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Discourse Topic Management and Discussion Skills in Middle Childhood: The Effects of Age and
Task

Ed Baines, Institute of Education, University of London

Christine Howe, Faculty of Education, University of Cambridge

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Address for correspondence: Dr. Ed Baines, Psychology and Human Development, Institute of Education, University of London, 25 Woburn Square, London WC1H 0AA, United Kingdom.
Tel. 44 (0) 207 612 6294. Fax. 44(0) 207 612 6304. E-mail. e.baines@ioe.ac.uk

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Abstract

Discourse topic management and discussion skills are central for intersubjectivity, learning and education, yet there is little understanding of how such skills develop. The reported research comprises two studies, which examined the skills of discourse topic maintenance, shading and hierarchicalisation during middle childhood. Each study compared the performances of same age and same sex dyads of four, six and nine years of age (Study 1 – 28 dyads; Study 2 – 43 dyads) across two tasks. Overall, topic maintenance varied according to age and task. Study 1 found that task structure constrained the interactions of older children while supporting those of younger children. Older children, but not four-year-olds maintained topics through collaborative discussion. Study 2 examined these differences further by comparing performance on similar tasks but where one required collaborative discussion for successful completion. Results showed that young children use justifications but not counter arguments and suggestions, and do not collaborate in discussion. Development in discourse topic management and collaborative discussion skills is linked to an increasing ability to engage in mutually active dialogue, and to adapt to, connect with and comment on alternative perspectives, as well as to functional changes in the use of justifications during dialogue.

Discourse Topic Management and Discussion Skills in Middle Childhood: The Effects of Age and Task

Researchers have for some time emphasised the co-operative and collaborative nature of conversational interaction (Anderson, Clark, & Mullin, 1994; Clark, 1996; Grice, 1975; Sperber & Wilson, 1986). This has resulted in an interest in children's capacity to co-operate in dialogue, for example through clarification requests, listening roles, and the use of markers to signal discourse structure (Anderson et al., 1994; Aviezer, 2003; Pan & Snow, 1999; Sprott, 1992). One central conversational skill that has, however, received little attention is discourse topic management, where speakers make their contributions coherent (or not) with those that precede (Brinton & Fujiki, 1984, 1989; Dorval & Eckerman, 1984; McTear, 1985; McTear & Conti-Ramsden, 1992; Mentis, 1991).

The importance of discourse topic management skills is illustrated by their centrality to concepts such as intersubjectivity and the achievement of shared understanding, and by their key role in supporting learning (Piaget, 1959; Rogoff, 1998; Tomasello, Kruger, & Ratner, 1993; Vygotsky, 1986). Piaget, in particular, suggested that the development of abstract thought results from an increasing capacity to engage in topically coherent talk with peers and to take account of alternate perspectives (Piaget, 1959). Education researchers also emphasise the importance of relevant and sustained on-topic talk, both in teacher-pupil and peer interaction contexts (Anderson, Chinn, Chang, Waggoner, & Yi, 1997; Baines, Blatchford, & Kutnick, 2003; Blatchford, Kutnick, Baines, & Galton, 2003; Galton & Williamson, 1992; Mercer, 2000). Indeed, the English national curriculum highlights topic maintenance as a central area of development during middle childhood (DFEE/QCA, 2000). For instance, between the ages of five and seven years, children are expected to be able to make relevant contributions to a topic, sustain their own topics, and give reasons for their opinions during discussions. Between the ages of seven and eleven years they are thought to be able to sustain a topic of discussion with others, justify views relative to alternatives, and resolve

conflict. Research shows that when considered in context, children's argumentation skills are coherent and meaningful (Anderson et al., 1997) at nine years of age. Furthermore, these skills can be enhanced through classroom initiatives focusing on group and class talk (Clark, Anderson, Kuo, Kim, Archodidou & Nguyen-Jahiel 2003; Mercer, Wegerif & Dawes, 1999; Resznitskaya, Anderson & Kuo, 2007). However, research has seldom examined the development of children's topic management and discussion skills earlier in childhood. Thus there is little evidence to guide curriculum development or to indicate whether policy-based expectations are realistic. The current research examines the development of the discourse topic management and discussion skills of four-, six- and nine-year-old children during peer interactions.

Theoretical and empirical studies of child and adult discourse (including AI models) emphasise that discourse is made up of locally derived segments. These segments can be characterised as 'focus spaces' (a function of joint attention) and/or as utterances cohering around a topic that is constructed and developed as dialogue proceeds (Grosz & Sidner, 1986; Keenan & Schieffelin, 1976; Reichman, 1978). This 'local' perspective contrasts with top-down approaches, which depict topics as static, summarising devices, such as titles or themes (Brown & Yule, 1983; Tracy, 1985; van Dijk, 1980). Adopting the local perspective, Keenan and Schieffelin (1976) indicate that topic may be viewed as 'a proposition (or set of propositions) expressing a concern (or set of concerns) the speaker is addressing' (p.343). The latter is evident from what they call the 'Question of Immediate Concern', which an utterance either poses or addresses.

