ / that goes there, then this will help you to decide who is right and will help you get the picture right."

However, there was no easy or direct way of eliciting counters or results from the children although the former can be similar in form to justifications that provide information against another's view.

To maintain adaptability and sensitivity to the interactions, the above questions and directives only represented part of the overall intervention. It was understood that the researcher would also have to provide information and explanations to the children to help them engage in collaborative discussion.

An essential component concerned with the implementation of the intervention was that the questions/ directives were only used to elicit justifications and so on, when it was functional for the children to produce these utterance types (McTear and Conti-Ramsden, 1992).

In order to select one of the three tasks and to test the effectiveness of the intervention procedure, a pilot study was carried out.

4.2.1.2.3 Pilot Study

Piloting involved a number of 4 and 6 year old dyads working on one of the different tasks, see section 4.2.1.2.1, with the researcher scaffolding their interaction. In view of the resulting interactions, one task was chosen and a number of details of the intervention procedure were changed for use in the main study.

Although the first task elicited some good quality dialogue, it was clearly too demanding for the 4 year old dyads, with none of the dyads managing to complete the task. The main problem for the children was co-ordinating the individual scenes with the location of the pieces on the A3 background. This task was therefore inappropriate for use in the main study.

The second task, although far easier, was also problematic for the children. The 4 year old children were able to complete the areas of the A3 background about which information was available in the two versions of the scene. However, when it came to filling in the missing information that was not available, the interactions invariably broke down. It appeared that the children were unable to understand fully what they were required to do when the plastic piece they had in their hand did not have a corresponding referent on either version of the scene. When this occurred, the children either put the piece to one side or put it, quite arbitrarily, anywhere on the background. This meant that the researcher could not even begin to encourage discussion within the dyad.

The children had few problems with the third and final task largely because it was so simple. The one drawback with this task was that it did not fully guarantee interaction for task completion. However, as the game itself was quite fun for the children, task based talk was evident in the children's interactions. Thus it was this task that was used in the main study.

Unfortunately, the intervention procedure required the need for some adjustments. Firstly, requesting the children to ask each other for a justification, suggestion, and so on, as outlined earlier, 4.2.1.2.2., was actually more disruptive than effective. Indeed, this resulted in the children 'freezing', ignoring the researcher's attempts at intervention and inevitably boredom with the game. To counteract this problem, directing the children to ask each other for justifications, and so on, was dropped from the intervention procedure and the researcher, on occasions, requested these types of utterances more directly. However, the children were still asked to 'say to ___' or 'tell ___' each other their ideas and justifications.

An additional problem was that the initial amount of scaffolding given by the researcher was often not enough for the younger children. That is, further scaffolding and control was required to let another child have his or her say, to get each other to think about what their partners had said and to get the children to question each other's ideas. When the level of scaffolding was increased, the researcher had to be careful not to dominate the interactions and thus control was applied only when necessary. For instance, when one child stopped paying attention to the other's comments or changed the topic without allowing the other child to have their say.

A further problem was that it was difficult to get many of the children to engage in discussion as they were unwilling to disagree with each other. Thus, the researcher was required to instil some disagreement into the interactions. In order to do this the researcher had to encourage the children to think more about what happens in the real world. For example, the sun does not go in front of clouds, a ferry cannot go in front of a rowing boat when the latter is a larger piece and so on. In addition, the research was required to request and give some justifications and so on more directly.

Finally, there was often not enough time to provide full intervention, gradually withdraw it and to provide a period of non-intervention. For this reason some intervention was introduced during the practice tasks, which was already scaffolded in order to help the children understand how to do the tasks and the time spent intervening during the main task was reduced to between 3 and 5 minutes. Ultimately, the time spent intervening depended on the number of times that an opportunity for discussion had arisen. That is, intervention was shorter for those interactions where a lot of intervention was achieved in a very short time. This adjustment allowed a

period towards the end of the task where scaffolding was not present but also functioned to familiarise the children with the intervention process.

Overall, the pilot study provided the researcher with crucial experience on how to conduct the intervention and, in particular, how to respond quickly and sensitively to the interactions and to provide scaffolding without preventing the children from thinking for and controlling the conversation themselves.

4.2.1.2.4 Summary of Intervention

In view of the findings from the pilot study the intervention took the form of a semi-structured intervention which was sensitive and adapted to individual's zones of proximal development and the point in the ongoing conversational interactions. The directives used to elicit discussion-like dialogue were of the format outlined in section 4.2.1.2.2, except that the children were not directed to "ask" each other for suggestions, justifications and so on. Rather the children were requested to "say to" or "tell" their partner a justification or suggestion. On occasions the researcher was more direct when eliciting justifications, agreements and so on from the children, this was particularly the case for agreement/ disagreement. However, every effort was made to ensure that the dominant interaction remained between the children rather than between each child and the researcher.

The intervention requests/ directives were introduced only when it was functional and appropriate. That is, it aided the children in doing the task. The requests designed to elicit justifications were only used when there was apparent conflict between the children's ideas. Thus the researcher avoided asking inappropriate questions to which an answer might be obvious. When disagreement or conflicting ideas were absent from the interactions, the researcher either tried to instil these by providing alternative ideas or by bringing the children's attention to other variables that they had not considered. In addition, in order to familiarise the children with the intervention and to provide a post-intervention period of interaction, scaffolding was introduced from the onset of the practice tasks, see section 4.2.1.2.1. However, full intervention was not applied until the children began working on the main task. For the first few minutes the scaffolding was intense and then over the following two to three minutes intervention was steadily withdrawn. Finally, as the older children were increasingly adept at engaging in discussion-like discourse the requirement for and amount of scaffolded intervention was less for these children. An

example transcript of a scaffolded intervention of the interaction between two 4 year old boys is shown in Appendix 3.

4.2.1.3 The Main Study

4.2.1.3.1 Subjects

Once again the samples of the different aged children were obtained by approaching schools in Glasgow. The sample of 4 year olds were from seven nursery and pre-schools and the samples of 6 and 9 year olds were from four primary schools. The children who attended these schools came from a variety of socio-economic backgrounds.

In order for the children to participate in the study, permission was sought from the relevant authorities including the children themselves. The resulting samples consisted of a total of 104 children who were split into same age and gender dyads. These dyads incorporated children who were familiar with each other, that is they were in the same class at school. There were twenty, sixteen and sixteen dyads in the 4, 6 and 9 year old age groups respectively. Further, twelve 4 year old dyads, eight 6 year old dyads and eight 9 year old dyads, were observed interacting in the intervention context. In the non-intervention context eight dyads were observed from each age group.

The average ages of the children in both the control and intervention contexts were 4;2 (S.D.=0;5), 6;4 (S.D.=0;5 (control) and 0;2 (intervention)), and 8;10 (S.D.=0;4) for the 4, 6 and 9 year olds respectively.

Once again it was difficult to get an equal representation of each gender group in the samples of children. Among the 4 year old group there were nine female and eleven male dyads. For the 6 year old group there were equal numbers of males and females and among the 9 year old group there were nine female and seven male dyads. The children were distributed between the two task conditions as evenly as possible.

There were few technical problems with the recording equipment and the majority of all the interactions was recorded.

4.2.1.3.2 Materials

The interactions were recorded using a 'camcorder' with an external microphone. The camera was positioned so that it captured all the participants in the

interaction as well as the task materials. Two example tasks were introduced to provide the children with some experience of the materials, an idea about how to play the game and the intervention to expect, if they were in the relevant group. These practice tasks were the same as the ones used in the previous study and are displayed in Appendix 2.

4.2.1.3.3 Procedure

Pairs of children of the same gender and age who were familiar with each other were asked if they would like to play a game that the researcher had set-up in another room. The majority of children assented and these were either assigned to the control or intervention condition. They were then taken to a separate room where they were introduced to the task. From the outset, the researcher made efforts to build up a rapport with the children. All of the children were given the two practice games to complete before they began the main task. During this stage all children were shown how it was possible to place pieces on top of others. If the children were part of the intervention group, some intervention occurred during the practice trials in order to familiarise them with the intervention procedure.

The children were then given the main task. For both the practice and main tasks the children were instructed to take it in turns to take a piece from their bags and to decide together the best position for it on the board. The children were encouraged to believe that there was a correct answer to the task. The children in the control group were then left to play the games. The interactions of the children in the intervention group were scaffolded to encourage the use of discussion-like discourse as outlined previously (for an example transcript of the intervention in use see Appendix 3). Initially, scaffolding was intense, however, as time went on it was increasingly withdrawn and eventually total control of the interaction was passed to the children themselves. The amount of scaffolding required by the children from each age group varied, the 4 year olds requiring much more than the 6 year olds who required more than the 9 year olds. Once the children had finished the main task they were thanked and accompanied back to the classroom.

4.2.2 Transcription and Coding

Rather than transcribing the interactions fully, as in the previous studies, they were coded directly from the video tapes. This seemed an appropriate way to proceed, given that the researcher was familiar with the application of the coding scheme which was almost identical to that used in the previous two studies. However,

utterances coded as suggestions, justifications, counters or results, were also transcribed as well as any other sequences of utterances that were considered to be of qualitative interest. In addition, for each utterance, one word was recorded that would distinguish it from the surrounding utterances. This would allow co-ordination between the transcript and video, if required at a later date, as well as co-ordination between coders in the event of the inter-observer reliability check. Finally, where new topics were initiated, the topic addressed was recorded in order to allow the coding of topic returns made later in the dialogue.

The coding categories at the topic level were the same as those used in the previous two studies which were outlined in sections 2.2.2.2.1 and 3.2.2. Apart from the joining and addition of a few categories, coding at the level of the types of topic maintaining utterances was identical to that of the previous studies, see sections 2.2.2.2.4 and 3.2.2. Indeed, at the level of types of minimally related utterances the categories of repetition, agreement, disagreement and 'other' were used as outlined in chapter 2. The remaining categories, that is reconfirmation requests, repetition requests, yes/ no responses and actions, were incorporated into the 'other' category.

At the level of types of adding information acts, the categories of suggestion, justification, counter, result, and suggestion and justification requests, were unchanged in the present study. However, requests for confirmation, clarification, specificity and new information, were all incorporated into the category of 'new' utterances.

Two further categories were introduced in the present study. The first was concerned with identifying if justifications and counters were used to address an idea presented by the same person (Own), or an idea/ utterance presented by someone else (Other), either the child's partner or the researcher. As was noted in section 4.1, the former implies an awareness that others may have different perspectives whereas the latter does not. The following are some constructed examples of this categorisation:-

- | | |
|--|-----------------------|
| 1) A) Maybe that sun should go there. | |
| 2) B) No because the hills are in the way. | Justification - Other |
| 1) A) The fish sign should go here | |
| 2) A) because that's the fish shop. | Justification - Own |

The first of the two examples above is an instance of addressing a justification to an idea expressed by someone else, the second addressing a justification to one's own idea.

These two different uses of justification can be divided into those supporting one's own idea and those providing a reason for not supporting another's position. However, although rare, there were exceptions, for example:-

- 1) A) The bike can go here.
- 2) **B**) Because it'll be locked to the fence. Justification - Other

In this example speaker B provides a supporting justification for a partner's idea. It is also conceivable that justifications be used to provide a reason for not taking up one's own idea.

- 1) A) Maybe the dog goes there.
- 2) A) Oh no 'cos he'd get knocked down by the car. Justification - Own

This own - other categorisation was also applied to the measure of counters, for example:-

- 1) A) Maybe the sun should go there.
- 2) B) But the hills are in the way. Counter - Other

- 1) A) Yeah the sun should go there,
- 2) A) but behind the clouds. Counter - Own

The first example involves a counter addressing an idea expressed by another person. In the second, the counter is used to clarify or avoid a false inference on the part of the listener and is therefore subtly different from the usage in the first example. However, again it is conceivable that counters one's own idea without conveying an awareness of another's perspective. For example:-

- 1) A) Its my turn.
- 2) A) Oh but I've just put that one on, Counter - Own
- 3) A) so its your turn.

The other new category that was introduced was applied in order to distinguish those utterances that were produced as a result of direct prompting (mediated) from those that were not (non-mediated). For example:-

- 1) A) I think the boy should hold the kite.
 Experimenter - "What do you think B?"
- 2) B) I think she's got it. Suggestion - Mediated
 Experimenter - "You tell A why you think she's holding it."
- 3) B) Because she's got her arm sticking
 out like that. Justification - Mediated
- 4) A) But she's pointing, she's not holding it. Counter - Non-mediated
 Experimenter - "Explain to B why you think he's
 holding it."
- 5) A) Well because he's got his arms like that. Justification - Mediated
- 6) A) So he's holding it Result- Non-mediated
- 7) A) and he's running with it New + Expand- Non-
 mediated
- Experimenter " Do you think she's right?"
- 8) B) Yeah Agree - Mediated.

It should be noted that in contrast to the definition of yes/ no responses outlined in section 2.2.2.2.4, as can be seen from utterance 8, yes/ no responses answering intervention questions concerned with agreement were coded as mediated agreements. The category of 'mediated' was introduced to ascertain, firstly, how far prompting was successful at eliciting the target utterance types and further, if these types continued to be produced without direct prompting. As is evident from the above example, some communicative acts which were not prompted or mediated occurred during the intervention period. Therefore, non-mediated utterances also referred to those produced, but not directly prompted, during intervention.

4.2.2.1 Inter-Observer Reliability

In order to carry out an inter-observer reliability check, a second rater was employed to code 22% of the interactions a second time. That is, eleven dyads, one male and one female dyad from each condition within each age group, except for the 9 year olds in the control condition where only a male dyad was coded a second time.

For the sake of simplicity, inter-observer reliabilities were calculated at five levels: the segmentation of the discourse into communicative acts; the coding of these acts at the topic and type of maintaining utterance levels; the coding of justifications and counters as addressing one's own or another's ideas and whether utterances were mediated or not. Reliability checks at the four latter levels required agreement at the first level. In addition, reliability checks at the types of maintaining utterance level required agreement that the communicative act considered was topic maintaining. Further, reliability checking at the level of own-other justifications and counters required agreement that the actual utterances considered were justifications or

counters. As can be seen from table A, agreement was high across most levels, the lowest level of agreement, 68%, being at the level of whether justifications and counters addressed one's own or another's ideas. In addition Kappa, as outlined by Siegel and Castellan (1988), was calculated for the data at each of these levels and each finding was statistically significant at the 0.01 level, as seen in table A. (See Appendix 3 for all calculations of the Kappa coefficient).

Table A:- Inter-Rater Agreement Scores, along with the Kappa Coefficient and the Significance of Kappa.

	% Agreement	Kappa	Significance
Segmentation into communicative acts	81%	0.4	P<0.01
Topic level categories	87%	0.54	P<0.01
Type of maintaining utterance categories	80%	0.54	P<0.01
Own - other coding	68%	0.36	P<0.01
Mediated - non-mediated	91%	0.8	P<0.01

4.2.3 Data Analysis

The data for the control groups were treated in the same way as the data in the previous studies. That is, at the topic level, the frequencies for each category were converted into percentages of the total number of communicative acts. This was for all categories except for the lengths of topics and the lengths of topics maintained, expressed in terms of mean numbers of acts and the proportions of topics maintained and topic expansions, expressed as a proportion of the total topic initiating acts and adding acts respectively. The categories concerning the types of topic maintaining utterances were expressed as a percentage of the total minimal responses or adding acts depending on the category with which they were concerned.

As the main focus of the present study was to assess the effects of intervention on children's discussion-like dialogue, the data were only split into mediated versus non-mediated utterances for the types of minimally related and adding information acts. Thus, for the intervention groups, the data at the topic level were treated and are presented in the tables in the same way as for the control group. That is, regardless of whether these utterances were mediated or not. However, see Appendix 3 for a table presenting the topic level data with the mediated data deducted. At the level of the types of topic maintaining utterances, the frequencies were converted into proportions of the total mediated minimal responses or total non-mediated minimal responses and the total mediated adding acts or the total non-mediated adding acts.

For the categories of justifications or counters addressing one's own or other's ideas, proportions were calculated from the total numbers of justifications or counters. For the intervention group, only the non-mediated data were considered.

Statistical comparisons of the data across the age groups and conditions involved the use of between subject MANOVAs. However, in the intervention condition for the comparison of the mediated versus the non-mediated data across the age groups, mixed design MANOVAs were used. In order to help interpret age by condition interaction effects, oneway ANOVAs were employed to make comparisons across the age groups within each condition. As in the previous studies follow up tests were implemented to identify the source of variation on any main effects. However, Newman-Keuls follow up tests were used for comparisons across the age groups in the control condition because the numbers of dyads in each age group were equal. Where the numbers of dyads between conditions were different, Tukey hsd tests were implemented as advised by Kirk (1968).

4.3 RESULTS

4.3.1 Overview

Firstly, the conversational interactions will be considered in terms of general qualitative observations and the overall frequencies of communicative acts. This will be followed by a consideration of the data at the topic level, that is topic initiation, maintenance, change, shading, and hierarchicalisation and returns. Within the section on topic maintenance, the data concerning the types of minimal and adding utterances will be presented along with that concerned with whether justifications and counters address one's own view or that of another. A section will also be included that provides a more qualitative consideration of the discussion like discourse produced.

4.3.2 Conversational Interactions

As was the case in the previous two studies, the conversational interactions were centred on the task, there were few external interruptions, and most of the topics were task related. In addition, all the children managed to complete and seemed to enjoy the task.

Table 1:- Mean Total Communicative Acts Across the Age Groups and Conditions.

Control Condition								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Condition
	Uncodable Acts	S.D.	Uncodable Acts	S.D.	Uncodable Acts	S.D.	Uncodable Acts	S.D.
Percentage of Mean Total Acts	3%	2.3	4%	2.8	3%	2.2	3%	2.4
Mean Total Acts	209	100	227	79	296	57	244	86
N=	8		8		8		24	
Intervention Condition								
Percentage of Mean Total Acts	1%	0.6	2%	1.5	3%	2.3	2%	1.7
Mean Total Acts	385	104	396	59	350	126	378	99
N=	12		8		8		28	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	2%	1.7	3%	2.3	3%	2.2		
Mean Total Acts	314	133	311	110	323	98		
N=	20		16		16			

As can be seen in table 1, the numbers of communicative acts produced by the different aged children were both similar and high, totalling 314, 311 and 323 for the 4, 6 and 9 year olds respectively. However, as indicated by the standard deviations, there were large within group differences on this measure. In addition, more communicative acts were produced in the intervention situation, 378, than in the control situation, 244, ($F=26.45$; $D.F.=(1,46)$; $P<0.001$). This effect is still apparent even when mediated utterances are deducted from the data, see Appendix 3. Further, despite an age trend on the numbers of communicative acts produced in the control situation, no interaction effect was evident.

Qualitatively, there were large differences in the general interactive patterns produced by the different aged children within each situation. On the whole, the conversations and topic sequences produced by the 6 and 9 year olds were well organised, co-operative and dialogical in nature. In contrast, those of the 4 year olds were often, although not always, monologic, lacking in joint attention and there were occasional periods of shared unco-operative behaviour. Indeed, 4 year olds, particularly those in the control condition, were often observed to focus only on the pieces they had withdrawn from their own bags. For example K and B (3;10 and 4;4):-

8) B) It's (ice cream van) good there isn't it?	
9) K) That's upside down the, sun.	New topic
10) B) Now its my go.	New topic
11) B) I'll choose ice cream man.	New topic
12) B) Where do you think the tree should go.	New topic
13) B) Do you think that should go up there.	
14) K) Yeah I think so.	
15) B) Do you think that tree goes up there.	
16) K) My go.	New topic
17) B) Let's see what I've got in my bag.	New topic
18) K) Kite [shows kite]	New topic
19) B) I got a person [show lady]	Unplanned return (17)
20) B) Where does this go?	
21) B) Maybe that goes here.	
22) B) Maybe that goes up here	
23) K) (kite) go there.	Unplanned return (18)
24) K) The kite goes there.	
25) K) Kite goes on there.	
26) B) How's that then [point lady]	Unplanned return (17)
27) B) and how's about that then [point tree]	Unplanned return (12)
28) B) Who's go?	New topic
29) B) Oh, my turn	
30) K) [Points at B] Yours	
31) K) And then its me.	
32) B) Now this is meant to go up here see	New topic

As is evident from the above example, the majority of contributions on any one topic are generally produced by one person. In addition, although the children try to co-operate in the taking of turns, there is a lack of joint attention the children being primarily concerned with their own piece when it is not their turn. On occasions this somewhat co-operative and organised conversation broke down and topic fights resulted. However, this was only when the children failed to regulate the taking of turns. For example S and M (4;2 and 4;5):-

79) S) Look what I've got da da [show wind break].	
80) M) This (wind break) goes here [point A3 scene].	
81) M) (Unclear) in there.	
82) S) I know some one (unclear).	
83) M) Look it's changed to a white bike. [shows bike]	Unplanned return (67)
84) S) Look ice cream [show ice cream]	New Topic
85) S) Ice cream [show ice cream]	
86) M) [Looks at ice cream, but continues talking] It's changed to a white bicycle.	Unplanned Return (67)
87) S) [Looks at bike] I got an ice cream. [show ice cream]	Unplanned Return (84)
88) M) Look it's [show bike] changed to a yellow one.	Unplanned Return (67)

89) S) I got an ice cream.	Unplanned Return (84)
90) M) Look it's changed to a yellow [show bike] one.	Unplanned Return (67)
91) S) Ice cream.	Unplanned Return (84)
92) M) It changed to a yellow.	Unplanned Return (67)
93) M) It changed to a yellow.	
94) S) Ice cream.	Unplanned Return (84)
95) S) Ice cream.	
96) S) Ice cream, ice cream.	
97) S) Does it go here?	
98) M) Yeah.	

In the above example, utterances 83 to 94 represented a clear example of a topic fight. That is, both children were actively trying to control the conversational floor and were aware of what their partner had said, indicated by the children looking at the piece waved in front of their face. Accompanying the contributions made by the children was an increase in volume with each contribution peaking at utterances 87, 88 and 89 and then receding. In the above example the topic fight fizzles out and one child gives in. On other occasions the children would attempt to bring some order back into the interactions by re-establishing the turn taking sequence by producing comments such as the following:-

136. L) Hey its my turn.
 137. R) I'm just getting something (a piece) ready (for my next turn).

Further, in comparison to the interactions produced by the children in the previous study, even among the 6 and 9 year olds there was an occasional lack of joint attention. For example A and S (8;6 and 9;2):-

115) A) Put this (speed boat) there.	
116) S) But its my shot now.	New topic
117) S) I know what to do (unclear).	New topic
118) S) Probably he's running in the sand.	
119) A) Put this (speed boat) there.	Unplanned return (115)
120) A) and this (speed boat) goes there.	
121) S) Where could he be running?	Unplanned return (117)
122) S) What could he be doing?	
123) A) Put the dog there.	New topic
124) A) Woah woah	
125) S) He'd probably be trying to get an ice cream	Unplanned return (117)
126) A) He's probably holding the kite.	
127) S) No he can't be.	
128) A) Look, look [shows boy holding kite]	
129) S) Oh aye he can.	

In the above example the children talk on separate topics for a while, separately maintaining their own topics. However, this lack of dialogue and joint attention comes as a result of A failing to pay attention to S, as well as being unco-operative and not allowing S to have his turn. Eventually at line 126, A suddenly decides to co-operate and addresses his partner's topic. This lack of joint attention and co-operation in the older children's dialogues, was definitely the exception rather than the rule.

In contrast to these patterns, the interactions during intervention were controlled by the researcher and therefore were far more orderly. Indeed, intervention from the researcher managed to establish joint attention and dialogue in the interactions of the 4 year olds, as well as, to some extent, focusing the dialogues of the older children.

4.3.3 Topic Management

4.3.3.1 Topic Initiation

As was the case in the previous two studies, new topics were usually initiated once a piece had been put in position or an agreed decision had been made concerning whose turn it was. However, there were occasions where abrupt topic changes were made, particularly among the interactions of the 4 year old children in the control condition. This usually developed out of the children failing to be co-operative in the taking of turns or attending to their own activity. When the interactions were scaffolded topic changes were generally less frequent or abrupt.

As can be seen in table 2, the quantitative data reflect, to some extent, these qualitative observations. Indeed, the 4 and 6 year olds produced slightly more topic initiations than the 9 year olds, that is 21%, 20% and 17% for each age group respectively. A MANOVA found this main effect to approach statistical significance ($P=0.052$). However, when the mediated utterances were deducted from the data, this effect became statistically significant, see Appendix 3. This finding illustrates the effect that the intervention had on the children's interactions. That is, the levels of topic maintenance elicited by the intervention were actually lower among the older children than the younger children. By deducting these mediated maintaining utterances the proportions of topics initiated increased, but more among the 4 year old children.

Table 2:- Mean Percentages of Topics Initiated Across the Age Groups and Across the Two Situations.

Control Condition								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Condition
	Topic Initiating Acts	S.D.	Topic Initiating Acts	S.D.	Topic Initiating Acts	S.D.	Topic Initiating Acts	S.D.
Percentage of Mean Total Acts	26%	6.5	26%	5.4	19%	4.2	24%	7.2
Mean Total Acts	209	100	227	79	296	57	244	86
N=	8		8		8		24	
Intervention Condition								
Percentage of Mean Total Acts	17%	3.3	15%	3.1	15%	3.0	16%	3.3
Mean Total Acts	385	104	396	59	350	126	378	99
N=	12		8		8		28	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	21%	7.6	20%	7.2	17%	4.1		
Mean Total Acts	314	133	311	110	323	98		
N=	20		16		16			

In further concordance with the qualitative observations, the levels of topic initiation were much lower in the intervention condition, 16%, than the control condition, 24%, ($F=30.57$; $D.F.=(1,46)$; $P<0.001$). This finding indicates that the intervention condition elicited other types of topic managing utterances and as will be evident shortly these were topic maintaining utterances, particularly by way of adding information.

In addition to these patterns, whereas in the control condition the 6 year olds produced similar levels of topic initiations to the 4 year olds, in the intervention condition they produced similar levels to that of the 9 year olds. This implies that the intervention was particularly effective for these children, encouraging higher levels of topic maintaining utterances. However, despite this apparent interactions, it was not found to be significant.