In a locally derived model, discourse topic management skills are used by speakers to manipulate, maintain and develop propositions that are the focus of attention. Thus a speaker's utterance can function to initiate, maintain, shade (a subtle form of topic shift) or reintroduce a topic. Models of adult discourse have also indicated that topic sequences can be related hierarchically as well as sequentially (Adato, 1979; Grosz & Sidner, 1986; Reichman, 1978; Stech, 1982). Topic hierarchicalisation involves the use of signals that indicate the relation of the new topic to the old one, and set up an expectation for (and followed by) a return to the old topic. In

developing a local perspective upon discourse topic, it is important to remember that speakers do not engage in conversations simply to manage topics of conversation but rather to achieve ends, such as discussing, informing, directing, advising, in the context of tasks (Austin, 1962). Coherence in talk arises as conversationalists engage in activities. Thus a consideration of discourse topic should also examine the tasks that participants are engaged in. This research examines the developing abilities of children in early and middle childhood to maintain, shade and hierarchically organise topics as a function of task activity. We will now examine each of these three topic management skills in turn and then focus on the relevance of task context.

Development of Topic Maintaining Skills

In his early research, Piaget outlined the development of topic coherence and collaborative discussion and distinguished between the skills expressed during disputes and non-conflict talk (Piaget, 1959). Piaget suggested that prior to the age of four years, children's dialogue with peers lacks coherence. From the age of four, and in non-conflict situations, children engage in collective monologues, where they take turns to talk about their own topics, which may be tenuously linked to each other. With further development children engage in increasingly coherent talk, first centred on current activities and then independently of ongoing events. During episodes of conflict, Piaget suggested that peer talk develops from physical disputes through verbally mediated and repetitive disputes with little elaboration, to coherent arguments involving explanations. The final stage in both contexts has children collaborating in the discussion of ideas. In contrast to disputes, where participants are in opposition, collaborative discussion involves participants reasoning in unison to reach a joint goal.

There has been considerable research tracking topic management skill in adult-child and peer interactions during early childhood (Bloom, Margulis, Tinker, & Fujita, 1996; Bloom, Rocissano, & Hood, 1976; Foster, 1986; Garvey & Hogan, 1973; Keenan & Schieffelin, 1976; Kertoy & Vetter, 1995; McTear, 1985; Schober-Peterson & Johnson, 1989; Wanska & Bedrosian, 1986; Wanska,

Bedrosian, & Pohlman, 1986). Studies of adult-child interaction identify adults as taking a key role in achieving topic coherence in conversations (Bloom et al., 1976; Foster, 1996; Ireson & Blay, 1999). During peer interaction, children must manage discourse topics themselves, and therefore they might be expected to find this challenging. Nevertheless, studies examining the peer interactions of three to five year olds suggest that Piaget underestimated children's skills since discourse is often 'mutually responsive' and children can contribute jointly to topics (Garvey & Hogan, 1973; Keenan, 1974; Keenan & Klein, 1975; Keenan & Schieffelin, 1976). There has, however, also been concern, initially expressed by Keenan and Schieffelin (1976), about the quality, substance and length of topic sequences within peer interaction (Schober-Peterson & Johnson, 1989). Martinez (1987) found that four-year-old children were less likely to respond to or expand comments introduced by peers than by mothers. When they did respond to peers, their contributions were frequently repetitions. Other studies of peer dialogue also indicate that repetition is the primary means of initiating and maintaining topics even beyond the age of five years (Keenan, 1974; Keenan & Klein, 1975; McTear, 1985; Pellegrini, 1982). However it also appears that by four-and-a-half years, children, on occasion, make topic-maintaining contributions that require further contributions from others (McTear, 1985).

Only a few studies have examined children's topic management skills beyond the age of five, and these studies have echoed the above concerns about topic sequences during peer interaction. For instance, Brinton and Fujiki (1984) compared the dyadic interactions of five-year-olds, nine-year-olds and adults, while Dorval and Eckerman (1984) considered the group dialogues of seven- to eight-year-olds, ten- to eleven-year-olds, adolescents and adults. Findings from both studies showed that in comparison to adolescents and adults, children's topic sequences are shorter, more repetitive and contain less novel information. The more detailed Dorval and Eckerman study also suggested that children's sequences are less organised, consisting of more directives, tangential and unrelated utterances, and fewer agreements, questions or answers. Both studies identified instances of unco-operative talk, termed 'topic fights', where children vie to keep their own topic on the

conversational floor by repeated reintroduction. Such sequences are characteristic of collective monologue (Piaget, 1959). These studies thus paint a gloomy picture of children's capacity for engaging in coherent dialogue, and suggest that development is slow and subtle. Indeed, Dorval and Eckerman (1984) suggest that Piaget may, in some respects, have over-estimated the capacity of older children. However, apart from these two studies, there is little research with children who are older than five.

The above characterisations contrast, however, with the precocious skills reported by researchers concerned with young children's causal talk and explanations, usually examined in the context of disputes. In these situations pre-schoolers show sophisticated topic maintaining skills through the use of justifications and counter arguments for persuasion, conflict resolution and explanation (Dunn, 1988; Dunn & Brown, 1993; Eisenberg & Garvey, 1981; Geneshi & Di Paulo, 1982; Howe & McWilliam, 2001, 2006; Phinney, 1986; Stein & Albro, 2001). Of course, occasional precocious performances do not necessarily mean frequent or appropriate mastery in use. Dorval and Gundy (1990) claim, for instance, that it is not until early adolescence that arguing *characteristically* consists of more than simple assertions and comments. Dorval and Gundy found that children aged seven years, interacting in large group contexts, did not typically use justifications or compromise. However, these were increasingly apparent in older children's conversations. Other studies report that nine- to ten-year olds engage in argumentation sequences involving justification and counter argument (Anderson et al., 1997; Clark et al., 2003), particularly after extensive training (Blatchford et al., 2006; Mercer et al., 1999). These studies suggest that there may be development in the types of utterances used to maintain discourse topics over middle childhood and especially in the use of justifications and explanations. However, research has rarely examined the development and use of these skills in non-conflictual conversation settings before the age of nine. The present study examines the nature of children's topic maintaining utterances across a range of settings from four to nine years.

Topic Shading and Hierarchicalisation

Studies of adult discourse have indicated that common features of topic management are topic shading and topic hierarchicalisation. Topic shading occurs when an utterance is used to shift the topic to a new area but with a propositional link to the previous topic (Goodenough & Weiner, 1978; Hurtig, 1977). For example, the following two utterances relate to two different books, 'I'll buy the French book', 'Did you read the book I gave you?' Topic hierarchicalisation is achieved by initiating related sub-topics, for example 'I'll do the washing up', 'Well, we need to talk about the cleaning first'. These are skills that have seldom been studied in relation to children.

Looking first at shading, there is disagreement about whether this is an 'appropriate' means to achieve topic shift. However, whether it is deemed appropriate or not will depend on both the context (Brinton & Fujiki, 1989; Crow, 1983) and the relation between the new and old topics, that is whether the connection is tangential or relevant. Children may show changes in the use of topic shading with development. Indeed shading appears to be fairly central to Piaget's (1959) notion of collective monologue where children are suggested to link initially with each other's comments but not to address them directly. This suggests high levels of shading in the dialogues of young children, yet research findings are unclear. While Dorval and Eckerman (1984) indicate that topic shading decreases with age, Brinton and Fujiki (1984) found an increase with age. However, neither study examined topic shading in detail, nor focused upon its function. Moreover, there may have been differential usage depending on the situation.

Topic hierarchicalisation is also controversial. Studies reporting topic hierarchicalisation in adult discourse (Adato, 1979; Grosz & Sidner, 1986; Reichman, 1978; Stech 1982), have lacked compelling linguistic evidence, leaving us none the wiser as to when topic hierarchicalisation, as opposed to a sequential organisation of topics, can be inferred. Arguably topic hierarchicalisation can only be assumed when utterances signal that a topic is subordinate to or embedded within

another topic, and that after considering this second topic, a return to the main topic is made. Signalling of this sort is necessary to enable speakers to keep track of the topic.

For children, topic hierarchicalisation may be cognitively demanding, since the topic must be kept in mind and then reintroduced after the subtopic has been dealt with. Studies of ‘casual’ conversations between children have revealed little topic hierarchicalisation and the suggestion is that this may develop more extensively during adolescence, along with the cue phrases that signal discourse structure (Hobbs, 1990; Reichman, 1990; Sirois & Dorval, 1988). However, the limited evidence of topic hierarchicalisation may also reflect the restricted contexts examined and the limited quantity of data collected (Reichman, 1978; Sirois & Dorval, 1988). In previous research, participants were directed to engage in casual conversation, either in friendship pairs (Hobbs, 1990; Reichman, 1990) or large groups (Sirois & Dorval, 1988). Casual conversations may not call for complex hierarchicalised discourse, given the absence of super-ordinate goals or purposes guiding talk. Indeed it is during complex, task-based activities where evidence from adults is greatest for the hierarchicalisation of discourse (Grosz & Sidner, 1986). Early forms of topic hierarchicalisation may also develop in the context of clarification sequences marked by ‘contingent queries’ (Aviezer, 2003; Garvey, 1977) or even during the maintenance of subordinate utterances such as justifications and counter arguments. However, research to date has seldom examined these possibilities.