4.3.3.2 Topic Maintenance

There were a number of qualitative differences between the different aged children and situations, in the way topics were maintained. As was noted earlier, the interactions of the 4 year olds, especially in the control condition, lacked a certain amount of joint attention. These children were often more interested in their own

activity, but continued to take turns to take and talk about their pieces. This resulted in the children taking turns to speak monologically on their piece, as illustrated in the example presented in section 4.3.2. Indeed, at many points within the 4 year olds' interactions, the negotiation and taking of turns to consider a piece was the only feature that could define the activity as interactive. However, when the children encountered a problem, or felt like it, the topics would become dialogical. In contrast to these patterns, in the intervention situation, the researcher was at hand to restore joint attention and dialogue.

As was the case in the previous study, topics concerned with the taking of turns were only maintained when there was some dispute over, and/ or the children could not remember, whose turn it was. As the older children were more co-operative and able to remember whose turn it was, these topics were rarely maintained if initiated at all. This lack of the maintenance of topics was also noticeable for what might be considered the more 'obvious' pieces such as the sun, plane, clouds and boats and so on.

As will become evident, the quantitative data for the proportions of topics maintained only partly reflect these qualitative observations. Indeed, despite major qualitative differences in the way topics were maintained between the conditions, as can be seen from table 3, the majority of topics were maintained in both conditions. Further, although there was a general increase with age in the proportion of topics maintained ($F=3.67$; $D.F.=(2,46)$; $P<0.05$), this effect was due to differences between the age groups in the intervention situation rather than that of the control. That is, whereas there was an increase with age on this measure in the intervention condition ($F=8.71$; $D.F.=(2,25)$; $P<0.01$), in the control condition no such effect was apparent. These patterns constituted an age by situation interaction, ($F=5.03$; $D.F.=(2,46)$; $P<0.05$), which is illustrated in graph 1.

The lack of an age difference in the control condition is not surprising given that: firstly, for one reason or another, all children did not maintain some of the topics initiated: and secondly, although the 4 year olds' interactions lacked joint attention this generally resulted in monologic or predominantly monologic topics rather than a lack of topic maintenance.* However, what is apparent is that the data for the intervention

* It should also be recalled that even when a topic was not maintained in the first instance, if it was reintroduced then it was considered maintained. Even if the children engaged in topic fights, a high proportion of topics maintained might be achieved. Thus. these data do not capture the full picture or

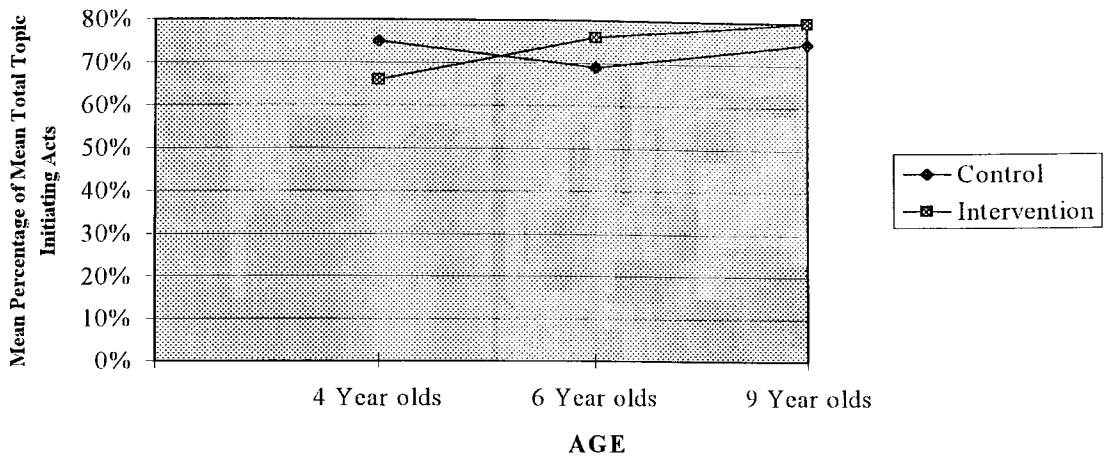
situation do reflect, although indirectly, the qualitative observations. That is, in order to re-establish joint attention and dialogue, the researcher was often required to reintroduce topics after one child had attempted to change the topic. This resulted in a number of topic initiations not becoming maintained, especially among the 4 year olds. A post-hoc analysis of the number of times this occurred, confirmed this. On average 6 topic initiations produced by each 4 year old dyad were not maintained because of the researcher reintroducing the preceding topic to establish dialogue. In contrast, as the older children's interactions were far more mutually focused and dialogical, the researcher only had to counter on average 1.8 and 0.8 topic initiations for 6 and 9 year old dyads respectively. Once these topics are deducted from the total number of topic initiations considered, the differences between the age groups and conditions on the proportion of topics maintained, level out to some extent. Indeed, the adjusted proportions are 73%, 78% and 81% for the 4, 6 and 9 year olds respectively.

Table 3:- Mean Percentages of Topic Initiating Acts Maintained of the Total Topic Initiating Acts Across the Age Groups and Situations.

Control Condition								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Condition
	Topic Initiating Acts Maintained	S.D.	Topic Initiating Acts Maintained	S.D.	Topic Initiating Acts Maintained	S.D.	Topic Initiating Acts Maintained	S.D.
Percentage of Topic Initiating Acts	75%	11	69%	6.6	75%	5.8	73%	8.3
Mean Total Topic Initiating Acts	51	21	55	16	56	9.9	54	16
N=	8		8		8		24	
Intervention Condition								
Percentage of Topic Initiating Acts	66% a	5.8	76% b	10	80% b	7.4	73%	9.5
Mean Total Topic Initiating Acts	64	12	57	8.4	51	12	59	12
N=	12		8		8		28	
Mean Totals for Age Groups								
Percentage of Topic Initiating Acts	70% a	9	73%ab	9	78% b	7		
Mean Total Topic Initiating Acts	59	17	56	13	54	11		
N=	20		16		16			

reflect the extent of the qualitative observations. However, given that the levels of returns were fairly low, see section 4.3.3.5, despite being used by 4 year olds for topic fighting, co-operation in the taking of turns on a topic, whether monologic or not, was high.

Graph 1: Mean Percentage of Topics Maintained of the Total Topic Initiating Acts Across Age and Context.



Turning now to consider the data for the mean length of topics and the mean length of maintained topics, further patterns were evident. Firstly, it should be noted that although the data for the intervention condition include those utterances which were mediated, as noted earlier, when these utterances are eliminated from the data the patterns are essentially the same, although slightly shorter in length, see Appendix 3.

As can be seen from the lower section of table 4, overall the 9 year olds maintained topics for longer than the 4 year olds. This was the case for both the mean length of topics ($F=9.21$; $D.F.=(2,46)$; $P<0.001$) and for the mean length of maintained topics ($F=4.56$; $D.F.=(2,46)$; $P<0.05$). The differences for the former measure existed between the 4 and 9 year olds, however for the latter, follow up tests failed to identify differences between the groups.

In addition, the intervention condition elicited longer mean topic lengths than the control condition, 5.5 as opposed to 4.4 respectively ($F=20.8$; $D.F.=(2,46)$; $P<0.001$) and mean lengths of maintained topics, 7.3 and 5.6 respectively ($F=26.8$; $D.F.=(2,46)$; $P<0.001$). Clearly, intervention elicited higher levels of topic maintaining utterances.

Table 4:- Mean Length of Topics and Maintained Topics Across the Age Groups and Situations.

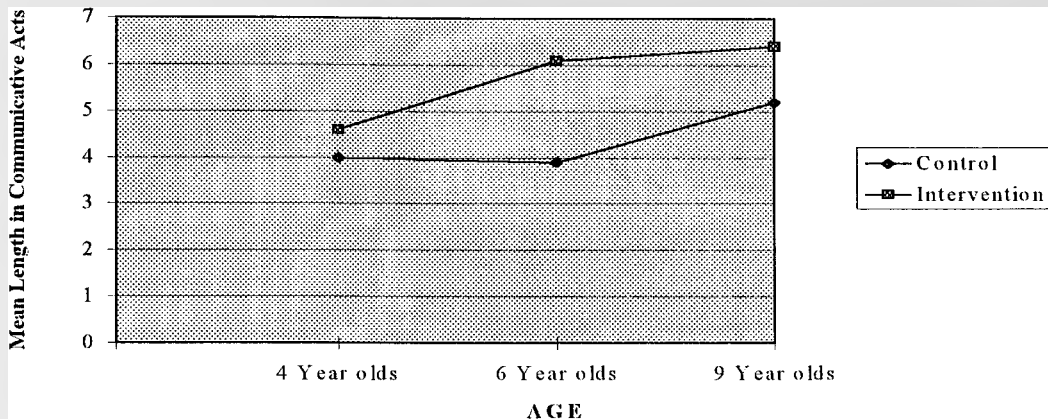
Control Condition								
	4 Year	Olds	6 Year	Olds	9 Year	olds	Totals for	Condition
	Mean Acts	S.D.	Mean Acts	S.D.	Mean Acts	S.D.	Mean Acts	S.D.
Mean Length Of Topics	4.0 a	1.1	3.9 a	0.8	5.2 b	1.1	4.4	1.2
Mean Length Of Maintained Topics	5.0	1.2	5.1	1.2	6.6	1.4	5.6	1.5
N=	8		8		8		24	
Intervention Condition								
Mean Length Of Topics	4.6 a	0.7	6.1 b	1.2	6.4 b	1.3	5.5	1.3
Mean Length Of Maintained Topics	6.7	0.8	7.7	1.2	7.7	1.6	7.3	1.3
N=	12		8		8		28	
Mean Totals for Age Groups								
Mean Length Of Topics	4.4 a	0.9	5.0 ab	1.5	5.8 b	1.3		
Mean Length Of Maintained Topics	6.0	1.3	6.4	1.8	7.1	1.6		
N=	20		16		16			

Moreover, despite similar age trends in each condition, an interaction effect was found to approach significance for the mean length of topics ($P=0.07$). As is apparent from table 4 and graph 2, the mean length of topics were longer for the older children, particularly the 6 year olds, in the intervention condition than in the control condition. In contrast, the 4 year olds produced similar lengths of topics in both situations. This stems from the earlier finding that for the scaffolded interactions of the 4 year olds, a number of topic initiations were not maintained because they were countered by the researcher trying to re-establish dialogue. Indeed, once the topics that were not maintained are deducted, the mean length of maintained topics are a lot longer and the interaction is no longer evident.

In sum, it was noted qualitatively, that although the older children maintained joint attention and engaged in dialogue, there were regular occasions, particularly in the control condition, where the 4 year olds did not. However, rather than escalating into a lack of topic maintenance, these children were generally co-operative in that they took turns to talk about their own pieces, as reflected by the fairly high proportions of topics maintained. However, in the intervention situation, attempts by the researcher to re-establish dialogue among the 4 year olds, resulted in lower proportion for this measure. Once adjusted the proportions were of similar levels to

the control condition, although an age trend was still apparent. In addition to these findings, there were increases with age in the lengths of topics and it was apparent that intervention was successful at eliciting higher amounts of topic maintenance, as indicated by longer topics than in the control condition.

Graph 2: Mean Length of Topics Across Age and Context.



At this point we will now turn to consider the way in which topics were maintained. This will involve a consideration of minimally related acts and adding information acts as well as the subcategories of the types of utterances that make up these measures.

4.3.3.2.1 Minimally Related Acts

Minimal responses were used regularly by all the children and at similar levels. As can be seen in table 5, the mean total levels of minimal responses across the age groups were generally around 32% to 35% of the total communicative acts. Further, the levels of minimal responding were relatively similar across the two conditions, 32% for the control condition and 35% for the intervention condition. Indeed, no significant age or situation differences were found on this measure.

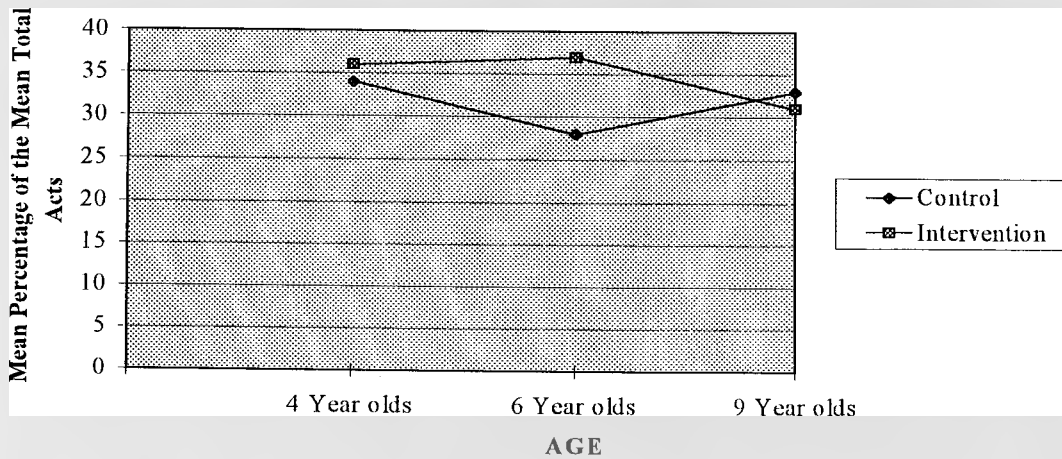
Statistical analysis revealed a significant age by condition interaction ($F=3.19$; $D.F.=(2,46)$; $P=0.05$). However, oneway ANOVAs and follow up tests failed to find age effects in either context or to identify the source of the variance. As illustrated in graph 3, whereas the 4 and 9 year olds produced similar amounts of minimal responses in both conditions, the 6 year olds produced far more during intervention than in the control condition. However, when the mediated minimal responses are deducted from the data in the intervention condition (see Appendix 3), the interaction

trend is no longer evident. This implies that the 6 year olds were responding to the intervention in the form of minimally related utterances. As will be evident in the next section the extra mediated minimal responses produced by the 6 year olds generally took the form of 'others'.

Table 5:- Mean Percentage of Minimally Related Acts Across the Age Groups and Situations.

Control Condition								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Condition
	Minimally Related Acts	S.D.	Minimally Related Acts	S.D.	Minimally Related Acts	S.D.	Minimally Related Acts	S.D.
Percentage of Mean Total Acts	34%	9.5	28%	5.6	33%	2.6	32%	6.8
Mean Total Acts	209	100	227	79	296	57	244	86
N=	8		8		8		24	
Intervention Condition								
Percentage of Mean Total Acts	36%	6.7	37%	6.6	31%	2.3	35%	6.1
Mean Total Acts	385	104	396	59	350	126	378	99
N=	12		8		8		28	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	35%	7.8	32%	7.4	32%	2.7		
Mean Total Acts	314	133	311	110	323	98		
N=	20		16		16			

Graph 3: Mean Percentage of Minimal Responses of the Mean Total Acts Across the Age Groups and Situations.



4.3.3.2.1.1 Types of Minimally Related Acts

As was the case in the previous two studies, the data concerning the types of minimal responses are split across two tables (6 and 7). In order to assess the effects of the intervention, on the levels of discussion like dialogue, the data for the intervention condition are split into those which were a result of prompting by the researcher, and those which were not. These are displayed in the tables under mediated and non-mediated respectively. (This will also be done in the later section on the types of adding utterances, 4.3.3.2.2.1). Comparisons of the data in the present section will take the following format. Firstly, for each measure overall age, ignoring condition, effects will be reported. These data involve all of the utterances produced by the children, excluding those that were mediated. After this, comparisons will be made between the data for the control condition and the mediated data for the intervention condition. This will indicate what the children were capable of with the help of the 'more capable' researcher. Finally, comparisons will be made between the control condition and the non-mediated data for the intervention condition. The differences between these data will indicate what the children were capable of doing when intervention was not in force, that is whether the intervention had an effect on the way the children interacted and conversed on the task.

Before considering the data for the types of minimal responses, it is interesting to note that, as is apparent from table 6, the totals of mediated minimal responses decreased with age. This illustrates that the intervention was adjusted to the different aged children, the younger children being requested for minimal responses more frequently than the older children. As will become evident, the older children were already producing agreements and therefore required little encouragement.

Repetitions

In terms of general age differences in the levels of repetitions regardless of the condition, there were clear age differences. As can be seen at the bottom of table 6, the 4 year olds repeated more often than the 6 year olds who repeated more than the 9 year olds ($F=42.65$; $D.F.=(2,46)$; $P<0.001$).

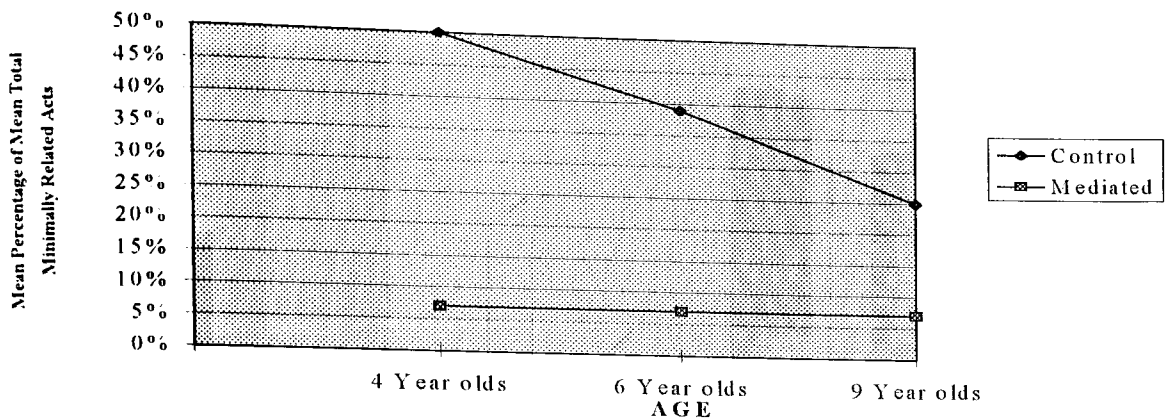
Further, as can be seen on the right of table 6, there were clear differences between the levels of repetitions produced in the control condition, 38%, and those in response to mediation, 7%, ($F=270.19$; $D.F.=(1,46)$; $P<0.001$). Concerning the patterns for this measure across the age groups and between the control and mediated conditions an interaction was apparent ($F=15.08$; $D.F.=(2,46)$; $P<0.001$). As is

illustrated in table 6 and graph 4, the levels of mediated repetitions remained constant, 7%, across the three age groups. In contrast, in the control condition the levels of repetitions decreased dramatically as age increased ($F=19.78$; $D.F.=(2,21)$; $P<0.001$) each age group being significantly different from the other two. These findings indicate that the researcher was not actively encouraging the use of repetition among the children. However, it is evident that as repetitions and agreements can be, on occasions, functionally equivalent, the scaffolding of the latter may have affected the levels of the former.

Table 6:- Mean Percentage of Types of Minimally Related Acts of the Total Minimally Related Acts Across Age and Situation (Including Mediated and Non-Mediated).

Control Condition								
Minimal Responding	4 Year Olds		6 Year Olds		9 Year Olds		Condition Totals	
	%	S.D.	%	S.D.	%	S.D.	%	S.D.
Repeat	50% ^a	8.7	39% ^b	8.4	25% ^c	6.4	38%	13
Agree	9% ^a	5.3	16% ^{ab}	11	22% ^b	11	16%	11
Total Minimal Responses	73	40	66	27	99	22	79	33
N=	8		8		8		24	
Intervention (Non-Mediated) Condition								
Repeat	52% ^a	11	30% ^b	10	21% ^b	8.7	37%	17
Agree	10% ^a	4.9	27% ^b	15	35% ^b	9.7	22%	15
Total Minimal Responses	99	36	110	38	92	39	100	37
N=	12		8		8		28	
Intervention (Mediated) Condition								
Repeat	7%	4.1	7%	5.5	7%	7.3	7%	5.4
Agree	63%	12	50%	11	63%	11	59%	12
Total Minimal Responses	39	12	37	12	17	6.3	32	14
N=	12		8		8		28	
Mean Totals for Age Groups								
Repeat	52% ^a	9.8	35% ^b	10	23% ^c	7.8		
Agree	9% ^a	5.0	22% ^b	14	29% ^b	12		
Total Minimal Responses	89	39	88	39	95	31		
N=	20		16		16			

Graph 4: Mean Percentage of Repetitions of the Mean Total Minimally Related Acts Across Age and the Control and Mediated Conditions.



As is further evident from table 6, there was no difference in the proportions of repetitions between the control condition and the non-mediated data of the intervention situation, the levels being 38% and 37% respectively. These patterns generally indicate that as a result of the intervention the levels of repetitions did not decrease. However, as is apparent from a comparison of the age patterns within each condition, the levels of non-mediated repetitions were slightly lower for the 6 and 9 year olds than for their counterparts in the control condition. In contrast, levels of non-mediated repetitions among the 4 year olds were about equivalent to those produced by the 4 year olds in the control condition. Despite these trends, no significant interaction was identified.

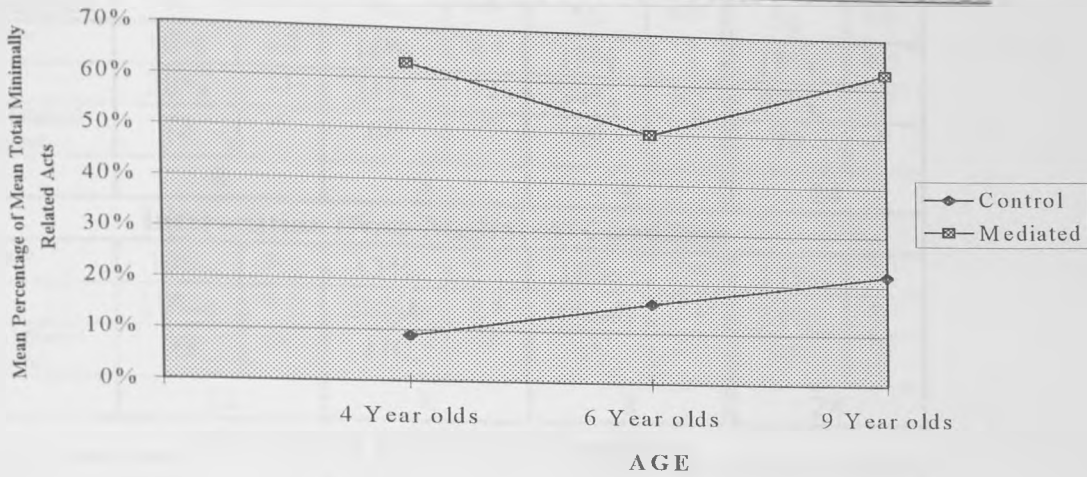
Agreements

A number of interesting patterns were evident for the measure of agreements. As can be seen from the lower section in table 6, agreements were used more frequently by the older children than the 4 year olds ($F=18.06$; $D.F.=(2,46)$; $P<0.001$).

In addition, the mediated intervention elicited higher levels of agreements, 59%, than those produced in the control condition, 16% ($F=209.9$; $D.F.=(1,46)$; $P<0.001$). This clearly indicates that the intervention, which aimed to encourage higher amounts of agreement and/ or disagreement, was successful in that the children were keen to express either, when requested. Further, as can be seen in table 6 and graph 5, there was a clear age by condition interaction ($F=4.20$; $D.F.=(2,46)$; $P<0.05$). Whereas similar levels of mediated agreements, given the standard

deviations, were produced by the children during intervention, in the control condition agreements increased with age.

Graph 5: Mean Percentage Agreements of the Mean Total Minimally Related Acts Across Age and the Control and Mediated Conditions.



Moreover, the effects of the intervention on the levels of agreement seemed to continue after withdrawal. Indeed, the level of non-mediated agreement was higher than in the control condition, that is, 22% and 16% respectively. This pattern was found to be statistically significant ($F=10.04$; $D.F.=(1,46)$; $P<0.01$). However, this is not the full picture as although the levels of non-mediated agreements were higher than those in the control condition, the distribution of this was not equal across the different aged children. Indeed, for the 4 year olds the proportions of agreements were much the same in both situations, 9% for the control and 10% for the non-mediated data. On the other, hand the 6 and 9 year olds differed substantially between the two situations with the levels being between 11% and 13% higher after intervention. Despite these patterns, a MANOVA failed to identify an age by situation interaction. These results clearly indicate that despite the production of a higher level of agreements in response to prompting, only the 6 and 9 year olds continued to use these at a slightly higher level. Evidently, the 4 year olds found the expression of agreement of little use in their interactions.

Disagreements

Turning now to consider the measure of disagreements, few patterns were evident as can be seen in table 7. In terms of age regardless of situation, disagreements were of similar levels across the age groups.

Table 7:- Mean Percentage of Types of Minimally Related Acts of the Total Minimally Related Acts Across Age and Situation (Including Mediated and Non-Mediated).