The Role of Activity Context

At a number of points in the discussion thus far we have suggested that consideration of context may be relevant. Indeed, consideration of context can be argued to be of central importance in any account of the development of discourse skills (Brown & Yule, 1983; Dimitracopoulou, 1990; Levinson, 1979). Discussions of context highlight features such as previous discourse, conversational participants, physical and social settings, social conventions, ongoing behavioural contexts, and so on. Discourse and topic management processes have been found to vary in a

number of ways across context (Goodenough & Weiner, 1978; Sigman, 1983). One feature of context that is of particular relevance here is the type of activity, especially the goals that lead participants to jointly held perspectives. These perspectives in turn place constraints on the interaction between participants, the types of contributions made, and the modes of discourse engaged in (Levinson, 1979). Research on toddlers' interactions with parents (Kertoy & Vetter, 1995; Wanska et al., 1986) and four-year-olds' peer interactions (Schober-Peterson & Johnson, 1989) indicate that the nature and length of topic sequences are influenced by the general setting, the types of toys played with, and the activity undertaken. Yet studies focusing on the topic management skills of children in middle childhood have been limited to single, most often loosely defined, 'casual' contexts (Brinton & Fujiki, 1984; Dorval & Eckerman, 1984). In these circumstances reports of 'poor' quality dialogue and low levels of topical coherence may be due to the absence of a joint purpose. That is, under these circumstances children feel under no obligation to talk about any topic except their own. Studying topic management skills in contexts where there is an externally identified shared goal and overriding purpose may assist in the identification of developments in topic management skill, as well as lead to more coherent topic sequences. Indeed, Piaget (1959) suggested that during middle childhood, greater coherence in dialogue is most likely to be observed around shared activities such as play, games and learning tasks in educational settings. In task contexts where participants are oriented to a common goal, the purposes for engaging in dialogue are more transparent.

Consideration and comparison of topic management performance across task contexts also enable us to determine whether observed patterns are developmental differences or the result of context. For example, the large group discussion context of the Dorval and Eckerman (1984) study may have been particularly demanding for children especially in terms of the co-operative negotiation of on-topic turn-taking. By contrast, within the dyadic contexts of the Brinton and Fujiki (1984) study, turn-taking will have been more easily co-ordinated. This simple difference between studies may have led to a host of differences in the topic management skills displayed by

participants. The present research examines topic management performances across different task contexts.

Research Questions

This research comprises two studies, each of which examined the topic management performances of same age (four-, six- or nine-year-olds) and same sex dyads across two task contexts. The aim of the research was to examine children's topic management skills as a function of task and age during middle childhood, with an emphasis on the following questions:

1. To what extent and how are topics maintained and how does this vary with age and task context?
2. To what extent is topic shading used by children, and how does this vary with age and task context?
3. How are topic returns used by children of different ages, and how does this vary across task contexts? To what extent do children use topic returns to hierarchically organise their topic sequences?

STUDY 1

Method

Design

The study used a mixed design, with a between-subjects variable of age (3 levels) and a within-subjects variable of task (2 levels). The order in which dyads worked on the tasks was counterbalanced.

Participants

Schools in Glasgow, Scotland were contacted, and consent for inclusion in the study was sought from parents of children approaching the ages of four, six and nine years. All schools recruited children from low to middle socio-economic backgrounds. The youngest children in the study came from pre-schools, and the two oldest groups came from primary schools. Children often moved from the pre-schools to the primary schools. Class teachers were asked to identify same age and same sex dyads of children who were well acquainted with each other but not 'good friends'. Fifty-six children were involved, 24 in twelve four-year-old dyads ($M = 3;10$, $SD = 0.3$), 16 in eight six-year-old dyads ($M = 5;11$, $SD = 0.3$) and 16 in eight nine-year-old dyads ($M = 8;10$, $SD = 0.2$). The youngest and oldest age groups had equal numbers of male and female dyads. The middle age group consisted of six female and two male dyads.

Materials and Procedure

Dyads were unobtrusively video recorded while interacting in two different task contexts. Children sat abreast facing a camera with an external microphone, and with the task materials in front of them. Due to technical problems, two of the youngest dyads and one six-year-old dyad were recorded in one task context only. These data were included in the study but were only used in quantitative analyses relating to single tasks and not in between-task comparisons.

Dyads were given problem solving tasks since these encourage long conversational interactions (Schober-Peterson & Johnson, 1989). The tasks took the form of a Picture Sequencing Task (PST) and a Construction Task (CT).