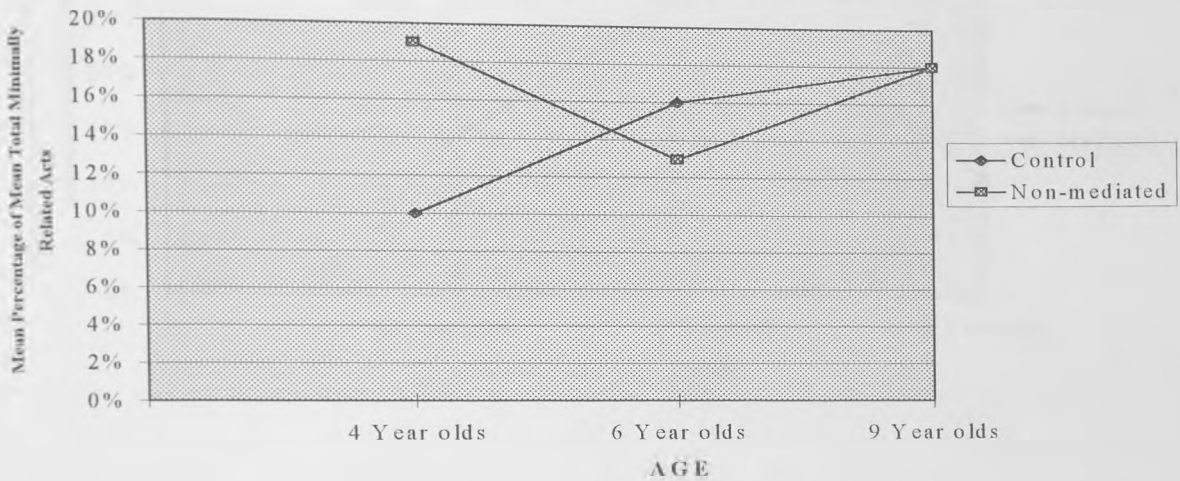
Control Condition								
Minimal Responding	4 Year Olds		6 Year Olds		9 Year Olds		Condition Totals	
	%	S.D.	%	S.D.	%	S.D.	%	S.D.
Disagree	10%	2.2	16%	8.9	18%	6	15%	6.9
Other	28%	13	28%	12	34%	9.3	30%	12
Total Minimal Responses	73	40	66	27	99	22	79	33
N=	8		8		8		24	
Intervention (Non-Mediated) Condition								
Disagree	19%	8.1	13%	4.5	18%	7.8	17%	7.2
Other	19% ^a	5.1	28% ^b	8.4	26% ^{ab}	7.2	24%	7.7
Total Minimal Responses	99	36	110	38	92	39	100	37
N=	12		8		8		28	
Intervention (Mediated) Condition								
Disagree	16%	10	12%	7.2	19%	20	16%	13
Other	14% ^a	6.6	30% ^b	20	11% ^a	8.8	18%	14
Total Minimal Responses	39	12	37	12	17	6.3	32	14
N=	12		8		8		28	
Mean Totals for Age Groups								
Disagree	15%	7.6	15%	7.0	18%	6.8		
Other	23%	10	28%	10	30%	9.2		
Total Minimal Responses	89	39	88	39	95	31		
N=	12		16		13			

Further, mediated intervention seemed to elicit similar levels of disagreements as produced in the control condition, that is 15% and 16% respectively. Moreover, during intervention the 9 year olds produced more mediated disagreements than the 4 year olds who produced more than the 6 year olds. In contrast, in the control condition there was an increase with age in the proportions of disagreements. However, it should be noted that there is a substantial amount of within group variance on this measure and therefore no significant age by situation interaction was evident.

However, in terms of a comparison of the non-mediated disagreements with those of the control condition the data are interesting. Although between each situation there was no difference in the overall levels of disagreement, the patterns across the age groups within each situation are slightly different, suggesting an

interaction. When a MANOVA was applied to these data the interaction effect was found to approach significance ($P=0.052$). As can be seen in table 7 and graph 6, the root of the interaction seems to be the higher level of non-mediated disagreements produced by the 4 year olds than those produced in the control condition. In contrast the levels for the older children remained about the same in both situations. The implication is that, although after intervention the older children found it useful to produce more agreements, the 4 year olds found it beneficial to use more disagreements.

Graph 6: Mean Percentage Disagreements of the Mean Total Minimally Related Acts Across Age and the Control and Non-mediated Conditions.



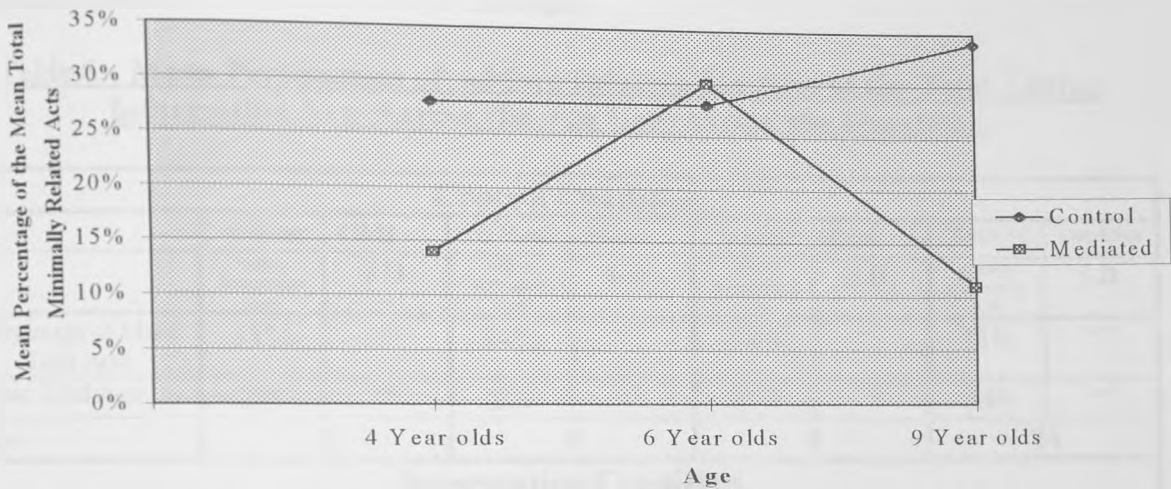
'Others'

Finally, levels of 'other' types of utterances, as can be seen in table 7, increased with age generally. However, due to high levels of within group variance a MANOVA failed to find this effect statistically significant.

Moreover, the level of mediated 'others', 18%, was lower than those produced in the control condition, 30%, ($F=11.74$; $D.F.=(1,46)$; $P<0.001$). However, despite lower amounts of mediated 'others' for the 4 and 9 year olds than their counterparts in the control condition, no equivalent pattern was apparent in the levels of 'others' produced by the 6 year olds. Indeed, from a comparison of tables 6 and 7 it seems as though the 6 year olds were responding by way of 'others' instead of by agreement or disagreement. This implies an age by situation interaction, which is illustrated in graph 7, ($F=4.68$; $D.F.=(2,46)$; $P<0.05$).

Once intervention was withdrawn, the levels of non-mediated 'others' were lower, 24%, than those produced in the control condition, 30% ($F=4.68$; $D.F.=(1,46)$; $P<0.05$). Further, whereas the 6 year olds produced similar amounts of 'others' in both conditions, the 4 and 9 year olds produced fewer non-mediated 'others' than in the control condition. Although these trends represent an interaction, this effect was not significant.

Graph 7: Mean Percentage of 'Others' of the Mean Total Minimally Related Acts Across the Age and the Control and Mediated Conditions.



Summary

In sum, whereas the 4 and 9 year olds produced similar levels of minimal responses in both conditions, the 6 year olds produced more during the intervention condition. For the measures of the types of minimal responses, differences were evident both between the age groups and, to some extent, across the conditions. Repetitions and agreements decreased and increased with age respectively. Further, although high levels of agreement and low levels of repetition were elicited through mediation, the levels of these measures were much the same for the non-mediated data, as for that in the control condition. In addition, whereas for the older children the levels of disagreements were much the same between the control, non-mediated and mediated data, for the 4 year olds the levels were higher for the non-mediated data. Finally, although the levels of 'other' minimal responses were lower for the 4 and 9 year olds in the intervention than in the control condition, the levels remained the same for the 6 year olds. We now turn to consider the data concerning the adding of information.

4.3.3.2.2 Adding Information

The amounts of adding information, as shown in table 8, were equally high for all the children with only a slight age trend apparent in the data. In contrast a clear difference was apparent between the two situations, the proportion of adding being lower in the control condition, 33%, than in the intervention condition, 41%, ($F=25.78$; D.F.=(1,46); $P<0.001$). Further, when mediated utterances were deducted from these data the overall trends remained the same, see table in Appendix 3. These results illustrate the beneficial effects of the intervention which encouraged the children to add more information to the topic.

Table 8:- Mean Percentages of Adding Information Acts of the Total Adding Information Acts Across the Age Groups and the Situations.

Control Condition								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Condition
	Adding Information Acts	S.D.	Adding Information Acts	S.D.	Adding Information Acts	S.D.	Adding Information Acts	S.D.
Percentage of Mean Total Acts	31%	4.2	34%	4.5	34%	6.1	33%	4.9
Mean Total Acts	209	100	227	79	296	57	244	86
N=	8		8		8		24	
Intervention Condition								
Percentage of Mean Total Acts	40%	7.2	40%	4.9	42%	3.4	41%	5.6
Mean Total Acts	385	104	396	59	350	126	378	99
N=	12		8		8		28	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	36%	7.4	37%	5.6	38%	6.3		
Mean Total Acts	314	133	311	110	323	98		
N=	20		16		16			

Further, as is evident from the table, the levels of adding across the age groups within each situation were almost equivalent and therefore no statistically significant interaction effect was identified.

As is apparent from table 9, topics were regularly expanded by all the children, but more by the older children than the 4 year olds ($F=4.65$; D.F.=(2,46); $P<0.05$). Further the levels of topic expansions were higher in the control condition, 44%, than in the intervention condition, 32%, ($F=24.93$; D.F.=(1,46); $P<0.001$). This result is not surprising given that the researcher's prompting will have functioned, on occasions, to expand topics rather than allowing children to do this. Moreover, fewer expansions would be expected because intervention was aimed at encouraging

discussion of a point or issue rather than expanding the topic in a variety of directions. Further, as the 4 year olds' interactions involved more intervention than those of the older children, this effect was more pronounced among the younger children. However, no age by context interaction was evident.

Table 9:- Mean Percentage of Topic Expansions of the Total Adding Information Acts Across the Age Groups and Situations.

Control Condition								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Condition
	Topic Expanding Acts	S.D.	Topic Expanding Acts	S.D.	Topic Expanding Acts	S.D.	Topic Expanding Acts	S.D.
Percentage of Mean Total Acts	41%	15	47%	7.6	45%	6.9	44%	10
Mean Total Adding Acts	65	33	78	33	102	31	82	35
N=	8		8		8		24	
Intervention Condition								
Percentage of Mean Total Acts	27% a	5	36% b	4.6	35% b	7	32%	7
Mean Total Acts	156	56	158	28	150	63	155	50
N=	12		8		8		28	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	32% a	12	41% b	8	40% ab	8.4		
Mean Total Acts	119	66	118	51	126	54		
N=	20		16		16			

4.3.3.2.1 *Types of Adding Information Acts*

Once again the data for the types of adding utterances are split across two tables (10 and 11). Further, the results for each measure will be considered in the same ordering as for the types of minimal responses, as described at the start of section 4.3.3.2.1.1. That is, firstly general age differences (excluding the mediated data), differences between the control condition and the mediated data, and finally differences between the control condition and non-mediated data.

'New'

The levels of 'new' information, that is statements, directives, requests for new information and confirmation and so on, decreased as the age of the children increased. As can be seen from the lower section of table 10, the levels of 'new' were highest for the 4 year olds, 81%, and decreased with increases in age to 74% and 68% for the 6 and 9 year olds respectively ($F=13.8$; $D.F.=(2,46)$; $P<0.001$). This

reconfirms the finding, evident in the previous two studies, that as the children get older they seem to produce a wider variety of types of adding utterances.

Table 10:- Mean Percentage of the Types of Adding Information of the Total Adding Information Acts Across the Age Groups and Situations (Including Mediated and Non-Mediated Data).

Control Condition								
Adding	4 Year Olds		6 Year Olds		9 Year Olds		Condition Totals	
	%	S.D.	%	S.D.	%	S.D.	%	S.D.
New	91% ^a	6.8	78% ^b	5.7	76% ^b	7.5	82%	9.1
Justification	2% ^a	2.5	5% ^b	2.9	6% ^b	2.9	5%	3.4
Suggestion	5%	5.1	10%	7.5	12%	7	9%	6.9
Counters	1%	1.3	2%	2.7	3%	2.2	2%	2.1
Results	1%	1.4	2%	1.2	2%	1.4	1%	1.4
Total Adding	65	³³	78	³³	102	³¹	82	³⁵
N=	8		8		8		24	
Intervention (Non-Mediated) Condition								
New	75% ^a	11	68% ^{ab}	11	60% ^b	6.1	69%	11
Justification	8%	4.6	9%	4.6	11%	3.6	10%	4.4
Suggestion	10% ^a	5.9	15% ^{ab}	11	19% ^b	5.8	14%	8.6
Counters	4%	2.4	4%	2.9	5%	2.6	4%	2.6
Results	2%	2.6	4%	2.6	3%	3.1	3%	2.7
Total Adding	130	⁴⁹	135	²⁴	134	⁶¹	133	⁴⁶
N=	12		8		8		28	
Intervention (Mediated) Condition								
New	36%	22	46%	17	35%	26	39%	21
Justification	43%	20	26%	17	36%	8.5	36%	18
Suggestion	17%	13	22%	16	26%	19	21%	16
Counters	2%	2.4	3%	4.2	0.6%	1.8	2%	2.9
Results	0%	0	0.4%	1.1	0.8%	2.1	0.3%	1.3
Total Adding	26	¹¹	23	^{9.8}	16	^{3.4}	32	¹⁴
N=	12		8		8		28	
Mean Totals for Age Groups								
New	81% ^a	12	74% ^{ab}	11	68% ^b	10		
Justifications	6%	5.1	7%	4.3	9%	4.1		
Suggestions	8% ^a	5.9	12% ^{ab}	9.5	16% ^b	7.1		
Counters	3%	2.2	3%	2.9	4%	2.6		
Results	2%	2.3	3%	2.2	2%	2.5		
Total Adding	104	⁵³	107	⁴¹	118	⁵⁰		
N=	20		16		16			

Further, as is evident from the right hand side of table 10, the levels of 'new' information were much higher in the control condition than for the mediated data ($F=85.05$; $D.F.=(1,46)$; $P<0.001$) implying that intervention elicited higher amounts of the utterances involved in discussion-like dialogue. Although the levels of mediated 'new' utterances were highly variable within each age group, the intervention seemed to elicit more from the 6 year olds, 46%, than the 4 or 9 year olds, 36% and 35% respectively. In contrast, in the control condition the levels of 'new' utterances decreased as age increased. These patterns imply an age by situation interaction, however, due to high levels of within group variation this was not statistically significant.

As well as eliciting fewer 'new' utterances, intervention also encouraged the children to use other types of utterances when not prompted. That is, the general level of non-mediated 'new' utterances remained lower, 69%, than that in the control condition, 82%, ($F=37.40$; $D.F.=(1,46)$; $P<0.001$). This pattern was the same across the different age groups, all the children producing fewer non-mediated 'new' utterances than their counterparts in the control group.

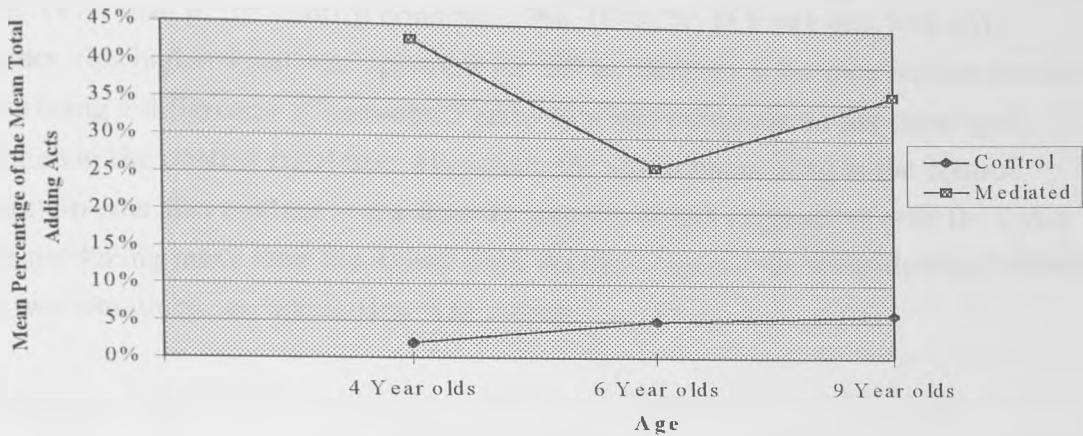
Justifications

In contrast to these patterns, the total levels of justifications increased with age, going from 6% to 7% to 9%, for the 4, 6 and 9 year olds respectively ($F=4.58$; $D.F.=(2,46)$; $P<0.05$). However, follow up tests failed to identify the source of the significant difference.

Further, during the intervention higher levels of mediated justifications were elicited from the children, 36%, as opposed to 5% from the children in the control condition. Indeed, a MANOVA found this effect to be significant ($F=77.3$; $D.F.=(1,46)$; $P<0.001$). Further, the levels of mediated justifications were highest for the 4 year olds, 43%, and lowest for the 6 year olds, 26%, the 9 year olds coming in between. However, once again the amount of within group variance was very high on this measure and no statistical differences were observed. In contrast in the control group an age trend was evident, the older children producing more justifications than the 4 year olds ($F=6.02$; $D.F.=(2,21)$; $P<0.01$). These patterns imply an interaction, as illustrated in graph 8, in that the 4 year olds go from producing the lowest levels of justifications to producing the highest level of mediated justifications. However, a MANOVA only found the interaction to approach significance ($P=0.053$). These patterns clearly indicate that 4 year olds are able to produce justifications with the

help of the researcher. The lower levels of mediated justifications produced by the 6 and 9 year olds may be due to these children already producing justifications and therefore the researcher was not required to elicit them as frequently from these children.

Graph 8: Mean Percentage of Justifications of the Mean Total Adding Acts Across Age and the Control and Mediated Conditions.



Further, direct mediation encouraged the children to produce justifications without prompting, that is, as can be seen in table 10, the levels of non-mediated justifications were higher, 10%, than those in the control condition, 5%, ($F=24.37$; $D.F.=(1,46)$; $P<0.001$). Moreover, all the children in the intervention condition produced higher levels of non-mediated justifications than the children in the control condition. Indeed, the 4 year olds produced higher levels of justifications after intervention, 8%, than 9 year olds had produced in the control condition, 6%. Despite these higher levels of non-mediated justifications, there was still an age trend, although not significant, on this measure.

Suggestions

The results for suggestions follow a similar pattern to those of justifications. As can be seen from the lower section of table 10, the total levels of suggestions increased with age, the 9 year olds producing twice as many as the 4 year olds ($F=5.97$; $D.F.=(2,46)$; $P<0.01$).

Further, the intervention successfully elicited higher levels of mediated suggestions, 21%, than were produced in the control condition, 9%, ($F=13.14$, $D.F.=(1,46)$; $P<0.01$). As was the case for justifications, these higher levels of mediated suggestions indicate that direct intervention was effective at eliciting the

types of utterances involved in discussion like dialogue. However, clearly the intervention affected the children equally because the age trend apparent in the control condition is also apparent for the mediated data. Thus no interaction was evident on this measure.

As was the case for justifications, the intervention encouraged the children to produce suggestions spontaneously, that is non-mediated suggestions, and at a higher level, 14%, than in the control condition, 9%, ($F=6.71$; $D.F.=(1,46)$; $P<0.05$). Further, this higher level was apparent for all the children in the intervention situation, there being a difference of between 5 and 7% when compared to the same aged children in the control condition. However, the age trend evident in the control condition was also evident in the data for non-mediated suggestions with the 9 year olds producing more than the 4 year olds. As these age trends were identical between the two situations, no interaction was evident.

Counters

Moving on to consider the data for counters, the general patterns were slightly different. As can be seen from the lower portion of table 10, the total levels of counters did not vary much between the age groups, generally remaining around the 3% to 4% mark.

Further, there was no difference in the level of counters produced during the control condition, 2%, and those elicited through mediation in the intervention condition, 2%. That is, intervention was unsuccessful at directly eliciting higher levels of counters. This is not surprising given that there is no way of directly or indirectly requesting this type of utterance. However, from a comparison of the data for each age group in each situation it is apparent that intervention did elicit slightly higher levels of counters among 4 and 6 year old children but next to none from the 9 year olds.

Unexpectedly, the levels of counters were slightly higher without prompting, 4%, than they were in the control condition, 2% (or during mediation), ($F=11.46$; $D.F.=(1,46)$; $P<0.01$). Further, although there were no clear age trends for non-mediated counters, the levels were higher, by about 2% to 3%, for all the age groups, than for the same aged children in the control condition. Indeed, the 4 year olds produced slightly higher levels of counters after the intervention than the 9 year olds had produced during the control condition. This indicates that although intervention

was unable to elicit higher levels of counters directly, the overall effect of trying to encourage discussion like dialogue seems to have encouraged the use of this type of utterance. Further, it may also be the case that encouraging the use of certain kinds of justification, those that provide information against another's position, will have produced increases in the levels of counters because these two forms generally have the same function.

'Results'

The data for the 'results' category followed a very similar pattern to that of counters. Indeed, as is evident from the lower section of table 10, no differences were apparent between the age groups in the totals of 'results' produced.

Further, direct intervention was unable to elicit many 'results' from the children the level being lower, 0.3%, than the proportion produced in the control condition, 1%, ($F=6.66$; $D.F.=(1,46)$; $P<0.05$). Again this pattern is not unexpected given the lack of an utterance form for directly eliciting 'results'.

However, the levels of non-mediated 'results' were slightly higher than those produced by the children in the control condition ($F=7.43$; $D.F.=(1,46)$; $P<0.01$). This higher level of responding is uniform across the age groups between the two situations and therefore no interaction was evident. Once again, it seems that although intervention was unable to elicit 'results' directly, it had a general effect of encouraging this type of utterance.

Finally, as can be seen in table 11, levels of suggestion and justification requests were very low and to make comparisons between the different aged children and the conditions would be dangerous as well as relatively meaningless.

Table 11:- Mean Percentage of the Types of Adding Information of the Total Adding Information Acts Across the Age Groups and Situations (Including Mediated and Non-Mediated Data).

Control Condition								
Adding	4 Year Olds		6 Year Olds		9 Year Olds		Condition Totals	
	%	S.D.	%	S.D.	%	S.D.	%	S.D.
Req. Suggestion	0.1%	0.3	0.8%	0.9	0.8%	0.9	0.5%	0.8
Req. Justific.	0%	0	0.5%	0.8	0.5%	0.7	0.3%	0.6
Total Adding	65	33	78	33	102	31	82	35
N=	8		8		8		24	
Intervention (Non-Mediated) Condition								
Req. Suggestion	0.9%	1.5	0.3%	0.5	0.6%	0.7	0.6%	1.1
Req. Justific.	0.4%	0.8	0.3%	0.5	0.4%	0.7	0.4%	0.7
Total Adding	130	49	135	24	134	61	133	46
N=	12		8		8		28	
Intervention (Mediated) Condition								
Req. Suggestion	0.7%	2.3	0.4%	1.1	0%	0	0.4%	1.6
Req. Justific.	0.7%	2.3	0.5%	1.4	0%	0	0.4%	1.7
Total Adding	26	11	23	9.8	16	3.4	32	14
N=	12		8		8		28	
Mean Totals for Age Groups								
Req. Suggestion	0.6%	1.3	0.5%	0.7	0.7%	0.8		
Req. Justific.	0.3%	0.6	0.4%	0.6	0.4%	0.7		
Total Adding	104	53	107	41	118	50		
N=	20		16		16			

4.3.3.2.2.2 *Justifications and Counters: Further Quantitative Analyses.*

As can be seen in tables 12 and 13, the data concerning whether justifications and counters were used to address one's own or another's statement indicate that 4 year olds and older children often do both. The data in the tables do not include the justifications and counters produced in response to mediation. Further, it should be noted that not only were the frequencies low for these measures, the within group variances were quite high and so the patterns should be treated with some caution.

Overall, a general age trend can be observed whereby justifications were increasingly used to address one's own ideas as age increased, going from 60% to 79% to 74% for the 4, 6 and 9 year olds respectively. In contrast the levels of justifications addressing another person's ideas reduced with age. A MANOVA found this pattern to be statistically significant ($F=4.08$; $D.F=(2,39)$; $P<0.05$). However, a noticeable feature about these data is that the within group variances are particularly

high which is especially worrying given the low frequencies. It is advisable that these data be treated with some caution. Further, the levels of justification addressing one's own or another's position were equivalent in both the control and intervention conditions, being around 71% for the justification of one's own ideas and 29% for addressing another's. As well as this, the age patterns within each condition are remarkably similar particularly for the 6 and 9 year olds, the 4 year olds producing slightly higher levels of justifications of their own ideas in the intervention situation. These results indicate that as children get older, their use of justification becomes more specific, increasingly being used to address their own ideas rather than those of others. This is supported by the decrease in within group variance as age increases.

Table 12:- Mean Percentage of Justifications Addressing One's Own or Another's Ideas, of the Total Justifications Produced. (Excluding Mediated Data).

Control Condition								
Adding	4 Year Olds		6 Year Olds		9 Year Olds		Condition Totals	
	%	S.D.	%	S.D.	%	S.D.	%	S.D.
Self Justifies	52%	41	80%	19	75%	15	72%	25
Other Justifies	48%	41	20%	19	25%	15	28%	25
Mean Total Justifications	1.4	2.4	4.3	2.3	7	4.1	4.2	3.7
N=	4		7		7		18	
Intervention (Non-Mediated) Condition								
Self Justifies	62%	24	79%	15	74%	11	71%	19
Other Justifies	38%	24	21%	15	26%	11	29%	19
Mean Total Justifications	11.3	6.4	13.5	8.7	15.1	7.0	13	7.2
N=	11		8		8		27	
Mean Totals for Age Groups								
Self Justifies	60%	28	79%	16	74%	13		
Other Justifies	40%	28	21%	16	26%	13		
Mean Total Justifications	7.3	7.1	8.9	7.8	11.1	6.9		
N=	15		15		15			

As can be seen in table 13, 4 year olds primarily use counters to address other's views. However, increasingly with age, counters become used to address one's own ideas. Despite this clear trend, a MANOVA failed to find this statistically significant, evidently because of the high levels of within group variation. Further, despite few differences between the patterns for each condition, the 4 year olds in the intervention situation produced a slightly higher proportion of counters addressing

ones own idea, 22%, than the 4 year olds in the control condition, 10%. However, this slight age by situation interaction was not found to be statistically significant.

Table 13:- Mean Percentage of Counters Addressing One's Own or Another's Ideas, of the Total Counters Produced. (Excluding Mediated Data).