The PST consisted of twelve pictures illustrating a young boy engaged in a variety of activities at the seaside, some coming from 'Holidays' by Oxenbury (1982), and some specially drawn for the study in the same style. Children were asked to work together to arrange the pictures so that they told a story about a boy's day out at the seaside. Some pictures, for example driving to the seaside, related to events that might be expected to come early in the day; others, for example

having a picnic, related to events that might be expected to come later. In working together children were to decide jointly where each picture should go. To ensure that the younger children understood the content of each picture, they were questioned and/ or informed about what the boy was doing in each of them. They were also helped with the first three pictures so that they understood what they were supposed to do. The PST was selected because it seemed likely to maximise the chances of children shading topics, via reference to their own personal experiences of being at the seaside.

The CT involved the use of 'Mini-Quadro' which consists of tubes of different length that can be connected to form a structure upon which different coloured squares can be placed to provide surfaces. One child in the dyad was given a part constructed bed, and subsequently a table and chair, and a set of pieces to use to complete the objects. The other child in the dyad was given a photograph of the final structures and required to direct the construction of the objects, without assisting directly or showing the photograph to his/ her partner. The level of pre-construction was greater for the younger children to make the task easier. To encourage a feeling of shared responsibility, the children were allowed to decide who would build and who would direct. The CT was selected to maximise the chances of topic hierarchicalisation as a result of some sub-structures needing to be put together before others. Sub-routines of this kind have been thought to encourage hierarchical discourse (Grosz & Sidner, 1986).

The PST and CT can also be characterised respectively as a decision-making task and an information-gap task in terms of the typology of communication tasks outlined by Pica, Kanagy, and Falodun (1993). In this typology participants working on decision-making tasks are not mutually reliant as both participants have equal access to information and are equally able to act on this information. In this situation participants must determine how they will work, that is in unison, in parallel or alone. Participants working on information-gap tasks are mutually reliant for task completion because one participant must communicate information to the other while the other acts on that information.

The tasks were introduced as games with the researcher explaining the rules of the first task and distributing the necessary materials. He then withdrew from the interaction and remained at a distance, pretending to get on with some work but closely monitoring the dyad's progress. If the children ran into difficulty they were left to try and resolve this for themselves before the researcher intervened. Intervention involved re-explanation of the instructions. When the children had completed the first task the second task was introduced and explained.

Transcription and Coding

The video recorded interactions were transcribed orthographically. As topic sequences are frequently introduced and maintained non-verbally (Ochs, 1979), non-verbal communication and contextual detail were also noted.

The unit for analysis was the 'communicative act' rather than the turn, partly because acts appear to be the units from which topic sequences are constructed (Stech, 1982), but also because topics can be introduced, maintained and closed within single turns. 'Acts', as used in the present research, encompass 'utterances', as defined by Schiffrin (1994), except that acts can also include a non-verbal component to allow for the contribution of gestures. Communicative acts were coded at two levels. At the first level, acts were coded in terms of their topic function according to a scheme based on one proposed by Keenan and Schieffelin (1976) and utilising their concept of 'Question of Immediate Concern'. The scheme was adapted to code topic hierarchicalisation and topic shading, skills not analysed by Keenan and Schieffelin. The second level of coding applied only to topic maintaining acts where utterances were also coded at a subordinate level according to their type. The subordinate level of coding is presented within the section on topic maintaining acts. Dialogue 1, provides examples of topic initiating and maintaining utterances and the subordinate types of maintaining utterances in the context of an ongoing discourse.

Topic initiations are utterances or gestures that do not share any propositional information with the immediately preceding acts (see dialogue 1).

A topic is maintained when an act functions to sustain or develop the topic. Two types of act functioned to maintain topics, 'minimally related acts' and 'adding acts'.

Minimally related acts are acts that either address the information contained within the immediately preceding act/s or contribute no further meaning to the topic thus maintaining the current topic on the conversational floor. Within this category utterances were coded at the second subordinate level and could be one of the following types of utterances:

Repetitions are re-presentations of acts that have been previously presented within the discourse topic sequence and that contribute no new information to the topic.

Reconfirmation requests are repeated or rephrased utterances within the topic sequence that require a confirmatory or disconfirmatory response.

Yes/no responses are affirmatives or negatives that are given in response to a request for confirmation or disconfirmation.

Agreements consist of an affirmative in the absence of a request for this form of response and when the act does not introduce new information to the topic. They function to express explicit agreement with an idea or course of action.

Disagreements are utterances that function to give negative feedback or a contrary view to that expressed in the preceding utterance without contributing new information to the topic.

Acknowledgements are utterances that function to indicate that the preceding utterance has been heard and understood, such as 'right', 'ok', 'I see'.

Others included repetition requests, non-verbal perlocutionary actions that were responses to directives (see Austin, 1962), and other contributions that sustained the topic but conveyed little new propositional content.

Adding acts are utterances or gestures that introduce new propositional information to the current topic which assumes or develops information presented in the preceding acts. Within this category and at the subordinate level we distinguished between the following types of utterances:

New information encompasses utterances or gestures that introduce new information to the topic in the form of a statement, declarative or directive.