Control Condition								
Adding	4 Year Olds		6 Year Olds		9 Year Olds		Condition Totals	
	%	S.D.	%	S.D.	%	S.D.	%	S.D.
Self Counters	10%	22	37%	41	42%	43	31%	38
Other Counters	90%	22	63%	41	58%	43	69%	38
Mean Total Counters	1	0.9	1.8	2.4	3.5	3.1	2.1	2.4
N=	4		7		7		17	
Intervention (Non-Mediated) Condition								
Self Counters	22%	29	37%	33	35%	30	30%	30
Other Counters	79%	29	63%	33	65%	30	70%	30
Mean Total Counters	4.7	3.0	6.3	5.7	7.6	7.2	6	5.2
N=	11		8		8		28	
Mean Totals for Age Groups								
Self Counters	18%	27	37%	35	38%	36		
Other Counters	82%	27	63%	35	62%	36		
Mean Total Counters	3.2	3.0	4	4.8	5.6	5.8		
N=	15		15		15			

Overall, as is evident from a comparison of tables 12 and 13, whereas the functions of justifications become increasingly specific as age increases, the functions of counters become increasingly general as age increases. That is they are increasingly used by children to address their own ideas.

4.3.3.2.2.3 Discussion-like Dialogue: Qualitative Differences

Apart from the quantitative measures of justifications, suggestions, agreements, and so on, that imply discussion-like dialogue (as defined in section 3.1), a number of qualitative observations were made which indicate that although the 4 year olds were able to produce these types of utterances, they were not fully able to engage in collaborative discussion. Indeed, as will become evident from the following examples, the 4 year olds sequences were more typical of disputing, than discussion. That is, they took on one point of view, argued for it and against their partner's view. For example R and B (3;11 and 4;6) in a conversation concerning where the sand castle should go.

- B) I think some people brought it up in a very heavy van
- B) and built it up there
- R) I think it should be built in the sand
- R) 'cos that's a sand castle.
- R) and not a real castle.
- B) 'Cos I think somebody took it in a big bag
- B) and wanted to build it up there.
- B) So they put some sand in a bag
- R) But how did they walk up there
- B) [they climbed]
- R) I think they didn't cross the water with a boat.

At this point the children move off the topic and onto another one. However, the researcher then reintroduces the topic of the sand castle and asks the children who is right:-

- R) I think I'm right
- Researcher: Say to B why you think you are right.
- R) Just because.
- R) There's nobody up there.
- B) 'Cos we've not found somebody that's gonna take it up there (yet).

In this dialogue child R eventually finds a reason why the sand castle cannot go on the hillside. Unfortunately for R, B immediately counters with a reason why R's reasoning is not satisfactory. This sequence clearly shows how the children were able to produce quite advanced forms of argument involving justifications, counters and suggestions. A similar example, again concerning the sand castle, comes from K and D (3;8 and 4;0). K wants to put the sand castle in the sea but D disagrees and then the researcher asks:-

- Researcher:- Why don't you think it goes there?
- D) 'Cos sand castles are not in the sea.
- D) 'Cos you make them.

Now although the justification itself is not the best reason for keeping the sand castle out of the sea, it shows that these children were able to, on occasion, provide a reasonable justification, given the constraints of their knowledge, and further justify that justification.

It was further notable that in their dialogues, 4 year olds were unable to come to a joint decision or co-operatively resolve conflicting opinions. This was the case even when the quality of one argument far outweighed the other. A number of

different situations arose from this state of affairs. One of the most common was that the topic would be changed and then returned to later, where one child would just put the piece where s/ he had felt it should have gone. At other times, but only in the intervention situation, children would ask the researcher who was right. Another method of resolution was for one child to assert dominance in some way, for example B (4;6) said the following to his partner:-

- B) Do what I say
- B) 'cos I'm the biggest boy.

Another attempt to come to a decision about where a piece should go, came from H and L (4;6 and 4;6). In the run up to the example given below L had suggested that the tree should go on the sea wall, H had disagreed and suggested that it should go in the hills. L then suggests that it could go in a pot on the sea wall and the argument is resolved with the following:-

- H) Well there isn't a pot.
- L) But you could pretend there is.

On the other hand the 6 and 9 year olds were quite capable of coming to a joint decision. Indeed, it was rare for these children to persistently argue over a point. That is, they would work together by reasoning both for and against an idea or ideas, to find the best decision possible which they would then both agree on.

The 6 year olds were also able to produce combinations of justifications, suggestions and counters in order to provide an overall argument:- for example L and S (6;6 and 6;4) talking about where the bicycle should go.*

- S) It could be on the beach.
- L) I've seen somebody at St. Andrews in Easter holidays riding a bike on the flat bit of the beach.
- L) But on the bit where the water has been.
- L) But on that bit (points at beach on A3 background) there isn't a flat bit.
- L) I think the water is covering the flat bit over.
- L) So the bike wouldn't be on that (beach)

* Incidentally, in this sequence the topic is shaded to a related topic concerned with a different beach and then shaded back to the original topic using the second counter. This clearly indicates that shading can also be used to reintroduce topics as well as introduce a related topic. This point will be further considered in section 5.3.3 of the next chapter.

L) because it would just sink (in the sand).

Clearly the above example is far more typical of collaborative discussion than those examples of the 4 year olds' sequences.

There were similar examples among the dialogues produced by the 9 year olds. For example, R and C (9,1 and 8,10) discussing where the dog should go.

- R) There could be dogs on the beach.
- R) 'cos I've seen plenty of them.
- R) Do you think we should put it on the beach?
- C) Yeah okay
- R) Where shall we put it?
- R) On top of the ice cream van? [show]
- C) Put it there [point]
- R) No it just...
- R) But that (point ice van) would go vrrmm vrrmm and run it over
- R) It could sit on the step could it not?
- C) Yeah, no.
- C) But then it (ice van) would knock it over.
- R) No it wouldn't
- R) because it would be sitting on the high step.
- R) because I usually see cats and dogs sitting on the stair, just sitting there.
- C) Yeah
- C) Because they wouldn't be sitting in the sand.
- C) 'cos dogs usually run into the water
- R) Yeah and muck about.
- R) Yeah and go splash, splash, splash
- R) But if you sit that in the water it looks a bit stupid
- C) so it should sit there
- R) Couldn't that go vrm vrrmm and knock it over
- R) Oh no 'cos there's a shop there.
- R) I suppose it could be there.
- R) And trying to nick some fish.

In this example justifications, suggestions and counters were regularly used to consider a number of possible decisions concerning where the dog should go.

Overall these qualitative observations suggest that whereas the 6 and 9 year olds were able to engage in collaborative discussion, the 4 year olds were unable to detach themselves from their own views and ideas, were unwilling to yield in the face of clear argument against their views, and had problems evaluating whose reasoning was the better.

4.3.3.2.4 Summary of Adding Information

In sum, the levels of adding information were higher and topic expansions lower in the intervention condition than in the control condition. It was suggested that the latter was due to the researcher expanding the topic for the children during the intervention as well as the higher levels of discussion like dialogue which were generally not treated as topic expanding. Of prime interest was the finding that the intervention elicited higher levels of justifications and suggestions both in response to prompting and when not prompted, than produced in the control condition. Moreover, the intervention seemed to have a general facilitatory effect in that, the levels of non-mediated counters and results were of a higher level than in the control condition or when mediated. The relative amounts of non-mediated discussion like utterances produced by the 4 year olds, were often as high as that produced by the 6 and 9 year olds in the control condition.

Of further interest were the findings that whereas justifications were used largely and increasingly with age, to address one's own ideas, counters were most frequently, but decreasingly with age, used to address ideas expressed by another.

Overall, qualitative observations noted that, despite evidence of collaborative discussion among the older children, the 4 year olds' use of justifications, suggestions and the like, were more typical of disputing.

4.3.3.3 Topic Changes

As was noted earlier in the section concerned with topic initiation, topic changes often occurred once a piece had been put into a position, or when a person had claimed the next turn. These features were also evident in the jigsaw task of the previous study, as noted in section 3.3.3.3. However, in the present study, the 4 year olds were not as concerned, as the older children, about making a joint decision about where a piece should go. Indeed, as noted earlier, this led to the researcher having to reintroduce topics in order to get the children to decide together where pieces should go.

On occasions, the older children in the control condition, were observed to close topics co-operatively, although not as frequently as in the previous study. Although very rare among the interactions of the 4 year olds, the co-operative closing of topics was observed on a couple of occasions during the intervention condition.

4.3.3.4 Topic Shading

As can be seen from table 14, the levels of topic shading were, once again, very low indicating that the children were unlikely to go off on a tangent about something not related to the task. However, the level of shading is minutely higher in this study than it was in the previous study, particularly when the data are considered in terms of frequencies. The total frequencies of topic shading produced across the age groups were 13, 16 and 1 for the 4, 6 and 9 year olds respectively. This indicates that the 9 year olds were less likely to shade topics than the younger children. Further, across the situations totals of 6 and 24 topic shadings were produced in the control and intervention conditions respectively. One possible interpretation of this result is that the children felt more at ease shading the topic when the researcher was present than when he was not present. As was noted in section 3.3.3.4 of the previous chapter, shading could be used co-operatively and this was occasionally apparent in the present study. However, as these instances usually took the form of topic returns, they were not realised in the data for shading.

Table 14:- Mean Percentage of Topic Shadings Across the Age Groups and Situations.

Control Condition								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Condition
	Shading Acts	S.D.	Shading Acts	S.D.	Shading Acts	S.D.	Shading Acts	S.D.
Percentage of Mean Total Acts	0.06%	0.2	0.3%	0.5	0%	0	0.1%	0.3
Mean Total Acts	209	100	227	79	296	57	244	86
N=	8		8		8		24	
Intervention Condition								
Percentage of Mean Total Acts	0.3%	0.3	0.4%	0.7	0.02%	0.1	0.2%	0.4
Mean Total Acts	385	104	396	59	350	126	378	99
N=	12		8		8		28	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	0.2%	0.3	0.3%	0.6	0.01%	0.05		
Mean Total Acts	314	133	311	110	323	98		
N=	20		16		16			

4.3.3.5 Topic Hierarchicalisation and Returns

As is evident from table 15, the levels of planned returns and therefore topic hierarchicalisation were virtually non-existent, as was the case in the previous two studies. One way in which the dialogue could be viewed as being organised

hierarchically was in terms of the dispute/ discussion sequences produced by the 4, 6 and 9 year olds. See the examples outlined earlier, 4.3.3.2.2.3, of extended dispute/ discussion sequences from dyads from each age group. However, as the topic returns to dominating topics were not planned, the dialogue cannot be considered to be hierarchical.

Not surprisingly, given the arbitrary order in which pieces were withdrawn from the bags, the children showed few signs of attempting to plan their dialogues. However, as was noted in the previous study, turn taking could be considered an attempt to organise interaction. Although this was not spontaneous, as the children were instructed to do this, all the children were able, to some extent, to participate in the taking of turns. As was noted in section 4.3.2, the 4 year olds were often unco-operative in, or had problems taking turns and this sometimes led to topic fighting. In these situations children used unplanned returns to reintroduce the topic that they were interested in, an example of which was presented in 4.3.2. The 6 and 9 year olds, despite also showing an occasional lack in joint attention, did not engage in topic fighting and unplanned returns were largely used to make adjustments to the constructed picture. This was particularly apparent in the intervention situation, where these children paid special attention to detail and order. That is, making sure the pieces remained in the position in which they were originally placed.

Table 15:- Mean Percentage of Planned Returns Across the Age Groups and Situations.

Control Condition								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Condition
	Planned Returning Acts	S.D.	Planned Returning Acts	S.D.	Planned Returning Acts	S.D.	Planned Returning Acts	S.D.
Percentage of Mean Total Acts	0%	0	0.2%	0.4	0%	0	0.1%	0.2
Mean Total Acts	209	100	227	79	296	57	244	86
N=	8		8		8		24	
Intervention Condition								
Percentage of Mean Total Acts	0.02%	0.05	0.1%	0.2	0.1%	0.2	0.1%	0.1
Mean Total Acts	385	104	396	59	350	126	378	99
N=	12		8		8		28	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	0.01%	0.04	0.1%	0.3	0.04%	0.1		
Mean Total Acts	314	133	311	110	323	98		
N=	20		16		16			

Table 16:- Mean Percentage of Unplanned Returns Across the Age Groups and Situations.

Control Condition								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Totals for	Condition
	Unplanned Returning Acts	S.D.	Unplanned Returning Acts	S.D.	Unplanned Returning Acts	S.D.	Unplanned Returning Acts	S.D.
Percentage of Mean Total Acts	6%	3.7	8%	4.2	10%	3.8	8%	4.1
Mean Total Acts	209	100	227	79	296	57	244	86
N=	8		8		8		24	
Intervention Condition								
Percentage of Mean Total Acts	5%	3.2	6%	2.6	8%	1.8	6%	3
Mean Total Acts	385	104	396	59	350	126	378	99
N=	12		8		8		28	
Mean Totals for Age Groups								
Percentage of Mean Total Acts	5% a	3.3	7%ab	3.5	9% b	3		
Mean Total Acts	314	133	311	110	323	98		
N=	20		16		16			

As can be seen in table 11, the levels of unplanned returns increased with age from 5% to 7% to 9% for the 4, 6 and 9 year olds respectively. This effect was statistically significant ($F=5.82$; $D.F.=(2,46)$; $P<0.01$), the difference being between the 4 and 9 year olds. As was noted earlier, the higher levels of unplanned returns produced by the older children will have been due to these children being concerned with getting the picture right and keeping it orderly. Unplanned returns were proportionally more frequent in the control condition, 8%, than the intervention condition, 6%. However, this difference was not found to be statistically significant. Thus despite differences in the function of unplanned returns, the older children produced them more frequently than the younger children.

4.3.4 Summary

Overall, the intervention was successful, not only at eliciting higher levels of the types of utterances used in discussion, but also at focusing the conversational interactions. Indeed, intervention elicited fewer topic initiations, longer topics and more adding from all the children, as well as engaging the 4 year olds in joint attention and dialogue. Intervention also functioned to elicit, both with and without prompting, higher levels of the types of utterances typical of discussion-like dialogue, from the

children. This was with the exception of agreements which, although higher when prompted, were of similar levels to those of the control when not prompted. It was however, clear from the qualitative observations of the interactions, that the ability to collaborate in discussion increased with age, especially between the 4 and 6 year olds. Further analysis of justifications and counters indicated that, although the former was used initially to address both one's own and other's ideas, counters were used initially to address ideas presented by others. Increasingly with age, however, they were both used increasingly to address one's own ideas. That is, as the function of justifications became more specific, the function of counters became more general.

4.4 DISCUSSION

4.4.1 Overview

This discussion will consist of a number of sub-sections. The first will consider and interpret the results through the sub-sections of topic initiation and change, topic maintenance and topic shading, hierarchicalisation and returns, in the light of previous research. In addition, the section on topic maintenance will include sub-sections on minimal and adding utterances where the results concerning discussion-like dialogue will be interpreted. The final section will summarise this discussion.

4.4.2 Topic Management

The final study examined the effects of a scaffolded intervention procedure on the topic management and discussion abilities presented by 4, 6 and 9 year olds. The study aimed to determine whether 4 year olds are unable or just unwilling to engage in discussion like dialogue. Two general patterns were apparent in the data: firstly, that with age there was an increasing ability to engage in joint attention, co-operate in dialogue and collaborate in discussion; and secondly, that intervention functioned to organise and focus the children's interactions and further to elicit higher levels of the types of utterances involved in discussion-like dialogue than were produced in the control condition.

In this section it will be argued that in contrast to the findings of the previous study, the apparent age differences were due to subtle differences in the ability to engage in dialogue when it is not encouraged or required by the task. Further, it will be argued that whilst 4 year olds are not quite able to collaborate in discussion as they are unable to detach themselves from their own perspectives, the complex skills

presented represent a clear basis from which an ability to engage in discussion can develop.

4.4.2.1 Topic Initiations and Change

Overall, the quantitative and qualitative analysis suggested that the majority of the children's interactions in the control condition were co-operative in nature. This was evident in that children took it in turns to take pieces from their bags, most topics were related to the task, topics were rarely changed until a piece was put in a position and that topics were occasionally closed co-operatively. However, this co-operative behaviour also increased with age, with the younger children's dialogues involving occasional lapses in co-operation, whereas those of the older children were more explicitly co-operative.

Connected to this was the observation that during the control condition all the children, but decreasingly with age, showed some evidence of a lack of joint attention. This, along with a lack of co-operation, was particularly apparent in the 4 year old's interactions where there were instances of topic fighting. Unfortunately, these patterns were not captured by the coding scheme, apart from slightly higher levels of topic initiations among the 4 year olds than the 9 year olds. Although these patterns seem similar to those portrayed for older children by Brinton and Fujiki (1984) for 5 and 9 year olds and Dorval and Eckerman (1984) for 7 to 8 year olds, they are not fully consistent with the well organised and focused interactions produced by similar aged children in the previous study. This is all the more interesting given that the children were working on a very similar task. There were however, two main differences between the present task and those used in the previous study. It is these variations in task that explain the differences in the patterns produced by the different aged children within the present study and in comparison to the previous study.

The first difference between the tasks was that, in the present study, the children were not required to copy a picture, rather they were to decide together where each piece should go. The second difference was that the children in the present study were not as mutually reliant as those in the previous study. Whilst the presence of separate bags meant that the children were reliant on each other to complete the task, they were not mutually reliant for the placing of each piece, as was the case in the previous study. Some of these differences will be considered in the next section, 4.4.2.2.

It was notable that the presence of separate bags, rather than encouraging joint attention, functioned to divert the children's attention to their own pieces. In addition, the requirement that the children should take it in turns to take pieces from their bags should have counteracted this problem by re-establishing joint attention. However, as the younger children were either forgetful and/ or unco-operative in the taking of turns, topic fighting often resulted. Even when turn taking was co-operative, joint attention focus was not guaranteed. Indeed, even among the interactions of the older children, who did take turns, there were occasions when joint attention was lacking. While one child took his/ her turn the other would search through his/ her bag for pieces, would tidy up the picture or focus on other pieces.

In contrast, the interactions in the intervention condition were more orderly, particularly among the 4 year olds but also for the older children, with the initiation of fewer topics and no topic fighting. The scaffolding of the interactions, therefore, functioned to focus the children's attention and engage them in dialogue as well as regulate the taking of turns. Indeed, sometimes the researcher had to go to great lengths to achieve this, as was evident from the high levels of topic reintroductions produced by the researcher to counter topic changes made by the 4 year olds .

4.4.2.2 Topic Maintenance

The results for the quantitative measures suggest that children's abilities to maintain topics were generally good. In the control condition, the proportions of topics maintained were high, 73%, though slightly lower than the levels for the previous study (which were 77% and 85%, for the jigsaw and information gap tasks respectively), and that reported by Brinton and Fujiki (1984), (79-84%). Given that a certain amount of joint attention was lacking from the young children's interactions in the jigsaw task of the previous study, the lower proportions of topics maintained for the present task imply an even greater lack of joint attention. In addition to these patterns, the mean lengths of topics in the control condition were slightly shorter than for the tasks in the previous study, that is 4.4, 4.7, and 5.0 for the control, jigsaw and information gap tasks respectively. This finding is not surprising as the children were not required to copy a picture and therefore consider fine details, such as colour and exact shape, as was the case for the tasks in the previous study. Indeed, although not apparent from the data, the children could consider any number of a variety of variables and therefore conceivably maintain topics for longer. However, it was evident, as in the picture sequencing task of study one, that the older children maintained topics for longer than the younger children.

Unfortunately, as was noted in section 4.3.3.2, the quantitative data do not capture a full picture of the actual patterns presented by the children. That is, these categories do not reflect that topic fights were more prevalent in the younger children's interactions. The essential reason behind this is that when calculating the data for these categories, unplanned returns and the attached topic maintaining sequences were considered as part of the original topic, not two separate topics. Had the latter been the case then the proportions of topics maintained and length of topics may have been somewhat lower or shorter for the younger children.

Of importance was the qualitative observation that many of the topics produced by the 4 year old children in the control condition were predominantly monologic. Although not helped by the lack of joint attention focus, this stems primarily from the lack of mutual reliance for the positioning of each piece on the background. This implies that the 4 year olds did not perceive that there was a need to engage in dialogue. Indeed, for these children dialogue was, to some extent, pointless or not required in this task and was only engaged in when a problem was encountered or when a child so desired. The talk these children provided took the form of a running commentary of their thoughts and activity. These findings are similar to those for the 4 year olds in the picture sequencing task of study one where monologic topics and a lack of joint focus were also evident. However, in contrast to the picture sequencing task, topics were generally maintained for longer than one to two utterances. It seems most likely that in these situations where dialogue is not required to complete the task, 4 year olds do not realise that there is any need to engage in dialogue, let alone discussion. That is, they view the tasks as an individual activity.

The topics of the older children, however, were dialogical. Indeed, these children often requested help concerning the identity of a piece, where it should or could go and so on. In addition, these children participated in some collaborative discussion.

In contrast to these patterns, the scaffolded intervention elicited longer topics and slightly higher proportions of topics maintained, particularly among the 6 and 9 year olds. This was also the case for the 4 year olds once the data were adjusted to take into account the attempts made by the researcher to establish dialogue. Of importance, however, was that the scaffolded intervention was able to establish

dialogue among the young children. Indeed, attempts to elicit discussion like dialogue functioned to encourage the children to jointly focus their attention.

4.4.2.2.1 Minimally Related Acts

Generally, the levels of minimal responses produced by all the children consisted of around a third of all communicative acts, a pattern similar to those of the tasks of the previous study. In addition, the levels and patterns of repetitions produced in the control condition were similar to those in the previous study, that is they decreased with age. Indeed, whereas half of the minimal responses produced by the 4 year olds were repetitions, the levels were lower for the 6 year olds and lower still for the 9 year olds. Moreover, agreements and disagreements were higher in the present than the previous study and the former also increased with age.

In response to mediation, the levels of agreements were far higher than that of repetitions, indicating that the young children were capable of producing agreements instead of repetitions. Despite this, when not prompted, the levels of repetitions and agreements were similar to those evident among the dyads in the control condition. Further, the amounts of disagreement remained unaffected by mediation for the 6 and 9 year olds but were higher for the 4 year olds. Surprisingly, this pattern continued when direct mediation ceased. These patterns imply that repetition was more functional for the young children than agreement, but not disagreement. However, the reason for this is unclear. As was suggested in sections 2.4.2.2 and 3.4.2.2, self repetition may be an attempt to get others to attend to an utterance. However, as was evident in the previous study even when there are high levels of joint attention, high levels of repetition persist. Other possible functions of repetition might be to make sure a message is understood, to guide activity, as suggested by Vygotsky (1962), or to keep hold of the conversational floor. In addition, as young children do not provide very much responsive feedback, repetition may be an attempt to make sure that another attends and understands, rather than relying on them to provide feedback. It is evident, therefore, that repetition may hold a variety of functions, all of which might be important for the 4 year olds. Supportive of this is that, even though 6 and 9 year olds are able to convey that they are attending, through the use of agreements, repetition is still very much evident in their conversations.

4.4.2.2.2 Adding Information

In the control condition, children regularly added information to the topic, although slightly less frequently than in the tasks of the previous study. This was still

more frequent than in the tasks of study one. Further, the levels of topic expansion were slightly lower than those reported in the previous study and by Kertoy and Vetter (1995), although only by about five to ten percent. This is hardly surprising given that the children were not required to consider as many variables when deciding where a certain piece should go on the background. In further contrast to the previous studies there were few differences between the different aged children in the levels of adding and topic expanding.

Intervention, however, elicited higher levels of adding from all the children, these levels remaining equally high even when the mediated utterances were deducted (see Appendix 3). In contrast however, the levels of topic expansion were lower in the intervention than in the control condition and particularly for the 4 year olds. This was evidently due to both the researcher expanding topics for the children during scaffolding and the encouragement of discussion which functioned to address one issue or the same question of immediate concern.

In the control condition, the levels of the types of utterances used to engage in discussion were similar to or slightly higher than in the jigsaw task of the previous study. Further, despite the proportions of justifications and suggestions being lower, except for the 4 year olds, than in the picture sequencing task of the first study, the frequencies were higher. However, the expectation was that the levels of utterances used in discussion-like dialogue would be higher and that the difference between the different aged children might be larger. Clearly, the older children did not produce as much discussion-like dialogue as expected. One probable reason for this was that the task was too simple and the positioning of pieces too obvious and arbitrary for the 6 and 9 year olds. Indeed, as was noted in 4.2.1.2.3, the older children did not need to provide justifications as to why, for example, they were putting a cloud, sun or aeroplane in the sky, as it could be considered common knowledge.

Intervention elicited high levels of justifications and suggestions, but not surprisingly, few counters and 'results'. The levels of these types of utterances elicited from the different aged children were generally equivalent, although there were large within group variances. These findings indicate that the 4 year olds are capable and willing, when prompted, to provide large numbers of justifications and suggestions. When scaffolding was reduced the levels of non-mediated justifications and suggestions remained higher than those produced by the children in the control condition. This was not only the case for the younger children but also for the 9 year

olds. Surprisingly, the levels of non-mediated counters and results were also higher and it may be the case that the scaffolding had a general effect of encouraging all types of utterances associated with discussion-like dialogue. These results indicate that not only are young children capable of producing these types of utterances when required by a researcher, they are willing to use them without direct prompting. This pattern is consistent with the recent literature on disputes in that 4 year olds as well as older children were able to produce justifications, counters, suggestions and results (Dunn, 1988; Eisenberg and Garvey, 1981; Genishi and Di Paulo, 1982). In addition, the older children clearly benefitted from the intervention procedure, as higher levels of discussion-like discourse were elicited from these children.

The main ambiguity with what might be considered the 'after effects' of the intervention, that is the levels of non-mediated utterances, is that they may have been indirectly elicited through the prompting of other types of utterances or from scaffolding more generally. These utterances may have been produced as scaffolding was withdrawn rather than during the non-scaffolded period. Thus they should not be considered 'after effects' but as accompanying yet unprompted effects.

Despite these higher levels of justifications, suggestions, and so on, as was noted in section 4.3.3.2.2.3, the young children were not quite able to engage in discussion-like dialogue even when the interactions were fully scaffolded. Indeed, the young children's sequences were more typical of disputing than collaborative discussion. These children were unable to detach themselves from their own ideas to consider a number of other views, or come to a joint decision based on a joint evaluation of their justifications, counters and general reasoning. These findings are similar to those reported by Eisenberg and Garvey (1981) who also noted that children did not resolve conflict in their disputes.

In concordance with Piaget (1959), these difficulties imply a certain amount of egocentricity in the young children's activity. That is, 4 year olds were unable to detach themselves from their own views to take account of other's views. This is despite being able to say why other views are incorrect. A further indicator that these children had problems engaging in discussion was the observation that children had problems identifying a justification and further, that on occasions, the justifications provided were inappropriate. Overall, the skills produced by the 4 year olds in response to the scaffolded intervention represent the majority of the skills involved when collaborating in discussion. However, these skills need to be utilised by the 4

year olds in unaided interactions prior to being able to use them to engage in collaborative discussion.

There was one notable problem with the intervention strategy. Despite being sensitive to the children's needs and successfully scaffolding interaction, the intervention questions and requests may have actually encouraged the young children to engage in disputes rather than discussion. That is, the forms of questions and requests lay emphasis on the expression of opinions rather than possible ideas, supporting one's own view and saying why someone else's view was wrong, as opposed to evaluating ideas independently of the speakers. In contrast to this criticism is the observation that the older children engaged in collaborative discussion rather than disputing. However, given that these children were already able to engage in this form of dialogue to some extent and were aware that it was required, both by the task and the researcher, it is not surprising that they produced collaborative discussion. During the intervention it may have been better to encourage the children to come up with a variety of different ideas and then to evaluate these independently of the speakers. Inevitably, this form of intervention would cause far more disruption to the children's interactions as it would be conceptually demanding. However, it seems worthy of testing and thus should be considered for future research.

Of further interest was the finding that whereas the 4 year olds addressed justifications to, almost equally, their own and other's views, older children increasingly addressed their own ideas with justifications. These patterns imply that 4 year olds have some awareness that others may have different views or understandings. That is, as these children provided justifications addressing their own views, they were aware to some extent that others may not share the same understanding. However, the extent of this is not totally clear in the data as in order to imply awareness of other perspectives, justifications must be presented spontaneously. However, given that there were so few justification requests, it can be assumed that the majority were spontaneous. In addition, the use of counters to counter or clarify an implied meaning, that is to address one's own ideas, also indicates that the user has an awareness of other's views as well as some ability to infer what others might be thinking. Thus this form could be considered slightly more advanced than the provision of justifications in support of one's own ideas. It was clear however, that among the 4 year olds, very few counters functioned to address one's own view but were used to do this increasingly with age. These findings are generally consistent with Selman's (1980), cited by Flavell (1985), stages of social

perspective taking, see section 4.1. Indeed, whereas 4 year olds were beginning to show signs of an awareness that others may hold a different perspective, the older children were clearly aware but also showed an ability to consider different views of the meaning and implications of their own utterances, a feature typical of stage two perspective taking.

Overall, the young children did not seem to perceive that discussion like dialogue was a useful form of dialogic interaction for doing the task. However, with the support of scaffolded intervention, the children were able and willing to produce the types of utterances involved in discussion, yet not quite able to collaborate in this form of discourse. The implication was that the young children's skills are characterisable as egocentric. In contrast, the older children were evidently capable of using collaborative discussion yet they too found intervention beneficial, indicating that they may have a certain unwillingness to participate in discussion. It should be noted however, that it is unclear whether these children viewed the task as requiring so much discussion given its concreteness and the constraints concerning the possible location of the pieces.

Finally, the increasing use, with age, of justifications and counters to address one's own views imply an increasing awareness of and ability to consider alternative perspectives; the 4 year olds but particularly the older children showing signs of this.

4.4.2.3 Topic Shading, Hierarchicalisation and Returns

Once again, the levels of topic shading were extremely low in comparison to the levels reported by prior research (Brinton and Fujiki, 1984; Dorval and Eckerman, 1984; Edmonds and Haynes, 1988). This suggests, as was noted in the previous chapters, section 2.4.2.3. and 3.4.2.3, that there was a certain unwillingness to shade the topic to features that were external or irrelevant to the ongoing activity. It was evident however, though only in terms of frequencies, that the 4 and 6 year olds produced more topic shadings in the intervention situation than the control. The presence of the researcher seems to have encouraged topic shading, the child trying to initiate informative and interesting talk in order to engage in casual conversation. As was reported in the previous study, shading was often evident in the rapport building period prior to the children working on the tasks. That is the children were asked about their own experiences of the seaside. In this situation, shading was used as a way of reporting own experiences and maintaining a sense of coherence with what had been previously said. In the intervention condition, the continued presence of the

researcher may have caused this effect to continue in some way. Indeed, it was notable that a large number of shadings were directed at the researcher rather than the child's dyadic partner.

In the previous studies, the levels of planned returns were very low and therefore topic hierarchicalisation could not be inferred. This is consistent with the claims made by Hobbs (1990), Reichman (1990) and Sirois and Dorval (1988). Despite this, there were instances of topic sequences that were related in a way that might be described as being hierarchical by both Reichman (1990) and Hobbs (1990), such as the maintenance of detail presented in justifications and the reporting of events to support a point or issue. For example, see the sequence of dialogue between L and S (6 year olds), presented in section 4.3.3.2.2.3. However, as planned returns were not used during these situations they were not coded as topic hierarchicalisation.

The levels and functions of unplanned returns were much the same as in the tasks of the previous study. However, it was notable that topic fighting was more frequent, although still rare, among the interactions of the 4 year olds in the present study. These fights developed from breakdowns in co-operation in the taking of turns and the lack of joint attention and mutual reliance. This implies that for the 4 year olds at least, topic fighting occurs when the children's aims and personal topics of interest are not convergent. This interpretation is consistent with the findings from Brinton and Fujiki (1984) and Sirois and Dorval (1988) where high levels of topic fighting were evident and convergent interests could be considered at a minimum. The older children were, however, far more interested in completing the picture correctly or to a standard that they were happy with and thus returns were used to make corrections. The suggestion is that not only do children become increasingly co-operative but also more concerned with completing the task correctly.

4.4.3 General Discussion and Summary

It was apparent that the task used in the present study did not support the children's interactions to the same extent as those in the previous study. Indeed, although the children were mutually reliant to complete the task, they were not reliant for the placing of each piece on the background. This, as well as the distracting function of two separate bags, functioned to require children to regulate joint attention and co-operation themselves. Clearly, the young children had great difficulties doing this as evidenced from the prevalence of monologic topics and occasional topic fighting. Although the older children also displayed some lack of

joint attention, their talk was far more dialogic. However, it is unclear whether the inferior patterns presented by the young children in the control condition were due to the lack of joint attention and mutual reliance or to the requirement that the children collaborate in discussion. That is, unless the children can engage in discussion like dialogue there is little need for them to engage in dialogue.

The intervention was very successful at encouraging all the children to produce the types of utterances used in discussion-like dialogue. This was at a higher level than in the the control condition. This implies that all children, including the 4 year olds, are able and willing to produce these types of utterances. However, it was notable that the 4 year olds were not quite able to engage in collaborative discussion as they were unable to detach themselves from their own views. However, it was evident that 4 year olds were aware, to some extent but increasingly with age, that others might have different views and understandings. In addition, the 6 and 9 year olds showed some ability, through the use of counters to clarify intended meaning, to consider what others may be thinking or understanding. These results imply that as 4 year olds are egocentric they are not quite able to engage in discussion-like dialogue. This also explains why the 4 year olds produced a high prevalence of monologic topics, that is, from their point of view there was little need for them to engage in dialogue. However, apart from a certain amount of egocentrism, the skills held by the 4 year olds are those required for use in discussion and it seems that once the children perceive a need for their usage, these children will be willing to produce them.

CHAPTER 5: GENERAL DISCUSSION

5.1 OVERVIEW

In this final chapter the aims of the research will be re-presented. This will be followed by an examination and interpretation of the general findings that were evident in terms of general age differences, contextual differences and the interaction of these two variables. The overall patterns and interpretations will be weighed against the prevailing theories of child development and implications will be considered for educational policy. A further section will re-consider the issue of topic management assessment in the light of the present research. Finally, the research will be concluded as a whole.

5.2 FINDINGS AND IMPLICATIONS

The present research aimed to assess the topic management skills of 4, 6 and 9 year olds as well as the effects of different task contexts on these skills. Particular interest was given to the notions of topic maintenance, shading and topic hierarchicalisation. However as the research developed, the focus narrowed onto the children's differing abilities to maintain topics by engaging in collaborative discussion.

The following sections will consider the findings in terms of: firstly, the general differences between the age groups; secondly, the differences between the task contexts; and finally, how the task contexts affected the performances of the different aged children.

5.2.1 Age Differences on Topic Management Patterns

Overall the abilities presented by the different aged children in the present research were more favourable than those outlined by previous research (Brinton and Fujiki, 1984; Dorval and Eckerman, 1984; Sirois and Dorval, 1988). As was noted at the outset, section 1.4.2, this prior research indicates that both young and older children often change topics abruptly, go off on tangents, battle for the conversational floor and have difficulties maintaining topics. That is, the dialogues of both young and older children lack co-operation and topical organisation. The children in the present research on the other hand, showed an ability to co-operate in their topic sequences only changing the topic when required, rarely going off on tangents or fighting for the conversational floor and were able to maintain topics for as long as was required to complete the tasks. This was often the case for all of the children, however, there were a number of age trends which indicated that the 6 and 9 year olds were slightly

better at managing their topics than the 4 year old children, and it is to these trends that we now turn. Although these patterns were apparent in the data to greater and lesser extents depending on the task context, this interaction will not be explored until section 5.2.3, later.

The first noticeable feature was that the older children produced consistently higher numbers of communicative acts than the younger children. Indeed this pattern was evident across all the task contexts except during the intervention condition. This indicates that the older children spent more time engaged on each task and in conversational exchange than the younger children.

There were also a number of patterns in the way topics were changed that implied that the older children were generally more co-operative in their conversations than the younger children. Firstly, although topics were not usually changed until the purpose for engaging in the topic was satisfied, this was not always the case for the younger children. Indeed, there were occasions where the 4 year olds failed to maintain joint attention or to be co-operative in the taking of turns and sometimes engaged in topic fights. Although these patterns were very much dependent on the context, they seemed to result from the young children interests becoming focused on their own activity.

A second indication of more co-operation among the older children was in the way they checked with each other before mutually changing the topic or terminating the task based dialogue. In contrast, when the 4 year olds were co-operative in the changing of topics, it was never* in this explicit and sensitive manner as displayed by the older children. Moreover, 4 year olds would abruptly close the task based dialogues sometimes saying, 'I've finished' or 'finished' without checking with their partners first. The explicit checking performed by the older children prior to the closing of topics or dialogues suggests that they were aware that their partners may have had more to say on a topic or dialogue. This is more explicitly co-operative than simply changing the topic when the purpose is satisfied. In addition, the observation that the 9 year olds negotiated plans for the dialogue (although only present when there was a possibility for planning the dialogues, i.e. only in the construction task) is also suggestive of co-operation. A similar increase in explicit co-operation and

* The pre-topic change check was observed on one occasion among a 4 year old dyad interacting in the intervention situation.

negotiation was reported by Dorval and Eckerman (1984) and Sirois and Dorval (1988), except that the age range in which this was observed was older. That is, children were not reported to explicitly co-operate in dialogue until early adolescence.

Although all the children were capable of maintaining topics for a number of utterances and by way of adding information to the topic, the older children were clearly better at this. Indeed, at the topic level the older children were more willing, although only on some occasions, to maintain topic initiations, maintain topics for longer, add more novel information to and expand (when this was measured) topics, than the younger children. Despite these higher levels of topic maintenance among the 6 and 9 year olds, it is not until the types of utterances used to maintain topics are considered that these trends really reflect clear differences between the interactions of the different aged children.

The consistent finding that the majority of younger children's minimal responses were self repetitions indicates that they found it difficult to allow the interactions to progress smoothly. These children were seemingly preoccupied with repeating topic initiations and information that had already been added. It was suggested that this use of repetition was multifunctional but that particular uses might be to: - establish and maintain joint attention, keep control of the conversational floor and to ensure that listeners understand what is being said. In addition, despite being willing to produce agreement in response to direct intervention, the 4 year olds did not use it when not prompted. This suggests that these children did not find this form of response as useful as self repetition.

In contrast, the older children produced a variety of types of minimally related utterances, though it was still apparent that repetition formed a sizeable portion of this measure. The exact types of minimal responses produced by the older children depended very much on the task context. However, particularly evident were the larger proportions of agreements, yes/ no responses and 'other' types of minimal responses. This latter category included 'rights', 'okays' and 'ohs' which were used fairly regularly. As well as using agreements to agree, it seems that older children used them to convey attention and that they had heard and understood the utterance/s presented. This was particularly noticeable in the open ended tasks such as the picture sequencing task, where joint attention could not be assumed. This interpretation, coupled with that presented earlier for repetition, suggests that whereas young children may repeat themselves to obtain and maintain attention and ensure

understanding, older children use repetitions, 'okays', 'rights' and so on to convey that they are being co-operative, actively attending and that they understand.

This implies, as was noted earlier, that the older children were participating in dialogue as co-operative and joint activity. That is, the children take equal responsibility for achieving and conveying understanding, and joint attention. The 4 year olds on the other hand, seem to treat dialogue slightly differently, that is, more as a narrative where the speaker must repeat to ensure attention and understanding. In this situation, the listener has less of a responsibility to convey attention, understanding or feedback. However, this may arise as a function of less interest in what others have to say. Whatever the case, there is an increased understanding of the role of the listener in dialogue in terms of when and what sort of feedback to provide.

There were also apparent age differences on the types of adding information. Indeed, a consistent finding was that whereas the levels of 'new' decreased with age, the levels of justification and suggestion, as well as a variety of other types of utterances, increased with age. Once again, the exact pattern depended very much on the context. This trend indicates that the 4 year olds were pre-occupied with informing, directing and requesting. Although the older children's dialogues also consisted predominantly of these types of utterances, they were concerned with evaluating, suggesting and discussing different ideas as well.

However, it was ascertained that 4 year old children did use justifications and counters spontaneously, although not to engage in discussion. Rather they were used to resolve disputes and to reflect or explain. This pattern was supportive of the claims made by Dunn (1988) and findings from Dunn and Brown (1993) that justifications are initially used in situations of a conflict of interests but then are used increasingly to reflect or provide explanations. These patterns were also found for the 4 year olds in the present research. This indicates that children of this age begin to show an awareness and sensitivity to others' needs and understandings. These are evidently vital features required for engaging in discussion-like dialogue.

Overall, the older children displayed a greater tendency and ability to participate in dialogue as a joint and mutual activity. The 4 year olds on the other hand, despite being co-operative and clearly capable of engaging in dialogue, displayed less of a sensitivity to each other both in terms of co-operation and with respect to the provision of feedback during dialogue.

5.2.2 Context Differences

We move now to consider the more general effects of the task context on the children's topic management patterns. The patterns produced in the task contexts were both similar and different according to likenesses shared between the tasks. These patterns can be considered on two levels, firstly concerning the resemblance in the materials and format of the tasks and secondly, on similarities in the interactive rules enforced by the tasks. These two levels of comparison will be dealt with in turn.

5.2.2.1 Task Format and Materials

Firstly, the different effects of task on the topic management patterns can be viewed as arising from differences in the task materials and procedure. Three of the five tasks involved very similar materials and took the same format, that is the concrete task of putting pieces on to a background to construct a picture. These were the tasks employed in studies two and three. Out of the other two tasks, used in study one, one was also concrete in that children were required to construct objects by attaching plastic tubes together. The other was more abstract requiring the children to use their reasoning to sequence a set of pictures.

Generally, the topic management patterns produced in the task contexts in study two and the control group of study three were very similar. The intervention context was also very similar but will not be dealt with until the end of this section. As can be seen in table 1, only slight differences were evident at the topic level on the measures of communicative acts, topic initiations, minimally related acts, adding acts, unplanned returns and mean lengths of maintained topics. Indeed, at the topic level clear differences were only apparent on the proportions of topics maintained and the mean lengths of topics.

In contrast to these three tasks, the picture sequencing and construction tasks of study one produced very different topic management patterns. The picture sequencing task elicited higher levels of topic initiation and lower levels of topic maintenance including shorter topic sequences and low levels of minimal responding and adding. The construction task on the other hand, produced slightly higher levels of topic initiation, vastly higher proportions of minimally related acts and lower proportions of adding. In comparison to each other the picture sequencing task produced higher levels of topic initiation, lower proportions of topics maintained and minimally related acts and shorter topics than produced in the construction task.

Table 1: Mean Data for the Measures Across the Different Task Situations in each Study

Categories	P.S.T	C.T.	I.G.T.	J.T.	CTRL	INTVN
Total Acts	38	117	203	236	244	378
Topic Initiations	43%	31%	21%	22%	24%	16%
Proportion of Topics Maintained	65%	81%	85%	77%	73%	73%
Mean Length of Topics	2.7	3.3	5.0	4.7	4.4	5.5
Mean Length of Maintained Topics	3.4	3.7	5.7	5.8	5.6	7.3
Unplanned Returns	7%	4%	7%	8%	8%	6%
Minimal Responses	27%	42%	33%	33%	32%	35%
Actions	14%	43%	4%	2%	--	--
Repetitions	32%	15%	38%	35%	38%	37%
Agreements	38%	13%	8%	10%	16%	22%
Disagreements	9%	3%	7%	11%	15%	17%
Yes/no responses	1%	5%	11%	15%	--	--
Req.reconfirmation	1%	6%	6%	4%	--	--
Other	4%	13%	21%	20%	30% ^①	24% ^①
Adding Information	21%	21%	37%	36%	33%	41%
New	60% ^②	65% ^②	73%	69%	82% ^③	69% ^③
Suggestions	20%	6%	3%	4%	9%	14%
Justifications	9%	1%	2%	5%	5%	10%
Counters	--	--	1%	4%	2%	4%
Results	--	--	1%	2%	1%	3%
Evaluations	2%	12%	5%	3%	--	--
Req Confirmation	1%	6%	6%	6%	--	--

Key

P.S.T - Picture Sequencing Task

C.T. - Construction Task

I.G.T. - Information Gap Task

J.T. - Jigsaw Task

CTRL - Control Condition

INTVN - Intervention Condition

① Data in this category include Actions, Yes/ no responses and Reconfirmation requests.

② Data in this category include Counters and Results.

③ Data in this category include Evaluations and Requests for Specificity, Clarification and Confirmation.

Some of these differences between the tasks seem to be attributable to the materials and physical design or procedure of the tasks. The main difference between the patterns elicited by the tasks was on the measures of topic maintenance. It seems that, as was suggested in section 3.4, in the picture-construction tasks (outlined in chapters 3 and 4) the involvement of more variables to be considered when talking about a piece or item produced longer topic sequences involving higher levels of adding information. In contrast, the fewer variables to be considered produced higher levels of topic initiation in the tasks of the first study (chapter 2). Further, as was evident in the construction task where lots of physical manipulation was involved, high levels of minimal responding were required in the form of actions and feedback.

Finally, the task used during intervention was identical to that used in the control condition and very similar to the other tasks involving the construction of a picture. However, the patterns produced were slightly different in that lower levels of topic initiation, longer topics and higher amounts of adding were evident in comparison to the other tasks. It seems that the scaffolding had the effect of focusing the interactions and encouraging higher levels of topic maintenance. Thus the scaffolded intervention was able to override, to some extent, the patterns that were produced by the children unaided. However, the patterns produced in this context remained quite similar to those patterns produced in the other picture construction tasks.

5.2.2.2 Interactive Rules

The other way in which the tasks can be compared is according to the interactive rules involved in the tasks. These can explain similarities and differences on the proportions of topics maintained, the lengths of topics and the measures of the types of maintaining utterances. In the research the construction task and the information gap task of studies one and two were typical of information gap type tasks. The picture sequencing task and the control condition of studies one and three were typical of decision making tasks and there was only one instance of a jigsaw task, as outlined by Pica et al. (1993). The task used during intervention was typical of a decision making task but also involved external intervention creating a different context again.

Generally, as is apparent from table 1, given the differences in the formats of the tasks as outlined in the previous section, the different types of task fall into a continuum for the measures of the proportions of topics maintained, mean lengths of

topics, agreement, disagreement, justification and to some extent, suggestion. As mutual reliance decreases, there are also decreases in topic maintenance but increases in discussion-like dialogue. Thus the continuum consists of the jigsaw holding a middle position between information gap type tasks involving high mutual reliance and the decision making tasks involving low mutual reliance.

While the intervention condition elicited similar patterns to that of the decision making tasks, the levels of discussion-like dialogue and topic maintenance were much higher, as was intended.

The different types of task involved very different interactive patterns which encouraged or allowed different types of dialogue. The information gap type tasks constrained the interactive pattern by involving a uni-directional flow of information. That is, one child was 'informed' and required to instruct the other child. Of particular prevalence in these types of task were stating and directing forms (i.e., 'new'), confirmation and reconfirmation requests and yes/ no responses. Decision making tasks did not, however, constrain the interactive patterns by making one child 'informed' rather the pattern of interaction was left for the interactants to organise between themselves. For example, in the control condition of study three, if one child in the dyad was an expert on the seaside and the other child was not, the children could conceivably organise the interaction in a similar format to that of the information gap tasks. However, given that these children tended to be equally familiar with the seaside and normal events there, the interactive patterns were symmetrical with the children holding equal status. This situation allowed the possibility of ideas to be generated, negotiated, discussed and evaluated in a collaborative interactive pattern, although this was not required for task completion. Whereas in the picture sequencing task either child could conceivably do the task alone, in the control condition as the children had separate bags they were to some extent mutually reliant.

The jigsaw task was different again from the above two types of task in that not only did it involve the distribution of information between the children in a similar way to that of two information gap tasks going on at once, but also required the children to pool their information in order to negotiate where pieces should be placed. The children were also required to organise their interactions co-operatively through the regulation of the taking of turns to take pieces from their bags. This form of interaction led to similar patterns of information giving and feedback evident in the

information gap tasks, but also led to the use of justifications and counters. It should be noted however, that the existence of ambiguous and problem pieces in the information gap and jigsaw tasks may have functioned to elicit a few instances of justifications, suggestions and the like during these tasks.

These patterns indicate that although the distribution of knowledge determines, to some extent, the levels and lengths of topic maintenance as well as the way topics are maintained and the way this is carried out through information giving, directing or through discussion, findings which are in concordance with the typology of tasks outlined and used by Pica et al. (1993), the nature of the task also determines the actual lengths of topics, levels of topic initiations, minimal responding and adding. However, it is not inconceivable that further similarities exist between the tasks and that slight adjustments to the tasks would elicit very different topic management patterns. So it seems that whilst problem solving tasks may encourage longer sequences on one topic domain as noted by Schober-Peterson and Johnson (1989), it is evident that this can vary quite dramatically depending very much on the exact nature of the task. These findings clearly support the position held by many researchers, that speakers produce different interactive and topic management patterns depending on the perceived requirements of the tasks (Applegate and Delia, 1980; Brown and Fraser, 1979; Ervin-Tripp, 1984; Liengme-Bessire, Grossen, Innaccone and Perret-Clermont, 1994; Wanska and Bedrosian, 1986; Wanska et al. 1986). Given the possibility of large differences between different task contexts, this factor should be considered when assessing interactants' topic management skills.

Finally it should be noted that whilst studies 2 and 3 aimed to construct and/or search for the perfect task which would encourage topic maintenance by way of discussion-like dialogue in the interactions of the 4 year olds as well as the older children, it is now evident that this is probably unattainable.

5.2.3 Age and Context Interactions

As was noted in section 5.2.1, age differences in topic management performance were evident to a smaller or greater extent depending on the task context, a finding which supports the claims made by Ervin-Tripp (1984) and Schober-Peterson and Johnson (1989), and it is to these patterns that we now turn.

The topic management skills presented by 4, 6 and 9 year olds were often very similar, all the children co-operating in dialogue to achieve the task goal. These

patterns were no more apparent than in the construction task of study one and the information gap task of study two. Indeed, despite a few age differences, most notably on the levels of adding, which increased with age, and repetition and 'new', which decreased with age, the topic sequences produced by all children were co-operative. They were also maintained for a number of utterances (between 3 and 5) and consisted of fairly high levels of adding information. In these information gap type tasks, the interactive pattern required for task completion was simply a matter of one child informing or directing while the other requested or responded.

On the other hand, the jigsaw task was more complicated, the children sometimes having to inform or direct and at other times request or respond to information. In addition, they were required to regulate the taking of turns at the task. Despite these extra complexities, the topic management patterns presented by the different aged children were again very similar and involved the maintaining of topics, often by way of adding and for a number of utterances. However, in contrast to the information gap type tasks, on occasions there was a certain lack of joint attention in the 4 year olds' dialogues. In addition, these children were observed to be less co-operative in the taking of turns than the older children.

As was noted in the respective chapters, these patterns are very positive as both the younger and older children were clearly capable of co-operating in and organising their topic sequences and dialogues based around the task situation. These patterns involved high levels of topic maintenance both through minimally related utterances and the adding of information to and expansion of topics when required. However, whilst the interactions were predominantly co-operative, in some of the tasks a number of age differences became apparent, as noted in section 5.2.1.

During the control condition of study three, despite similar levels of adding and proportions of topics maintained, the 4 year olds produced slightly shorter topic lengths, fewer agreements and justifications than the older children. However, of particular importance was the finding that on a number of occasions these children's topics were monologic. Of further importance was the finding that, although the taking of turns at the task was often conducted in a co-operative fashion, there were break downs in this pattern among the interactions of the 4 year olds and occasionally topic fighting and disputes resulted. In contrast, the patterns for the older children were much better, particularly as they engaged in some discussion-like dialogue.