Suggestions are utterances that express an opinion or tentatively propose an idea or view. These acts are often fronted by: 'Maybe', 'That might...', 'I think...', or 'We could...!'

Justifications are reasons or explanations given in support of a view or action. These can be, but are not always, fronted by the word 'because'.

Clarification requests are utterances that function to request further information to enhance understanding.

Requests for new information are utterances that ask for additional information or for confirmation of an idea or view. Included within this category are requests for justifications and suggestions.

Dialogue 1

- | | |
|--|--|
| B) How does this one (tube) go? | [Topic initiation: Tube goes?] |
| A) Put it in that way, there. [Points at chair] | [Adding: new information] |
| B) Which way around? | [Adding: request new] |
| A) With the tube sticking out this way. | [Adding: new information] |
| B) Okay | [Minimally related: acknowledgement] |
| A) The black bit goes on there [Point at chair]. | [Topic initiation: Black bit goes?] |
| A) The black one goes there [Point at chair]. | [Minimally related: repetition] |
| B) What here? | [Minimally related: request
reconfirmation] |
| A) Yeah | [Minimally related: yes/ no response] |
| A) Because the other space is for a blue one. | [Adding: justification] |
| B) Which way around though? | [Adding: request clarification] |
| B) Maybe this way? | [Adding: suggestion] |
| A) No | [Minimally related: disagreement] |
| B) [Re-orient black bit] This way works | [Adding: new information] |
| A) Yep that's it | [Minimally related: agreement] |

Topic shading is where an utterance addresses a new topic but with a propositional link to the previous topic (Brinton & Fujiki, 1984; Hurtig, 1977). That is, part of the propositional content of the previous utterance is carried over into the new topic. In Dialogue 2 the propositional link is in terms of 'Mum' though the reference is to two different 'Mums' and thus the topic is shaded.

Dialogue 2

A) The boy is getting dried. [Topic: What's the boy doing?]

B) Yes his Mum's drying him in the car.

A) My Mum has got a new job. [Topic Shaded to Mum's job]

Two types of act functioned to reintroduce a previous topic.

Planned returns are anticipated utterances that address a topic which differs from that of the immediately preceding utterance but which has been addressed previously. They are planned because earlier in the discourse an explicit signal had been given that the topic would be reintroduced at a later point. Examples of such signals are cue words such as 'before' or 'firstly'. Only planned returns can clearly indicate topic hierarchicalisation (see Dialogue 3).

Dialogue 3

A) Where does this tube go? [Topic: Where Tube Goes]

B) Hold on, you've got to put the black bit in first. [New Topic: Black Bit First]

.... after some discussion of the black bit...

B) Right, now you can put the tube on. [Planned Return: Where Tube Goes]

Unplanned returns are acts that address a topic which differs from the immediately preceding utterance but which has been addressed previously. They are unplanned as no anticipatory verbal signals have been given that the topic will be reintroduced and thus the topic cannot be considered to be hierarchically embedded (see Dialogue 4).

Dialogue 4

- A) The car goes [points] there. [Topic: Where the car goes]
- B) Okay [Puts car near where indicated]
- B) Where does this [show tree] go? [New topic: The tree goes somewhere]
- A) No the car goes there [points] [Unplanned return: Where the car goes]

Inter-Observer Reliability

A second researcher, trained in the use of the coding scheme, coded two complete dyadic interaction transcripts from each age group, thus constituting a 21% sample of all data. Inter-coder reliabilities were calculated and high levels of agreement found. These ranged from 79% - 85% for the different category sets and Kappa (Siegel & Castellan, 1988) ranged between .76 and .79 ($p < .01$). Disagreements were discussed and resolved with reference to the category definitions.

Results and Discussion

The video recordings were analysed quantitatively and qualitatively. Quantitative analyses employed 3 (age) x 2 (context) two way analyses of variance and Tukey hsd post hoc tests. Table 1 shows that the older children produced more communicative acts than the younger children in both task contexts ($F(2,21) = 26.99, p < .001$). More acts were produced with the CT than the PST ($F(1,21) = 135.2, p < .001$). To control these effects because our interest was in the relative patterns produced by the different aged children, frequency data were converted into proportional data. Sex differences were not found in the data and thus will not be discussed further.

*******Table 1 about here*******

Topic Initiation and Maintenance

Topic initiations were frequent, with between one-third and one-half of utterances functioning to initiate a new topic. An age by context interaction was found where topic initiations decreased with age in the PST but remained constant across the age groups in the CT ($F(2, 21) = 4.09, p < .05$).

The proportion of topic initiations maintained did not vary with age, but levels were higher in the CT than the PST ($F(1, 21) = 10.27, p < .01$).