Similarly, the topic management performances in the picture sequencing task varied substantially across the different age groups. In this task, the 4 year olds initiated large numbers of topics, many of which were not maintained. Further, when topics were maintained, this was often through self repetition and thus many of the topic sequences were monologic, although efforts were made to engage in dialogue. The 9 year olds initiated fewer topics, maintained them for much longer and usually by adding information. Moreover, these older children engaged in collaborative discussion.

There are two main reasons for these different age trends on the different tasks. The first is that, as differences between the age groups became increasingly apparent, there was also a noticeable reduction in the mutual reliance involved in the task. Indeed, during the information gap type tasks where mutual reliance was at its highest, the topic management patterns were very similar across the age groups. Where mutual reliance was lower, the interactions of the 4 year olds increasingly lacked joint attention, dialogue and co-operation. It seemed that mutual reliance supported the young children's interactions by providing them with a clear need to engage in dialogue and further to converge the children's interests and attention. As mutual reliance decreased, the requirement for dialogue was less and the children's interest and attention became less controlled and convergent. In these situations it was evident that whereas the older children remained jointly interested and focused on the tasks, the younger children were occasionally distracted by an interest in their own activity or they did not engage in dialogue because it was not necessary for them to do so. These findings are partly supportive of the claims made by Keenan and Schieffelin (1976) for slightly younger children. These researchers suggested that children would have difficulties maintaining topics for long periods because of short attention spans and ease of distractibility. Clearly, the occasional lack of joint focus and co-operation among the 4 year olds' interactions developed from a greater interest by one child in his/ her own activity rather than the joint activity. However, this self interest decreased and joint attention increased with age, particularly between the age of 4 and 6 years. This was particularly apparent in the intervention situation where the researcher was not required to control the dialogues of the 6 and 9 year olds to the extent of the 4 year olds.

The other reason for the age trends on some of the tasks was that although they warranted but did not require discussion-like dialogue for task completion, the 4 year olds did not engage in this discourse form. This was the very finding that led to

studies two and three. As was suggested at the end of study one, the 4 year olds were either unable or unwilling to engage in discussion-like dialogue. As was apparent from the findings for the jigsaw task, the 4 year olds were able to produce justifications during disputes and to provide explanations, as discussed previously in section 5.2.1. With the help of direct intervention, the 4 year olds in study three were able to produce higher levels of agreements, justifications and suggestions. Once encouraged by the scaffolded intervention, the children showed a willingness to use these utterance types, with the exception of agreements but the inclusion of counters and 'results' without prompting. It was further the case that the 4 year olds produced more of these types of utterances than the 6 year olds and sometimes the 9 year old control children. From these finding it was thus concluded that 4 year olds are capable and willing to produce these types of utterances when required.

However, the qualitative analysis revealed that, despite using these types of utterances to engage in and provide very advanced arguments, 4 year olds were not quite capable of engaging in collaborative discussion. Indeed, it was clear that the 4 year olds had difficulties detaching themselves from their own ideas, considering the validity of others' ideas, and weighing up the different perspectives and demonstrated that they were, to some extent, egocentric. Given this apparent egocentrism, it is not surprising that in task contexts requiring the use of discussion the 4 year olds do not perceive that this discourse form might be useful for aiding in task completion.

It was noted however, that the mediating utterances used in the intervention may have encouraged dispute like discourse rather than discussion. That is, the questioning involved a bias towards arguing and the presenting of opinions rather than discussion. Whereas this may have prompted the younger children to engage in disputes, the older children may have been less affected. Given that there was no great personal conflict and that they have a greater understanding of when discussion-like discourse might be required, as evident from the picture sequencing task of study one, the older children responded to intervention with discussion. It may be the case that if the mediating requests had encouraged more neutrality and independence of the ideas from their speakers, then the intervention may have been more successful at encouraging discussion. Clearly this is an issue that could be addressed by future research.

Of particular interest was the finding that 4 year old children had some awareness that others have different conceptual views as well as when this was

required to be taken into account. These 4 year olds were able to decide when a justification should be used to communicate the basis of their own ideas. However, the older children were more willing to take others' views into account and were able, to some extent, to infer what these views might be.

Despite not managing to elicit collaborative discussion from the 4 year olds, the findings from the present research are particularly positive as they suggest that 4 year olds have many of the cognitive and linguistic skills required to engage in discussion-like dialogue. The two elements that these children seem to lack is firstly, an understanding that this form of discourse might be required, and secondly a willingness to consider other views/ ideas as viable alternatives to their own. Both of these points might be overcome by reductions in egocentrism as well as a greater understanding of the situations where collaborative discussion is required.

These findings further emphasise the importance of a consideration of context in terms of whether the interactants can engage in the appropriate form of dialogue as well as understand that it is required.

5.2.4 Summary

Overall, the topic management patterns presented varied according to task context and age. Differences in these patterns were evident across tasks of differing nature and format. In addition, mutual reliance had an encouraging effect on topic maintenance, the levels increasing as mutual reliance increased.

Age differences in the explicitness of co-operation and in the provision of feedback imply an increasing understanding of the listener's role in communication, that is to convey a sense of attention, comprehension, agreement and acknowledgement. This pattern further suggests that children view dialogue increasingly as a joint and mutual activity.

Moreover, as the levels of mutual reliance decreased the amounts of dialogue and co-operation among the 4 year olds also decreased but on the whole remained much the same for the older children. This emphasises the clear importance of an explicit purpose to encourage these young children to engage in dialogue.

However, linked with this is the observation that as mutual reliance decreased, the children were required to engage in discussion-like dialogue. Although the 4 year

olds displayed an increasing awareness and sensitivity to others' perspectives, as well as a willingness to use justifications, suggestions and the like, they were unable to take part in discussion. This was in contrast to the older children who displayed a greater sensitivity to others' perspectives and an increasing ability to engage in discussion-like dialogue.

5.3 IMPLICATIONS

5.3.1 Developmental Theory and Research

The findings from the present research are both supportive and contrary to the theoretical model of child dialogue development presented by Piaget (1959) and the reorganisation of this model by Dorval and Eckerman (1984) and Dorval and Gundy (1990), as outlined in section 1.4.1.1 and 1.4.2.2 respectively. In accordance with these models was the indication that the children did indeed develop through the proposed pattern of development. The main element in contrast was that the children in the present study seemed to reach the stages earlier than Piaget (1959) and Dorval and Eckerman (1984) had suggested.

Despite some evidence of monologic topics, a lack of co-operation and joint attention between 4 year olds, as typical of Piaget's stage 2 type 1 talk, the majority of talk was socially directed and responsive. Indeed, it was frequently dialogic in nature and far more typical of Piaget's stage 2 type 2 talk. This finding is generally in concordance with prior literature concerning young children's topic management skills (Garvey and Hogan, 1973; Schober-Peterson and Johnson, 1989) as well as Vygotsky's (1962) claim that children are socio-centric from a young age.

In further contrast to Piaget (1959) and Dorval and Gundy's (1990) claims was the finding that 6 year olds were able to engage in some discussion-like dialogue. However, of more importance was the finding that 4 year olds were able and willing to produce justifications and counters regularly. However, it was notable that they were, to some extent, egocentric in that they showed an unwillingness to detach themselves from their own views or consider others' views as possible alternatives to their own.

Moreover, the finding that young children act on the basis of some consideration of the listener's view by providing justifications to support their ideas is contrary to Piaget's claims as well as those of Selman (1980), cited by Flavell (1985).

As was noted in the previous chapter, Selman (1980) indicates that children should not be expected to distinguish between their own and others' views until between the ages of 5 or 6. Further, the occasional use of counters by 6 year olds to explain an idea, that is take a second person's view to reflect on their own thoughts and speech, would not be expected until between 7 and 12 years.

These findings present a more advanced picture of young children's perspective taking skills than have been presented in the past. In addition, given that these children are already capable to some extent of taking account of a listener's view this ability may actually begin to appear much earlier in the child's development

In addition, this perspective taking ability is also involved in the understanding of how and when to provide feedback to a speaker. Clearly as some feedback provision is apparent among the dialogues of the young children, this is an understanding that is also in the process of development. However, it may be the case that the children are not fully aware of the situations in which these forms should be presented and further that there may be an increasing ability to focus attention on the conversation as well as the activity. This is signalled to some extent by a gradual and developmental increase, rather than a dramatic increase among one age group, in the use of feedback forms

Although the claims and findings concerning the development of dialogue from Piaget (1959) and Dorval and Eckerman (1984) seem to underestimate the abilities of the children, the findings are interesting when compared to those of the present research in terms of the contexts within which the children were observed. Indeed, the discrepancies between the different pieces of research can be explained somewhat by the increasingly complex contexts examined. Dorval and Eckerman (1984) observed children interacting as a group in quite formal settings with no play materials present. In comparison, many of Piaget's observations were of children, in groups and dyads, playing around activities but not necessarily task contexts. As a contrast to these two settings, the present research examined dyadic interactions in fairly structured, formal, yet personal task settings involving the convergence of shared goals. These three pieces of research indicate that the ability to perform these topic management and collaborative discussion skills depends very much on the children's ability to adapt to these differing environments. Given the greater complexity of group situations, particularly in terms of the co-ordination of turns at talk, it is hardly surprising that Dorval and Eckerman (1984) put such widely different

ages to stages in topic management ability. It is far easier to engage in dyadic dialogue, particularly when it is supported by common goals and interactive structuring, than multiparticipant conversation or disorganised activities. The suggestion is that although young children can demonstrate quite advanced skills in highly structured and supportive contexts, when placed in more complex yet less structured contexts children may not perform these advanced skills until they reach an older age.

As is emphasised by Bruner (1983) and Vygotsky (1978), it is vital that researchers consider children's abilities in relation to the context within which they are performed rather than independently of the context.

5.3.2 Educational Implications

The findings from the present research clearly imply that the curriculum guidelines for children's conversational skills as presented by the SOED (1991), outlined in section 1.4.1.3, drastically underestimate the actual abilities of children even if considered in a complex situation of classroom group discussion. In contrast, the preschool curriculum presented by Strathclyde Regional Council Education Department (1994-95) clearly emphasises the learning of skills that preschool children have yet to develop or can develop further.

The findings from the present research suggest that curriculum guidelines, attainment targets and the implementation of educational practices should consider that learning takes place in, and should be assessed with regard to, a variety of physical and social contexts. Not only should children's expected abilities be considered in relation to the social and physical context within which they might initially be produced, but some indication should be given concerning how and when these abilities become utilised in other more complex, formal and less structured settings. Further, it is apparent that there is a benefit in the utilisation of simple and structured activity contexts for the learning of a variety of different skills and that once developed in one context, they should then be encouraged for usage in other more complex contexts. More complex situations can also be used by breaking them down into simpler activities and/ or through the utilisation of highly scaffolded support by the teacher. As was noted earlier in section 1.4.1.3, many of these ideas have recently been implemented into pre-school education in the local area (Strathclyde Regional Council Education Department, 1994-95).

The present research findings also indicate that skills of collaboration involving discussion can be encouraged from an early age. Given the importance of the use of skills of conflict and collaboration emphasised by current theories of child development in the facilitation of socio-cognitive development and learning generally, the encouragement of these discourse forms can be nothing but beneficial to children's development.

5.3.3 Conceptual Underpinnings

Throughout the duration of the research, one of the major concerns has been a clear characterisation of the notion of discourse topic, an issue shared by a number of other researchers (Brown and Yule, 1983; Ervin-Tripp, personal communication; Sanders, personal communication; Schlobinski and Schutze-Coburn, 1991)

In chapter one it was argued that a local approach to topic identification and derivation was a far superior characterisation than a top down approach. While it is apparent that many global elements, such as themes, genre and activity, have an effect on topic, the local approach still, in view of the research in this thesis, continues to represent a superior approach. Further, in the coding scheme used in the present research an attempt was made to maintain the sense of dynamicity, as emphasised in the introduction, without losing sight of the phenomenon itself. Although this was achieved, it was apparent that the coding scheme did not capture the many intricacies of the phenomenon and the way it is managed. We will now deal with some of these observations

One problem particularly evident among the older dyads dialogue, was that it was often difficult to track the topic when implicatures and general utterances requiring an inference to understand its relevance were used. Evidently, this will become an increasing problem as the speakers become older and use these implicated meanings far more frequently.

The notion of shading, while enjoying a more specific definition, was difficult to apply. There were frequent instances where topics shared what seemed like a semantic link to a preceding topic but as they were not different instances of the same word they were not classified as shading. One particular instance developed out of a comment concerning 'the circus' which was then shaded to the reporting of a personal experience concerning 'the carnival'. While these are not the same instance one clearly developed from the other. Moreover, shading seems to be a multifunctional form of

topic change and can be used both appropriately and inappropriately. The use of shading by children is certainly considered an important area for future research and will undoubtedly reveal some interesting findings.

Justification as a category also posed a problem for the coding scheme. While in the present study justifications were coded as topic maintaining utterances they could be considered as side sequences in themselves. This is particularly the case when they become maintained or upgraded into a topic in themselves. These instances could in many ways be considered as instances of topic hierarchicalisation, particularly given that justifications are considered subordinate clauses.

Throughout the present research, there was a conscious effort to avoid inferring topic hierarchicalisation when it was not present. However, it was apparent that topic hierarchicalisation is only one form of relating topics. Other forms being counter topics, illustrative topics and so on. Some of these related topics begin with a cue word and communicate a certain anticipation of a return (as outlined by Adato, 1979). Indeed, on some occasions if no topic return is made then the actual intervening topic would very often have to be reconsidered as an abrupt topic change, unco-operative shading or interruption. In the older children's dialogues there were a number of instances of these topic relations. This suggests that although these children might not be organising their topics hierarchically, they are certainly relating them to each other by organising them at a higher level. This has a certain implication for topic maintenance, in that whereas the younger children are only able to maintain topics in isolation, the older children might be maintaining a number of related topics. Further examination of this ability to hierarchically organise and relate topics is required

Overall, the local model of topic management presented needs to be developed further in order to capture many of the intricacies of the way speakers make their utterances coherent to the phenomenon of discourse topic. As to the characterisation of topic, analysis of developing abilities to manage and address topics may help to provide a better understanding of the notion itself.

5.3.4. Follow-up Research

Whilst the present research has yielded a number of interesting findings and implications both for developmental theory and education, there are a number of issues and leads that require additional research.

First and foremost, although the current research indicates that 4 year olds are not quite able to engage in discussion-like dialogue, they clearly have many of the prerequisite skills in order to do so. Follow-up research could focus on applying a similar scaffolded intervention procedure across a number of sessions, consisting of a variety of suitable task contexts, distributed over a period of a few weeks. This would be used to encourage 4 year olds to apply the skills that they hold and maybe participate in collaborative discussions and to encourage older children to utilise these skills more readily. The tasks used should be constructed so that they can be utilised in educational settings including remediation programs designed to encourage these conversational skills in children with a language delay or impairment.

Further, follow up research could be directed at identifying the additional skills, understandings and variables which are involved in or are prerequisites to an understanding and taking of a listener's role in dialogue, and/ or engaging in collaborative discussion. While these two elements are highly linked there is a wide breadth of research required in both areas.

Future research should continue to be directed at the topic management performance of children during middle childhood. In particular, research needs to consider children's performances in other situations for example with adults, peers and siblings in the home, the school playground or in educationally applicable settings. Moreover, little research has focused on the developments in topic management performance in adolescence.

Finally, despite the current findings little is known about the development and usage of topic shading or topic hierarchicalisation. Indeed, although it is fairly well established that adults use these two skills, the regularity, context dependency and development of these skills is still an area open for research.

5.4 CONCLUSION

In conclusion, the present research indicates that topic management performance varies according to task context and age. The findings indicated that with age there is an increasing ability to co-operate in dialogue as a mutual activity, take account of and consider others' communicational needs and views and behave according to the requirements of the task contexts.

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APPENDIX 1

Pictures (reduced by 50%) used in picture sequencing task.



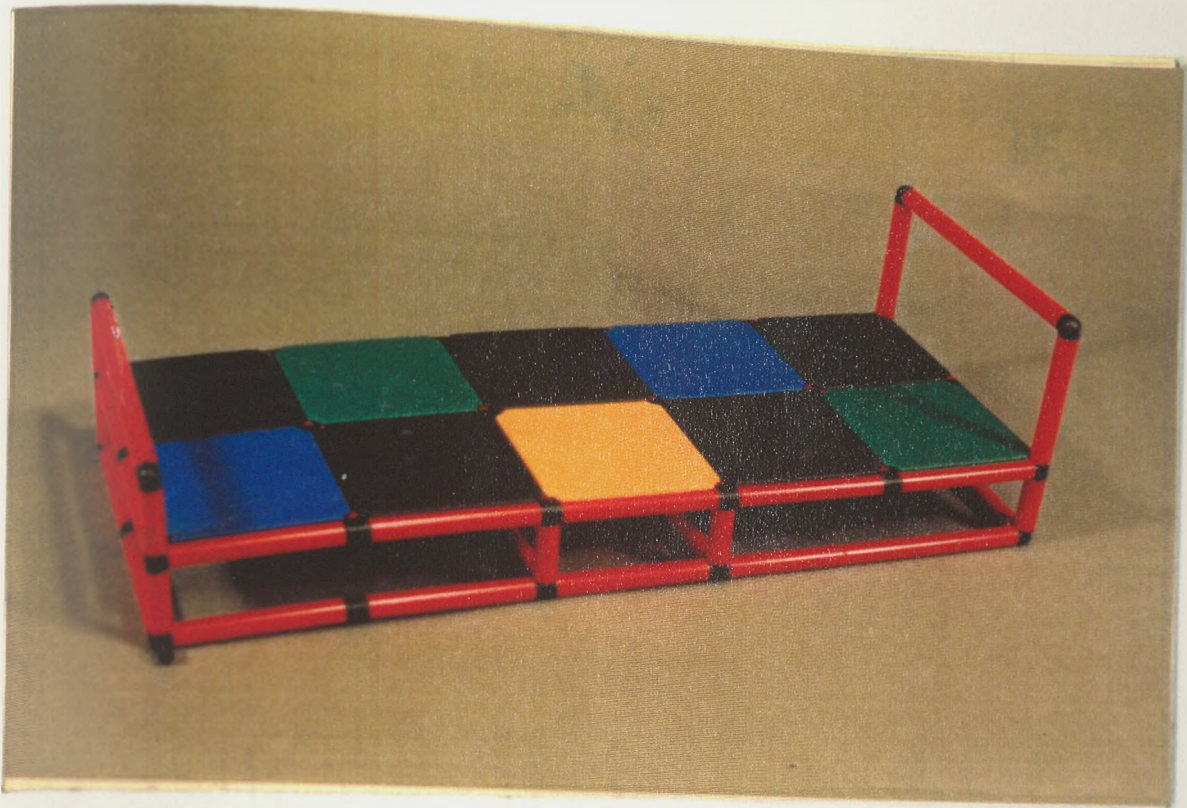
Pictures (reduced by 50%) used in picture sequencing task.



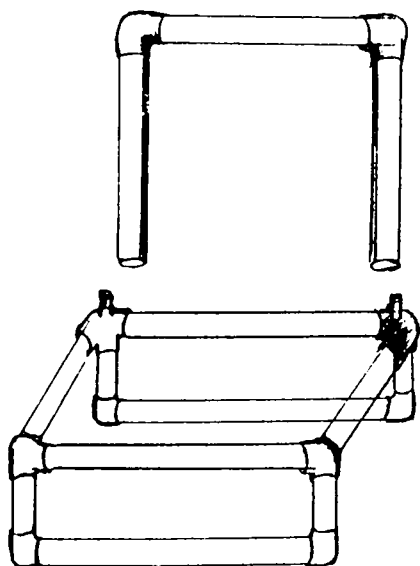
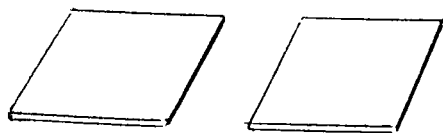
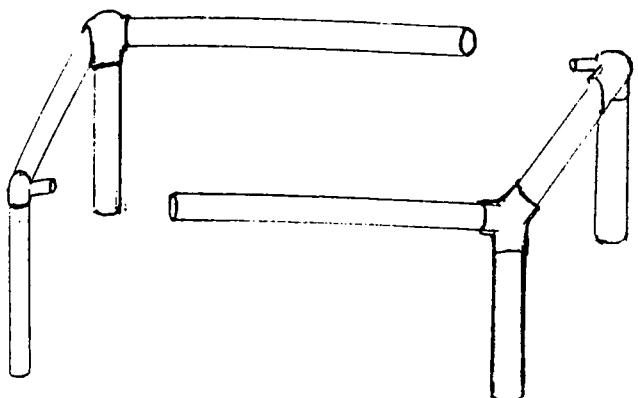
Pictures (reduced by 50%) used in picture sequencing task.



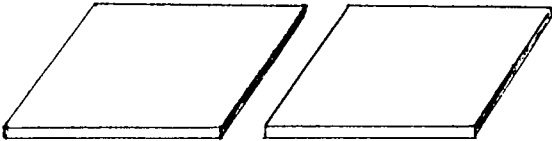
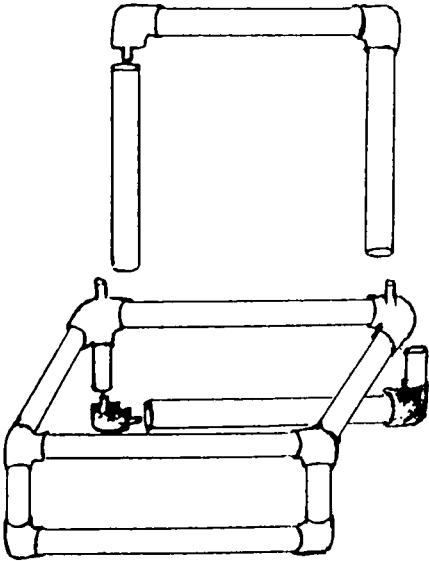
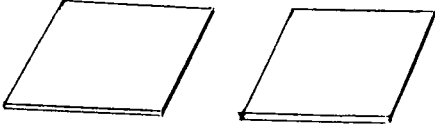
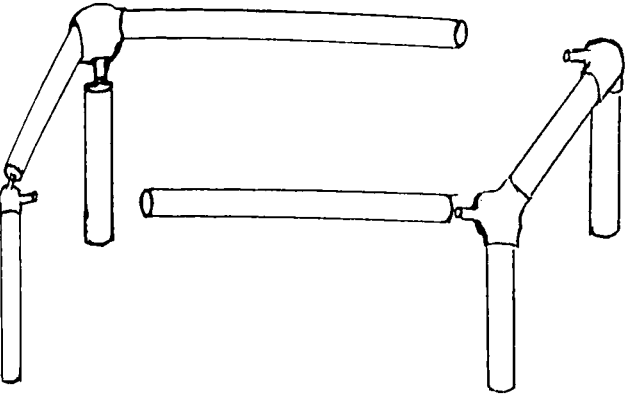
Photographs used in the construction task.



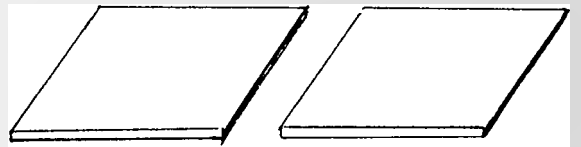
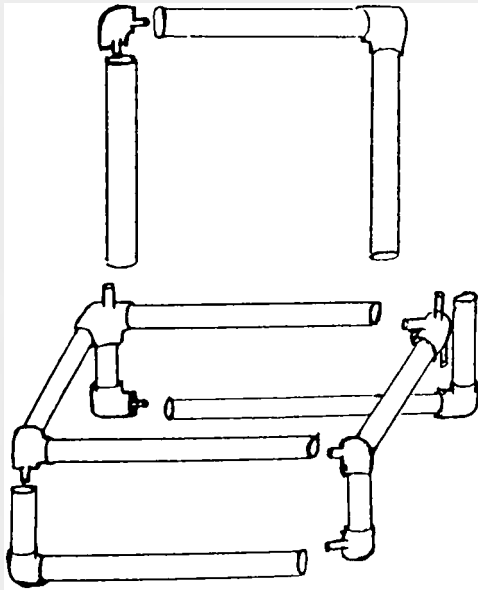
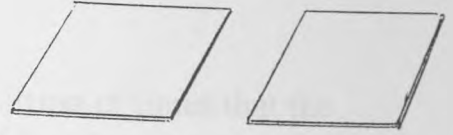
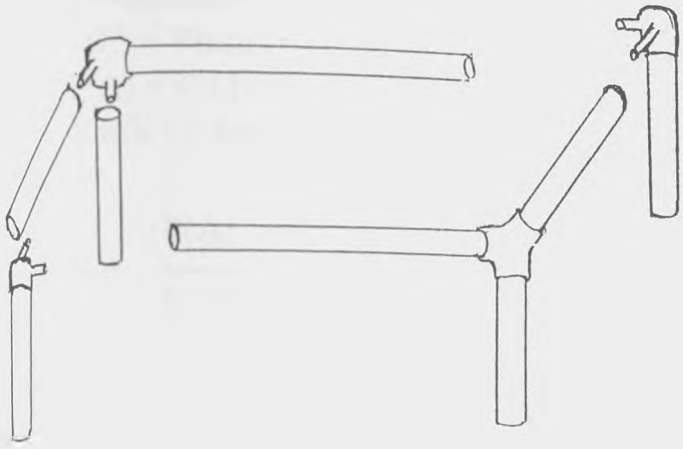
Extent of deconstruction of the table and chair for the 4 year olds in the construction task.



Extent of deconstruction of the table and chair for the 6 year olds in the construction task.



Extent of deconstruction of the table and chair for the 9 year olds in the construction task.



Kappa measurement of inter-observer agreement.

N= number of communicative acts considered.

k = number of raters.

P(E) = Proportion of agreement expected by chance.

P(A) = Proportion of times the raters agreed.

Var(K) = the variance of Kappa.

$$K = \frac{P(A) - P(E)}{1 - P(E)} =$$

"The ratio of the proportion of times that the raters agree (corrected for chance agreement) to the maximum proportion of times that the raters could agree (corrected for chance agreement)."
(Siegel and Castellan, 1988) (P. 285)

In order to determine whether K is significantly greater than a chance outcome the following calculations are carried out.

$$z = \frac{K}{\text{sqrt Var}(K)}$$

Kappa measurement of inter-observer agreement - study 1 - Topic level categories.

$$N = 757$$

$$k = 2$$

$$P(E) = \underline{0.28}$$

$$P(A) = \underline{0.85}$$

$$\text{Var}(K) = \underline{0.000514}$$

$$K = \frac{0.85 - 0.28}{1 - 0.28} = \underline{0.79}$$

$$z = \frac{0.79}{\text{sqrt } 0.000514} = \underline{34.8}$$

As $34.8 > 2.32$ (the critical value at the 0.01 level) the result is significant at the 0.01 level.

Kappa measurement of inter-observer agreement - study 1 - Type of topic maintaining utterance categories.

$$N = 440$$

$$k = 2$$

$$P(E) = 0.12$$

$$P(A) = 0.79$$

$$\text{Var}(K) = 0.000649$$

$$K = \frac{0.79 - 0.12}{1 - 0.12} = \underline{\underline{0.76}}$$

$$z = \frac{0.76}{\text{sqrt } 0.000649} = \underline{\underline{31.0}}$$

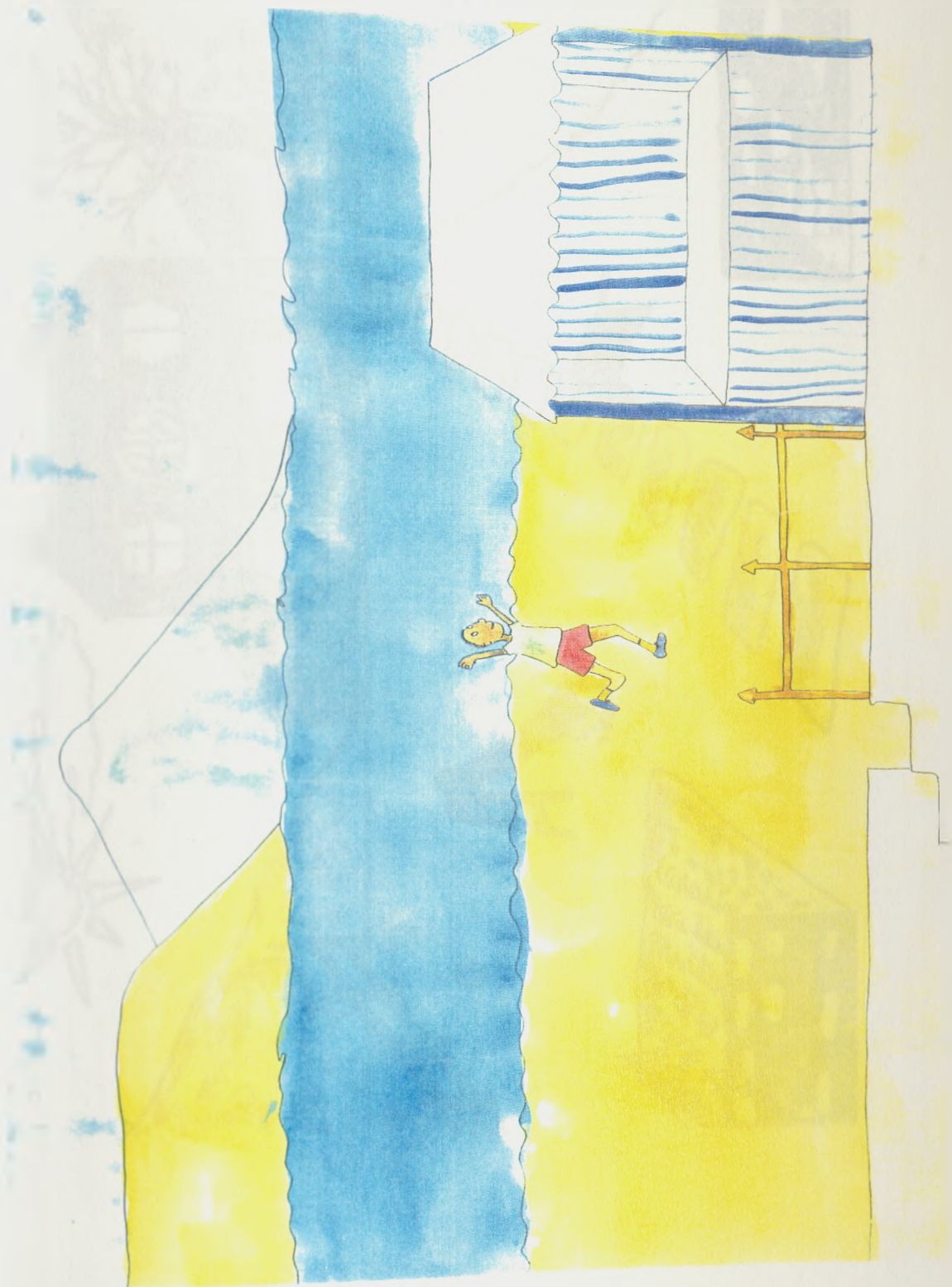
As $31.0 > 2.32$ (the critical value at the 0.01 level) the result is significant at the 0.01 level.

APPENDIX 2

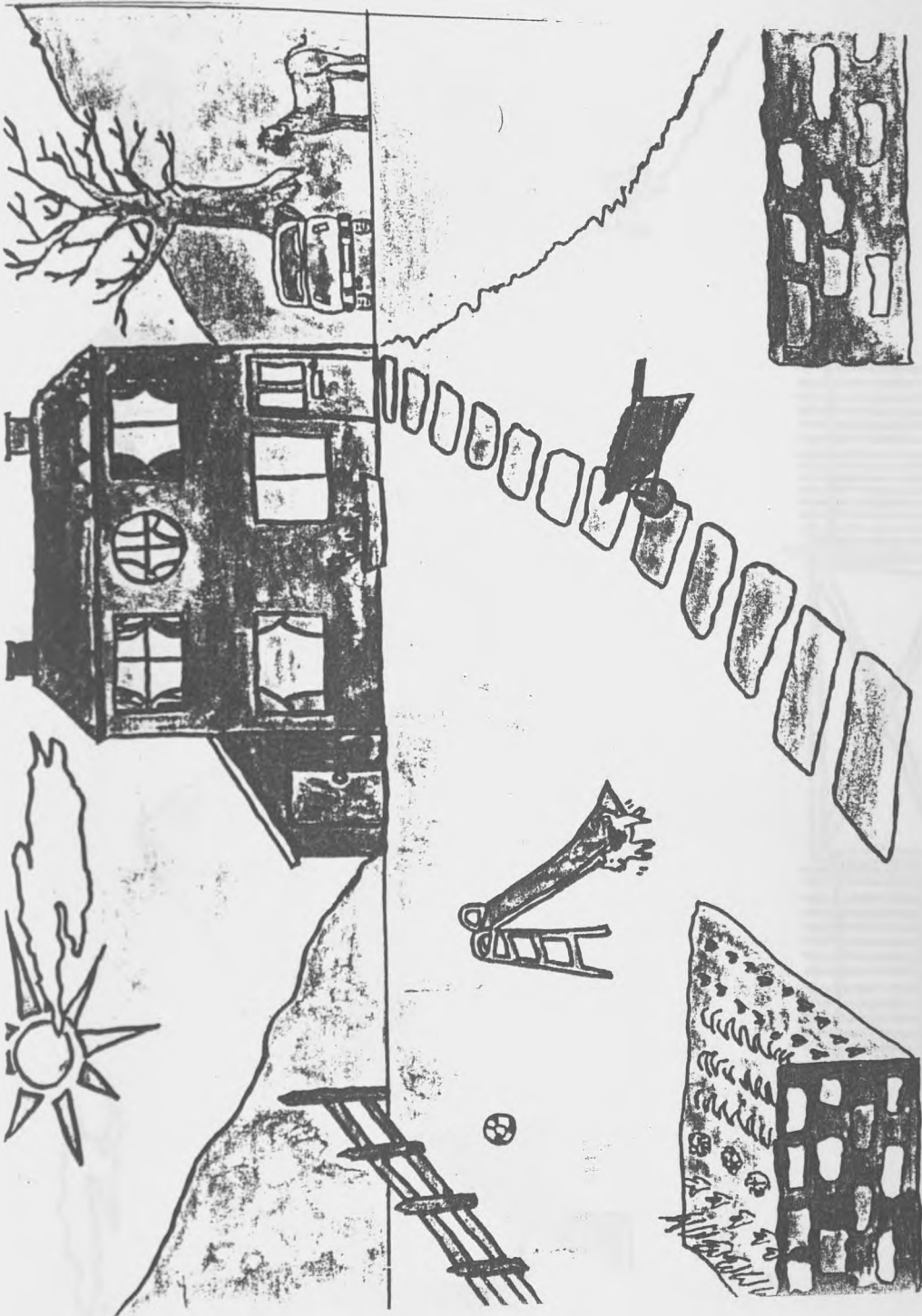
A4 scene (reduced by 50%) given to the children in the information gap task.



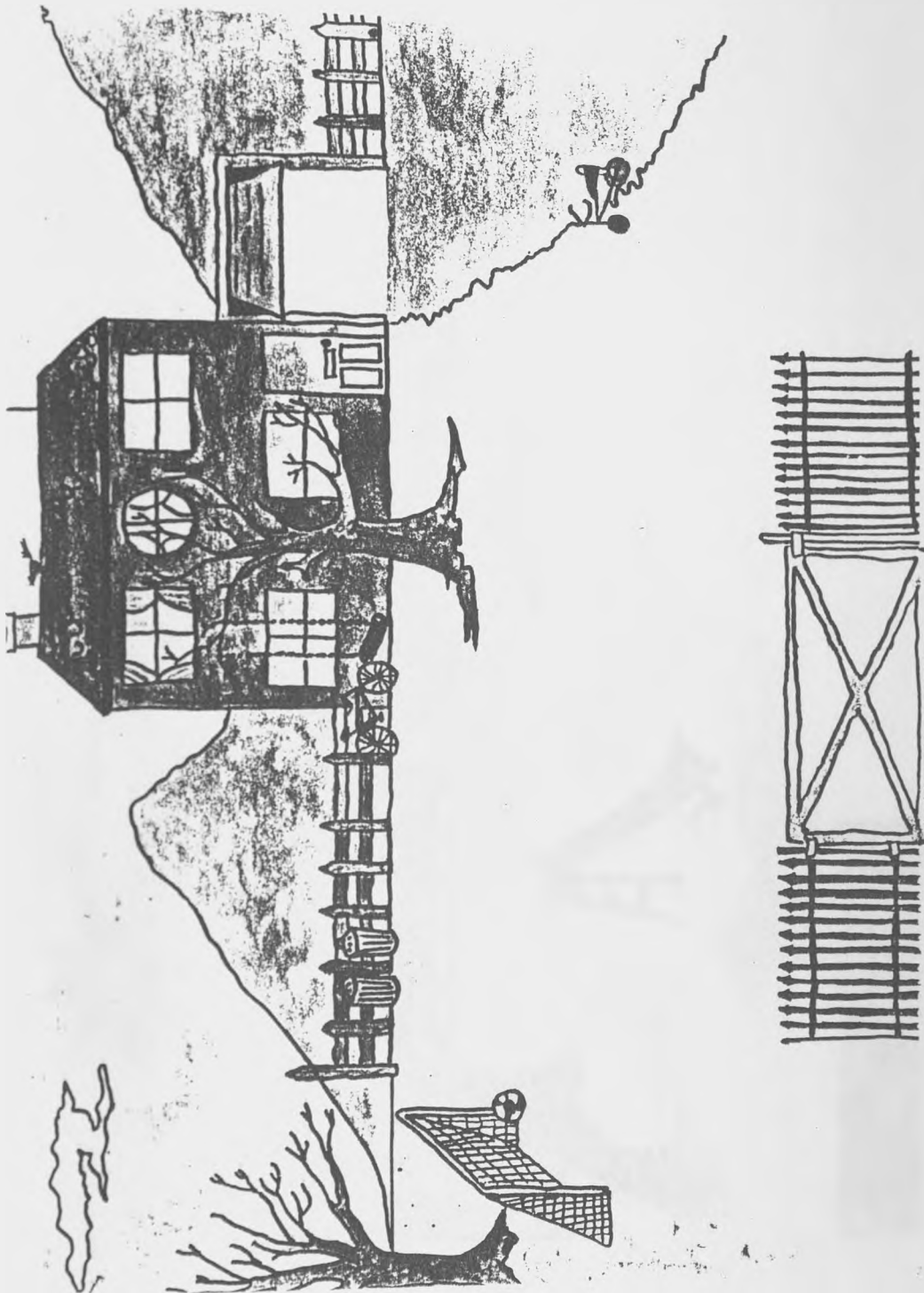
A3 background (reduced by 50%) on which to put pieces during the information gap task. This version was given to the 4 year olds. The version given to the older children was identical except that the boy on the sand was a piece rather than a feature of the background. This A3 background was also used in study 3.



One of the two A4 scenes (reduced by 50%) given to the children in the jigsaw task - prior to piloting.



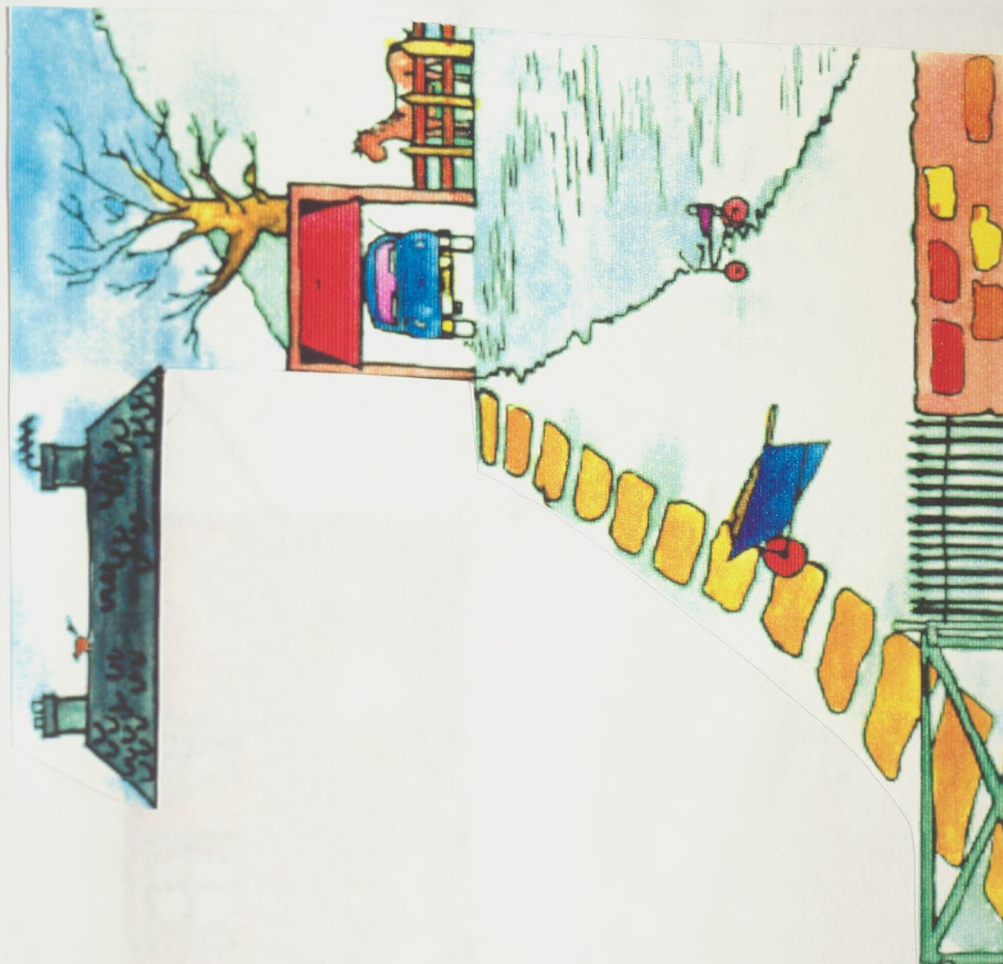
One of the two A4 scenes (reduced by 50%) given to the children in the jigsaw task - prior to piloting.



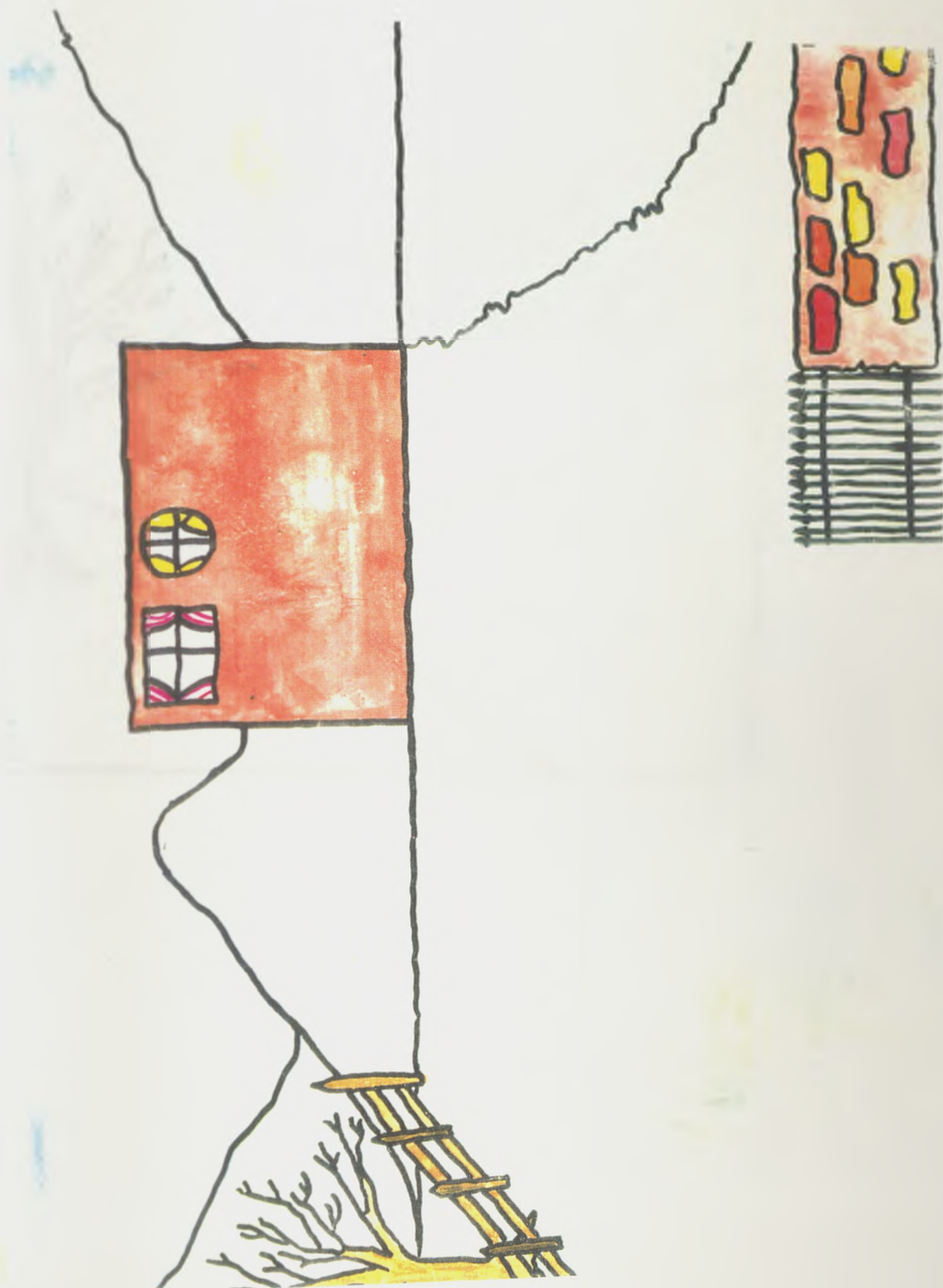
One of the two A4 scenes (reduced by 50%) given to the children in the jigsaw task - after piloting.



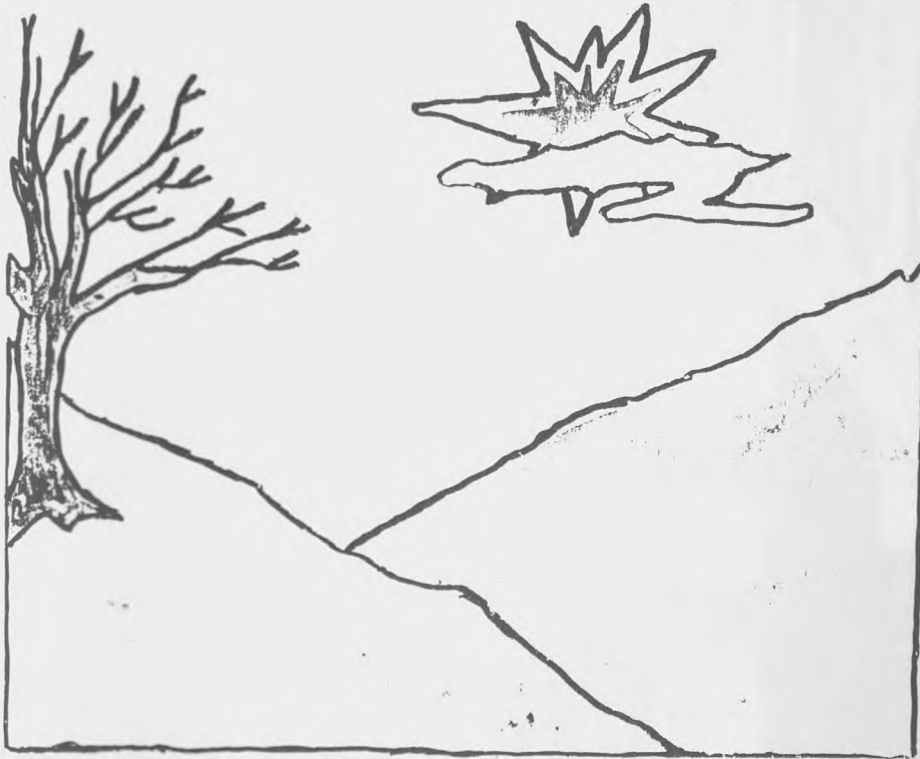
One of the two A4 scenes (reduced by 50%) given to the children in the jigsaw task - after piloting.



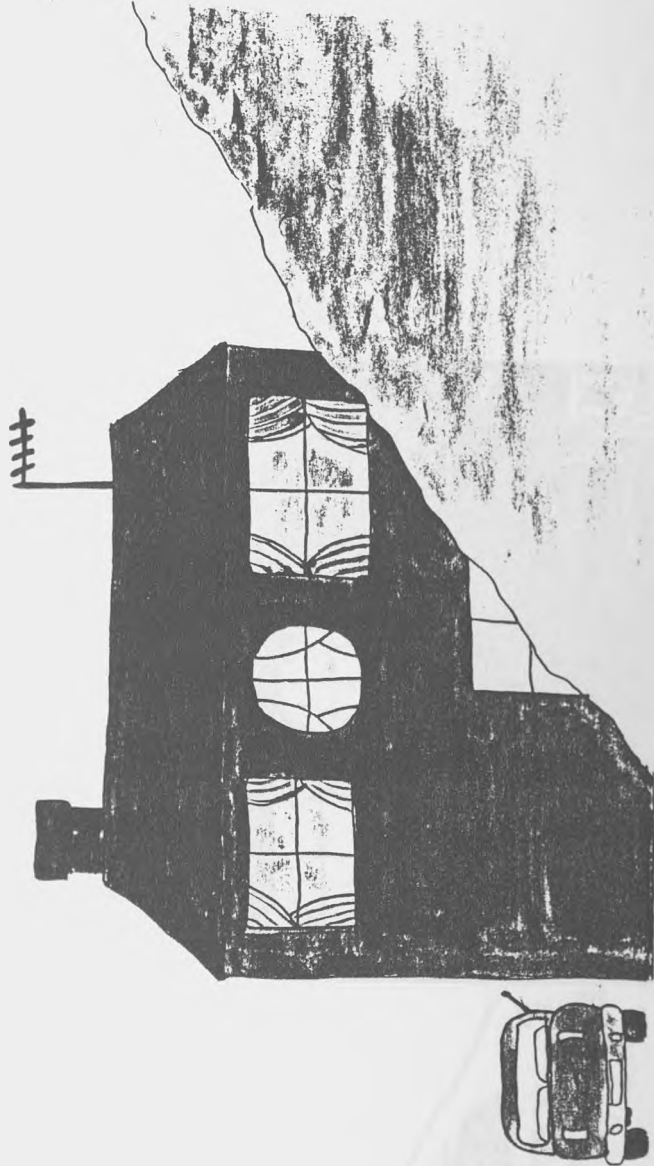
A3 background (reduced by 50%) on which to put pieces during the jigsaw task. This version was given to the 4 year olds. The version given to the older children was identical except that the house, wall and railings, wooden fence, and tree, were pieces rather than features of the background.