The mean length of topics ranged between two and five acts and analyses highlighted a main effect of age ($F(2, 21) = 4.50, p < .05$) and an age by context interaction ($F(2, 22) = 3.97, p < .05$). With the PST, nine-year-olds maintained topics for more utterances than four-year-olds, whereas with the CT all age groups had similar mean topic lengths. Topics were maintained for longer with the CT than the PST ($F(1, 21) = 5.57, p < .05$).

Minimally Related Acts

Minimally related acts made up between one-quarter and two-fifths of the total acts. Usage did not differ between the age groups, but a greater proportion of the acts produced during the CT were minimal when compared with the PST ($F(1, 21) = 28.32, p < .001$). A large proportion of minimally related acts, in both task contexts, were repetitions. An age by task interaction was found ($F(2, 20) = 6.41, p < .01$) where proportionally more repetitions were produced by the four-year-olds than the six- or nine-year-olds during the PST, but in the CT levels of repetitions did not differ according to age. There was also an age by task interaction for agreements ($F(2, 20) = 5.12, p < .05$). Agreements increased significantly with age during the PST, but did not vary with age in the CT. Moreover, levels of agreements and disagreements were higher during the PST than the CT ($F(1, 20) = 27.93, p < .001$ and $F(1, 20) = 8.60, p < .01$ respectively). By contrast, production of yes/no

responses, requests for reconfirmation and acknowledgements was higher during the CT than the PST ($F(1,20)=38.79, p<.001$; $F(1,20)=14.37, p=.001$; $F(1,20)=10.94, p<.01$ respectively)¹.

*******Table 2 about here*******

Adding New Information to the Topic

Between 14% and 29% of topic maintaining acts added information to the topic (see Table 2). An age by task context interaction was found ($F(2,21) = 3.47, p<.05$). With the PST the oldest children added information more often than the four-year-olds, but with the CT levels were equivalent across age groups.

The majority of adding acts were statements and directives, broadly categorised as ‘New information’ in Table 2. An age by task interaction was found for the levels of new information ($F(2,18) = 4.18, p<.05$). Levels of new information were much higher for the four-year-olds than the nine-year-olds, particularly with the PST. The implication is that statements and directives were virtually the only means by which four-year-olds added information to the topic. Nine-year-olds produced proportionally more justifications than younger children during the PST, but not the CT, while four-year-olds produced equivalent levels during both tasks, resulting in an age by context interaction ($F(2,18) = 9.49, p<.01$). Proportionally more justifications were produced during the PST than the CT ($F(1,18) = 9.22, p<.01$). Suggestions also increased with age and a significant age effect was found ($F(2,18) = 3.55, p=.05$) with the six- and nine-year-olds producing more suggestions than the four-year-olds. Suggestions were used more often with the PST than the CT ($F(1,18) = 9.23, p<.01$). Few clarification requests were produced overall, and requests for new information were proportionally higher in the CT than the PST ($F(1,18)=13.57, p<.01$).

¹ Levels of ‘others’ were high during the construction task and reflect the pronounced use of perlocutionary action responses to directives to put a piece in a particular location. These actions were not accompanied by talk.

Confirming the quantitative data, qualitative analysis suggests that during the PST, topic management amongst the younger children involved repetitive sequences, which conveyed information and/or regulated another's actions, for example:

Dialogue 5

M) What do you think he's doing there? [Shows picture of boy putting his shoes on]

S) He's putting his shoes on. [M puts the picture into the sequence]

S) [Shows picture of boy paddling in the water]

M) What do you think he's doing there? [Tries to grab card from S]

S) What do you think he's doing there? [Shows picture of boy paddling in the water]

M) I think he's going into the water.

M) Put it there [Points to the end of the sequence of pictures]

M) Put it there [Points again]

S) [Puts the picture of the boy paddling onto the end of the sequence]

M) What do you think he's doing there? [Show picture of a boy playing with a boat]

S) He's pull ..., he's playing with a boat.

In contrast, the nine-year-olds, and to a lesser extent the six-year-olds, used suggestions and justifications to collaborate in discussion about where the pictures should be placed in the sequence, for example:

Dialogue 6

E) What now?

N) Erm, that one [Points at fishing picture and looks at partner]?

E) That one? [N goes to put the picture in the sequence, then takes out]

E) I don't think so.

N) Yeah 'cos //he's [Points at fishing picture]

E) //No wait a minute, [Picks up sandcastle picture and looks at it]

N) No 'cos he's got on er, [Points at fishing picture] stones (in that picture),

N) and he's putting [Points to sand castle picture] stones on the sand castle (in that picture)

E) Okay then [Agrees that the fishing picture should come before the sandcastle picture].