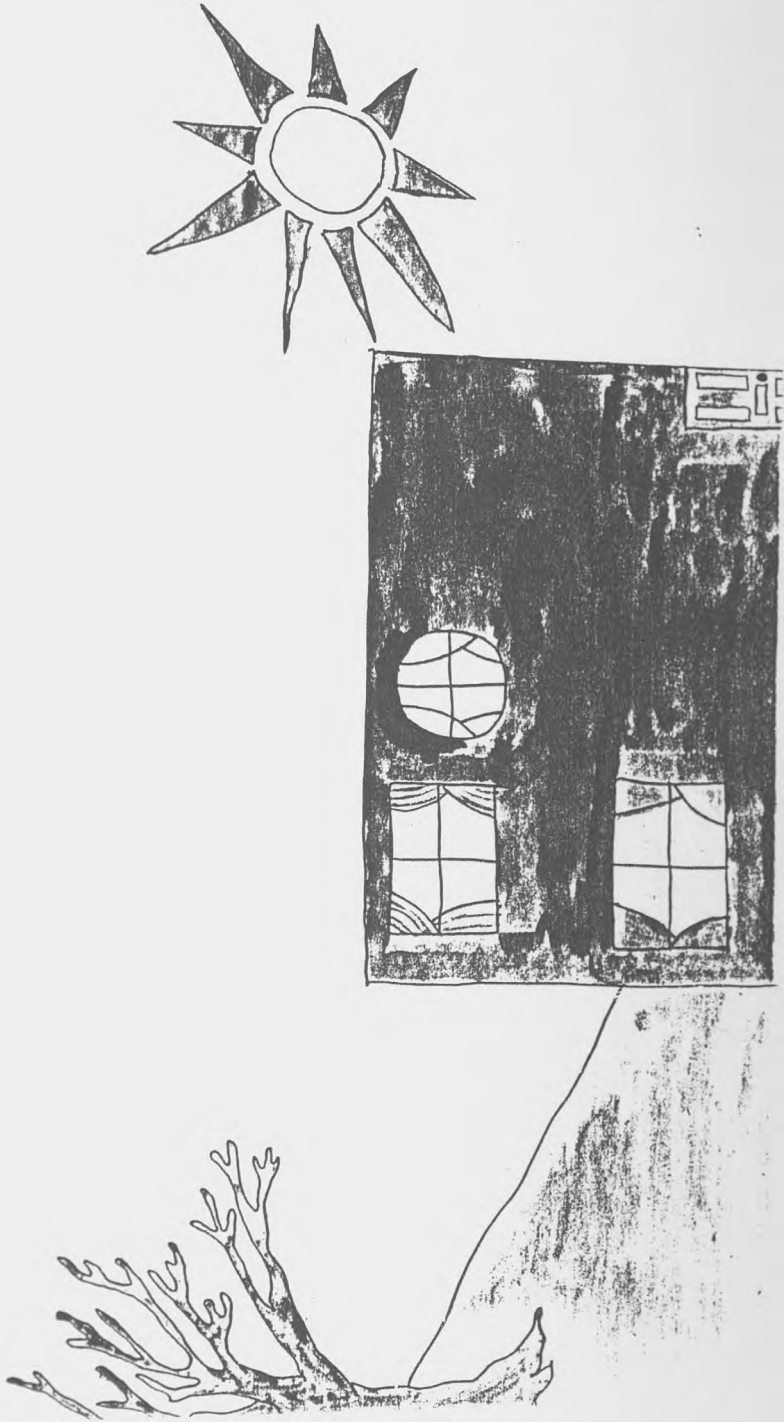
First practice task given to the children prior to that of the information gap and jigsaw tasks. Children were required to copy the picture onto a blank sheet. This practice task was also used in study 3.



Second practice task given to the children prior to that of the information gap and jigsaw tasks. Children were required to copy this and the picture on the next page onto one blank sheet. This practice task was also used in study 3.



Second practice task given to the children prior to that of the information gap and jigsaw tasks. Children were required to copy this and the picture on the previous page onto one blank sheet. This practice task was also used in study 3.



APPENDIX 3

Data at the topic level for the intervention condition, of study 3, once the mediated utterances are deducted.

Intervention Context (Mediated Deducted)								
	4 Year	Olds	6 Year	Olds	9 Year	Olds	Across	Context
	Mean Percent or Number	S.D.	Mean Percent or Number	S.D.	Mean Percent or Number	S.D.	Mean Percent or Number	S.D.
Topic Initiations	21%	4.1	17%	3.2	17%	3.8	19%	4.1
Minimally Related	31%	6.9	33%	8.3	29%	1.5	31%	6.4
Adding Information	40%	8.3	41%	5.3	42%	4.0	41%	6.3
Expansions	31%	5.9	42%	5.3	40%	8.6	37%	8.1
Unplanned Returns	6%	3.7	7%	2.9	9%	1.8	7%	3.3
Planned Returns	0.02%	0.06	0.1%	0.2	0.1%	0.2	0.06%	0.1
Shading	0.4%	0.4	0.4%	0.7	0.03%	0.1	0.3%	0.5
Mean Length of Topics	4.2	0.8	5.2	1.0	5.7	1.3	4.9	1.2
Mean Length of Maintained Topics	5.5	1.1	6.4	1.2	6.8	1.6	6.2	1.4
Mean Total Acts	320	94	336	57	317	119	324	91
N=	12		8		8		28	

Kappa measurement of inter-observer agreement - study 2 - division of dialogue into communicative acts.

$$N = 1132$$

$$k = 2$$

$$P(E) = \underline{0.69}$$

$$P(A) = \underline{0.81}$$

$$\text{Var}(K) = \underline{0.00199}$$

$$K = \frac{0.81 - 0.69}{1 - 0.69} = \underline{0.4}$$

$$z = \frac{0.4}{\text{sqrt } 0.00199} = \underline{8.97}$$

As $8.97 > 2.32$ (the critical value at the 0.01 level) the result is significant at the 0.01 level.

Kappa measurement of inter-observer agreement - study 2 - Topic level categories.

$$N = 905$$

$$k = 2$$

$$P(E) = \underline{0.33}$$

$$P(A) = \underline{0.87}$$

$$\text{Var}(K) = \underline{0.0005368}$$

$$K = \frac{0.87 - 0.33}{1 - 0.33} = \underline{0.54}$$

$$z = \frac{0.54}{\text{sqrt } 0.0005368} = \underline{34.5}$$

As $34.5 > 2.32$ (the critical value at the 0.01 level) the result is significant at the 0.01 level.

Kappa measurement of inter-observer agreement - study 2 - Type of topic maintaining utterance categories.

$$N = 699$$

$$k = 2$$

$$P(E) = \underline{0.20}$$

$$P(A) = \underline{0.63}$$

$$\text{Var}(K) = \underline{0.00035}$$

$$K = \frac{0.63 - 0.20}{1 - 0.20} = \underline{0.54}$$

$$z = \frac{0.54}{\text{sqrt } 0.00035} = \underline{28.7}$$

As $28.7 > 2.32$ (the critical value at the 0.01 level) the result is significant at the 0.01 level.

Kappa measurement of inter-observer agreement - study 2 - Own vs other (justifications and counters only) categories.

$$N = 63$$

$$k = 2$$

$$P(E) = \underline{0.5}$$

$$P(A) = \underline{0.68}$$

$$\text{Var}(K) = \underline{0.01587}$$

$$K = \frac{0.68 - 0.5}{1 - 0.5} = \underline{0.36}$$

$$z = \frac{0.36}{\text{sqrt } 0.01587} = \underline{2.86}$$

As $2.86 > 2.32$ (the critical value at the 0.01 level) the result is significant at the 0.01 level.

Kappa measurement of inter-observer agreement - study 2 - mediated vs non-mediated categories.

$$N = 422$$

$$k = 2$$

$$P(E) = \underline{0.60}$$

$$P(A) = \underline{0.91}$$

$$\text{Var}(K) = \underline{0.00355}$$

$$K = \frac{0.91 - 0.6}{1 - 0.6} = \underline{0.8}$$

$$z = \frac{0.8}{\text{sqrt } 0.00355} = \underline{13.42}$$

As $13.42 > 2.32$ (the critical value at the 0.01 level) the result is significant at the 0.01 level.

Appendix 3: Transcript

R (3;11) and B (4;2). Researcher = Rescher

Researcher has already given the practice tasks which contain some scaffolded intervention. 2 pieces are already in place the sun and the ice cream van.

1. B) Now where do you think [Show lion] this goes on?
2. R) [Points at fishmonger's].
3. B) Circus?
4. R) [Nod]
5. B) Your turn. [R takes out a boy running and puts on the background]
6. B) My turn.
7. B) Unclear
8. B) Do you think that's you [points at boy running]
9. B) And this might be me [points girl pointing to an ice cream]
10. B) You're walking and then stops.
11. R) Yeah [nods and points at boy running]
12. B) And then he's stopped
13. B) [Comparing the two pieces boy running and girl pointing] That is the same.
14. R) No its not.
15. B) Yeah it is. [places girl pointing on background next to boy running]
16. B) Now its your turn.
17. B) You got, where do you think that [windbreak] goes?
18. B) [A places windbreak next to railings] Naaaah. I don't think that goes there.
19. B) [Takes windbreak from R] I think this goes, I think this goes [places on the beach].
20. R) Naaaa.
21. B) Yep. [After a pause, changes mind and puts it in front of railings].
22. B) Come on hurry up (i.e. its your turn).
23. R) [Shows fish and crabs piece].
24. R) Wrong way [turns piece around].
25. B) A Boat! [Shows top part of ferry]
26. B) I've got a boat.
27. R) [Points at the sea]
28. B) Its sailing, sailing, sailing [moving boat as repeats each word] , sailing, sailing [reaches end of picture].
29. R) [Points at Lion] Does that go there? UNPL RET 1
30. B) Naaah, does that [referring to fish and crabs piece] look as though it goes in the circus [points]?
(misunderstands referent) UNPL RET 23
31. R) Yeah [nods]
32. B) That's where that goes [puts and then points at fish and crabs in the sea]
33. R) [Shows post]
34. Rescher) Why do you think that goes there? UNPL RET 32
35. B) 'Cos.
36. Rescher) Why?
37. B) Because that's, there's a crab and fish there [points].
38. B) And I don't think that it would go there [point at fishmonger's (circus)]
39. Rescher) You say why you don't think it should go there?
40. B) 'Cos I just know.
41. B) Because.
42. R) [Puts post piece on background] Your go.
43. R) Do you not have any [points at B's bag]?
44. Rescher) Say to B why you think that piece [point fish and crab piece] goes there [point at fishmonger's]
45. R) Because.
46. B) Because the crab and fish are not supposed to be in (unclear) [points at fishmongers].
47. B) 'Cos they're supposed to be in the sea.
48. Rescher) Do you think he's right?

49. R) [Nod]
50. Rescher) You do think he's right?
51. R) 'Cos its a fish.
52. Rescher) Do you think he's put them in the right place though?
53. R) [Nod]
54. B) What do you think?
55. Rescher) It doesn't matter what I think, it is what you think that is important.
56. R) But why it there that [point crabs and fish piece] big white thing on it?
57. B) Because that's the tank for them.
58. R) Yeah.
59. Rescher) Do you think he's right?
60. R) [Nod]
61. B) What this [Show kite]?
62. R) A kite.
63. B) A kite.
64. R) It goes flying up there [point sky].
65. B) I know
66. B) [Puts piece back in bag] Oh but its R's turn.
67. Rescher) Is it?
68. B) No its my turn.
69. B) He done that one [point at post piece].
70. B) Fly away up in the sky [puts kite in sky].
71. R) Look [shows donkey piece and then puts on the hill nearest the sun]
72. B) Naaah
73. R) Yeah
74. Rescher) B. do you want to say to R why that horse. donkey shouldn't go there.
75. B) Because erm. because. because it. I just don't know why.
76. Rescher) Tell B why you think it should go there.
77. R) Because.
78. Rescher) Because what?
79. R) Just because.
80. B) You know something. I think it goes there [puts donkey on beach]
81. B) So all the children can get a ride on it.
82. Rescher) Do you think he's right?
83. R) [Nod]
84. Rescher) You do?
85. R) Yeah
86. B) Was I right?
87. Rescher) Well R thinks you are right.
88. Rescher) [B puts cloud on hills] Does that go there [to R] do you think the big cloud goes there then?
89. R) [shakes head]
90. B) Naaah [moves cloud into sky]
91. B) I remembered. it goes up in the sky.
92. R) Where does [showing wheel] this go?
93. B) R. how much more have you got?
94. B) 'Cos I've got [holds bag up so that R can see].
95. R) I've got a lot.
96. B) I've only got a wee pot (bit).
97. B) 'Cos I've (unclear) first.
98. B) You know something?
99. B) You know something?
100. B) I put that one there [Point lion in fishmonger's]
101. R) This [showing wheel] one.
102. B) Let's go and fly our kite.
103. B) I know where it goes [takes wheel from R].
104. R) Where? [B puts wheel on ice van]
105. R) Yeah [nodding].
106. B) (Unclear) always right.

UNPL RET 65

UNPL RET 92
 UNPL RET 65
 UNPL RET 101

- 107.R) But maybe I'll get the next right.
 108.B) A blue bike.
 109.B) A blue bike [show bike]
 110.B) The bike is cycling.
 111.Rescher) Where do think that should go?
 112.R) A tiny bike I think.
 113.Rescher) Tell R where the bike should go.
 114.B) On the beach.
 115.Rescher) Where abouts on the beach?
 116.B) I think it will go in the circus.
 117.B) To go on one wheel.
 118.R) So do I.
 119.R) I went to the carnival.
 120.B) So did I.
 121.B) How did I not see you there?
 122.R) Just because.
 123.R) Did you go on the (jeeps?)
 124.B) I went on Thursday
 125.B) When did you go?
 126.R) A long time.
 127.B) Can you just tell me.
 128.B) *Cos I was there on Thursday.
 129.R) It was a long time.
 130.B) How come I can remember then?
 131.R) *Cos
 132.B) *Cos I'm very clever.
 133.B) I know when you went
 134.B) (Unclear)
 135.R) Where does this [show boy running] go? [moves to next to girl standing] UNPL RET 8
 136.B) You know something R?
 137.Rescher) Do you think that piece [point boy running] is in the right place, B?
 138.B) Naaah
 139.R) Well I do.
 140.B) I think he should go there [moves to on the ice cream van] for a driver.
 141.Rescher) You think he's the driver?
 142.B) [Nod] YES/NO RESP - OTH
 143.Rescher) But he's not inside the ice cream van is he?
 144.R) //No
 145.B) //[Shakes head]
 146.B) Yes he is.
 147.Rescher) What do you //think R?
 148.R) //But he's running [points].
 149.R) He's running
 150.Rescher) So where do you think he should go? [R puts him back on the beach]
 151.B) [Shakes head]
 152.B) A man in the circus. [moves to fishmonger's]
 153.R) No [moves piece back to on the beach. B takes and moves back to fishmonger's]
 154. Rescher) Do you want to say to R why you think the man should go there?
 155.B) *Cos it looks like he's [shows boy on bike] pedalling the pedals.
 156.Rescher) Does that look right to you?
 157.R) [Shakes head]
 158.Rescher) You say to B where you think it should go.
 159.R) [moves to on the beach] there.
 160.Rescher) And say why you think it should go there.
 161.R) *Cos he's running so fast.
 162.B) No,
 163.B) But he might be running around there [moving in fishmonger's] like that.
 164.B) *Cos he looks like he's pedalling a bike.

- 165.Rescher) Do you think he's right saying that?
- 166.R) Yeaah
- 167.B) Who's turn is it?
- 168.Rescher) Who's turn is it?
- 169.R) [point own bag]
- 170.B) [point to self]
- 171.B) 'Cos R done the man.
- 172.R) [Nod] Yeah. [B takes wheel and puts on picture]
- 173.R) [Show lady pointing and then puts on beach]
- 174.B) Where does that go?
- 175.B) I think that would go in the circus
- 176.Rescher) Do you think she would go in the circus as well?
- 177.R) No
- 178.B) I think she would be sitting in the boat, standing up.
- 179.R) (Unclear)
- 180.Rescher) What do you think she's pointing at?
- 181.R) [Points at boy running]
- 182.B) [Shakes head and points at ice cream van].
- 183.Rescher) Where do you think she should go then, B?
- 184.B) I think she's pointing at [points at ice van] that.
- 185.R) No way.
- 186.B) She's pointing to something up, above her.
- 187.B) So what could it be?
- 188.R) Its pointing to his [point boy running] head.
- 189.B) No he's not.
- 190.R) Yeah he is.
- 191.Rescher) Tell B why she'd be pointing to his head.
- 192.R) 'Cos, [shrug]
- 193.Rescher) B, why do you think she'd be pointing to his head?
- 194.B) I don't know why.
- 195.Rescher) So where do you think she should go then?
- 196.B) I think she should go there looking up at the boat.
- 197.Rescher) But you just said, you just said you thought she should go there [point ice van].
- 198.Rescher) Tell R why you said that.
- 199.B) 'Cos she's pointing at the ice cream van.
- 200.B) Pointing up at the writing [point].
- 201.Rescher) Yeah or the ice cream up there maybe.
- 202.R) Yeah.
- 203.B) Yeah.
- 204.B) Yeah, she's ran to the ice cream.
- 205.Rescher) Maybe there's someone in the ice cream van asking what ice cream she would like
- 206.Rescher) And maybe she's saying I'd like that one up there.
- 207.R) Maybe she wants the white one.
- 208.Rescher) Yeah
- 209.R) Its your go.
- 210.B) No
- 211.B) Oh yeah its my turn
- 212.B) Its my turn
- 213.B) A cloud [puts cloud in sky]
- 214.R) Another cloud
- 215.B) A cloud
- 216.R) Oh yeah [Show water skier and then places in sea]
- 217.B) What is it?
- 218.B) No way Jose.
- 219.B) Slide along [takes and moves across sea]
- 220.B) What do you think he's holding on to?
- 221.R) That [takes and puts behind a boat]
- 222.R) That [looks at B]

- 223.B) I know what he could be holding on to.
 224.B) No its not a shark [show R a piece]
 225.B) 'Cos that's not on the beach.
 226.B) I think I know what he could be holding on to.
 227.B) () I just can't see very well [Looking in bag for a piece]
 228.Rescher) Shall we just put that to one side for a little while?
 229.R) Naaah.
 230.Rescher) And then find out what he is holding onto in a minute.
 231.R) () find it [directs B to look in bag]
 232.R) I'll see if I've got it.
 233.B) No R. don't.
 234.B) 'Cos I know what he's holding on to.
 235.B) Its a boat with a flying bit on.
 236.R) How?
 237.B) 'Cos I know.
 238.B) 'Cos I just know that.
 239.R) [Rescher has retrieved a piece ice cream man that was on the floor] Is that it?
 240.B) no
 241.R) Naah
 242.R) That's a man. a doctor.
 243.Rescher) You think he's a doctor?
 244.R) Yeah
 245.R) 'Cos look [show ice man] YES/ NO RESPONSE - OTH
 246.Rescher) Unclear
 247.R) //Unclear
 248.B) //I. I think he's on the beach. UNPL RET 238
 249.B) And its tied on to the aeroplane [show plane].
 250.B) And its getting scooshed along [plane flying movement]
 251.Rescher) Do you think that's right //R?
 252.B) //Yeah. what do you think R?
 253.R) [Shakes head] No
 254.B) I think. I think it is. [moving plane through air]
 255.R) I don't.
 256.B) I do.
 257.Rescher) So who is right?
 258.B) [points to self]
 259.R) [points to self]
 260.Rescher) How can we decide who's right then?
 261.B) I don't know.
 262.Rescher) Say why you don't think he's right?
 263.R) Because. just because.
 264.B) Here's another plane
 265.Rescher) Do you think the best way to find out who is right is to see who has the best reason?
 UNPL RET 260
 266.R) [Nods]
 267.B) [Nods] yeah
 268.Rescher) The person who says 'well because ' and they give you a reason. Is that the best way to
 find out
 269.R) [Nod]
 270.B) Well. well who could that be?
 271.Rescher) Well who's given a reason?
 272.B) Nobody yet
 273.B) 'Cos we don't know.
 274.R) I'll look in my bag too.
 275.R) A tree!
 276.B) [Showing a sand castle]
 277.R) A sand castle!
 278.R) A sand castle!

- 279.B) Where do you think it should go? [puts on beach]
 280.R) [Points at different part of the beach]
 281.B) [shake head]
 282.B) I think some people brought it up in a very heavy van
 283.B) And built it up there [puts sand castle in the hills].
 284.Rescher) Do you think it should be built up there?
 285.R) I think it should be built in the sand.
 286.R) 'Cos that's a sand castle
 287.R) And not a real castle.
 288.Rescher) cos that's a sand castle
 289.R) [nod]
 290. Rescher) What do you think B? You say to R why you think it should be built there [point].
 291.B) 'Cos I think somebody took it in a big bag
 292.B) and wanted to build it up there.
 293.B) So //they put some sand in a bag
 294.R) //But how did they walk up there
 295.B) They climbed
 296.R) [Points at boat in sea]
 297.B) Naah.
 298.R) Yeah.
 299.Rescher) You think they climbed, you think they climbed up there [point hill]
 300.B) [Nod]
 301.R) I think they didn't cross the water with a boat.
 302.B) I think they (unclear) with a boat.
 303.Rescher) Why don't you think he's right? Ryan say why you don't think he is right?
 304.R) I've got ice cream [places on ice cream van]
 305.Rescher) So what are we going to do with this [show sand castle]. UNPL RET 304
 306.B) Put it up there [point hills]
 307.B) 'Cos// I think that's right.
 308.R) //Put it down there [point beach]
 309.B) No up there [point hill]
 310.R) Down there [point beach].
 311.B) Who do you think has the best reason?
 312.R) Who do you?
 313.Rescher) Why don't you think he is right?
 314.R) I think I'm right.
 315.Rescher) Yeah, why do you think you're right and he's wrong? Say to B why you think you are right.
 316.R) Just because.
 317.R) Well there's nobody up there.
 318.B) 'Cos we've not found somebody that's gonna take it up there //in our bags
 319.R) //Yeah [nod]
 320.Rescher) You've got to find somebody to take it up there in a bag?
 321.B) [Nod]
 322.R) I don't have any one I think.
 323.R) [Show piece]
 324.B) What's that. UNPL RET 322
 325.Rescher) So what are you going to do with this piece then?
 326.B) I don't know. UNPL RET 323
 327.R) Look what I've got [show piece]
 328. Rescher) Mmm
 329.B) I'm always finding the same thing.
 330.Rescher) Just take the one thing out that you keep finding and put it on and then you won't find it again.
 331.R) It doesn't matter if it goes there [puts on beach]
 332.R) 'Cos its a sand castle.
 333.B) (Unclear)
 334.Rescher) Mmhm, is that okay him saying that?

335.B) //What?
336.R) //What about this then?
337.Rescher) Do you think he's right saying that about the sand castle?
338.B) No. UNPL RET 334
339.R) What about this then?
340.B) I think [show speed boat] that's the person that put the bag down there UNPL RET 336
341.B) And then he rowed across UNPL RET 320
342.R) No I think that's [put skier next to speed boat] holding on.
343.B) Nah I think, I know what I think.
344.B) Where's the (unclear) [looking in bag for a piece]
345.B) I can't see it.
346.R) Look what I've got [show ring]
347.B) What's that?
348.R) A ring.
349.Rescher) What are you going to do with the rubber ring?
350.B) Put it on the person. [puts ring on top of lady]
351.Rescher) Put it on the person you think.
352.R) Why's this all white.
353.Rescher) Do you think it goes on the person R?
354.B) No 'cos its not even around his tummy. UNPL RET 351
355.Rescher) How do you think it should go on?
356.B) 'Cos he might want to swim
357.Rescher) Yeah, you say where you think it goes R?
358.R) Oh [show rowing boat]
359.Rescher) Do you want to wait a minute because you're not even taking it in turns anymore are you?
360.R) I think it should go in the ring.
361.B) Do you know why?
362.B) Do you know why we're not taking it in turns //anymore?
363.R) //(unclear) big boat UNPL RET 358
364.B) 'Cos R started it.
365.B) He said it was down there [point beach]
366.B) And I said it was up there [point hill]
367.B) So we both argued
368.Rescher) So you both started arguing and you didn't finish deciding did you?
369.B) No
370.Rescher) So what you've got to do is finish deciding, you've got to decide between //you
371.B) //I think it goes up there [puts in hill].
372.R) [move sand castle to beach]
373.Rescher) And you think it goes down there.
374.B) [moves it to hills] And I think it goes up there.
375.R) And I think it goes down there [moves it to beach]
376.B) Do what I want
377.B) 'Cos I'm the biggest boy.
378.B) Where is it? [moves it to hills]
379.Rescher) Do you think he's right?
380.R) No
381.Rescher) Try and think of something to say to persuade him that you are right in saying that it
should go down there [point beach]
382.R) Yes
383.Rescher) Say to B why you think it should go there.
384.R) Cos.
385.Rescher) 'Cos what?
386.R) 'Cos I just think cos.
387.Rescher) Just because?
388.R) [Nod]
389.B) If you don't tell me why then I won't know.
390.Rescher) Say why you think people would build it up there [point hill]

- 391.B) 'Cos I just think that some people might have wanted to build it up there where its nice and quiet.
392.B) That's what I think.
393.B) R Don't you think I'm right?
394.R) [Shrugs]

Interruption

- 395.Rescher) Why do you think he's wrong?
396.R) Because. because a man was up there [point hills] and he carried it down there [point beach].
397.Rescher) Do you think that's right?
398.B) [Shakes head]
399.R) Why do you?
400.Rescher) Tell R why you think that's wrong.
401.B) 'Cos I don't.
402.B) No I think its right.
403.B) But this way up [turns sand castle on its side]
404.R) Not that way.
405.Rescher) Are you happy with that?
406.B) [Turns sand castle correct way] Yeah.
407.B) What's this?
408.B) Beach ball
409.Rescher) Who's turn is it now?
410.R) // I have to put this on something [show piece].
411.B) Ryan's cos I took that [point] out.
412.B) So its R's (turn).
413.B) What that? [R puts ice cream on ice cream van]
414.B) What's that?
415.B) Oh we should try and figure out where it goes
416.B) There
417.Rescher) Who's turn now then?
418.R) Look at this cloud [show cloud].
419.B) No R its my turn.
420.R) No
421.Rescher) Why do you think its your turn?
422.B) Cos R took that piece out [point ice cream]
423.B) Where do you think she goes [shw ice cream man]?
424.B) I think she goes there.
425.Rescher) Do you think she goes there?
426.R) Yeah
427.B) Serving the ice cream.
428.B) Go

Interruption

- 429.R) My go.
430.B) Mine
431.R) Its mine.
432.R) Oh it is.
433.R) No cos I putted that there (unclear)
434.B) No I put that up there then I.
435.B) No I put that there
436.B) And you put and I put that there and you put.
437.B) I think its your go
438.R) Big boat
439.B) How did you manage to (unclear)

Continues for another 4-5 minutes.