As is evident from the above dialogue of two nine-year-old girls, collaborative discussion involves working in unison to reach a joint goal, through shared reasoning beginning with the suggestion of an idea, continuing with the evaluation (through justifications and counter arguments) of alternative ideas, and ending with joint agreement on an idea. The process involves generating, considering and exploring different perspectives and then weighing these up in terms of their assumptions and implications in order to reach a decision, for example on a course of action. The consideration and evaluation of alternative ideas serve not just to add new information to the topic but also to expand the topic in new directions.

Topic Shading and Returns

There were no instances of topic shading in the children's dialogues. Topic hierarchicalisation, as indicated through the use of planned returns, was rare. It was suggested earlier that topic hierarchicalisation may arise through clarification requests or subordinate utterances such as justifications. Clarification requests and justifications were not maintained as sub-ordinate topics. On the other hand, the existence of occasional planned returns within the dialogues of four-year-olds suggests that some young children are capable of organising their topic sequences hierarchically.

Unplanned topic returns were more common than planned returns, and an age by context interaction was found which approached significance ($F(2,21) = 3.11, p=.07$). This interaction was due to the nine-year-olds producing higher levels of unplanned returns during the PST than the

younger children, but similar levels being produced by all age groups during the CT. Unplanned returns were used as part of an ongoing collaborative interaction rather than in the context of a conflict to hold a topic on the conversational floor. These utterances were not associated with topic fights, but rather with the reconsideration of topics so that corrections could be made. In addition, and specifically within the PST, the older children engaged in ‘checking over’ the sequence they had created before agreeing they had completed the task. The following excerpt was typical of this ‘checking over’.

Dialogue 7

A) Is that right?

M) Yeah

A) Yeah

A) I think that's it. [Pointing at the sequence left to right].

A) Let's see.

M) Car, goes there [Points picture]. [Unplanned return: First picture]

M) And then he goes [Points picture] getting undressed. [Unplanned return: Second picture]

A) What about that, do you think that goes there?

M) Erm, then he, yeah

M) because he's changed in to them (Swimming trunks) hasn't he?

A) Yeah, gets changed.

M) Then after his ice-cream [points picture] he goes there... [Unplanned return: Third picture]

In the example a checking sequence is initiated by 'A' in the second utterance and the third, fourth and ninth utterances all function to reintroduce topics.

To summarise, the main differences between the age groups were found in the PST where children were not mutually reliant for task completion. With the PST, the older children used

agreements, suggestions and justifications to decide on the order of the pictures. The younger children engaged in shorter topic sequences, often initiated new topics, maintained topics primarily through the use of repetition and rarely contributed new information. When the four-year-olds did contribute novel information during the PST this was usually in the form of statements and directives rather than justifications or suggestions. By contrast, relative frequencies and patterns of utterance usage during the CT, where the children were mutually reliant, were very similar across the age groups. With the CT, children of all ages maintained topics across similar numbers of acts, and used equivalent acts to direct, give and receive information and provide feedback. In other words, the younger children were capable of participating in this form of discourse and performed as well as the older children.

These findings suggest three things. Firstly, mutual reliance encourages topic maintenance and thus supports the interactions of younger children. Secondly, mutual reliance constrains the interactions of older children by preventing them from producing the justifications and suggestions that can be regarded as central to collaborative discussion. Thirdly, while the looser structure of the PST permitted the older children to engage in collaborative discussion, the four-year-olds did not engage in this form of discourse. Whether this lack of engagement reflects inability or unwillingness is currently unclear. On one level, lack of ability seems unlikely; remembering the precocious disputing skills displayed by children of a similar age and younger which involve many of the relevant types of utterances (Eisenberg & Garvey, 1981; Genishi & Di Paulo, 1982; Howe & McWilliam, 2001, 2006; Phinney, 1986; Stein & Albro, 2001). On the other hand, it is possible that younger children lack the processing capacity simultaneously to manage the task and to engage in this form of discourse. However, suggestions that children had processing difficulties also seem unlikely since if anything the construction task was more complex. The alternative implication, that children were unwilling to engage in this form of discourse, suggests that young children have not grasped the full range of uses for their repertoires of utterance types. That is, though children use

the utterances during disputes, they may not have developed an understanding of their usage in cooperative situations and joint decision-making.

Study 2

In the hope of clarifying some of the above uncertainties, the second study compared the topic management skills of four-, six- and nine-year-olds with two further tasks. As was the case in Study 1, these tasks were designed to encourage topic maintenance, shading and hierarchicalisation. However, in this study children were mutually reliant for task completion with both tasks, but the tasks also introduced ambiguity such that discussion would be required to resolve problems and complete the tasks. The first task was an information-gap task and in this respect similar to the CT of Study 1. The second task was a jigsaw task, as outlined by Pica et al. (1993), where children had to pool their knowledge to complete the task. We felt that the requirement to pool knowledge as well as be mutually reliant for task completion might encourage younger children to engage in collaborative discussion while not constraining older children. When pooling knowledge children would have to expand topics by providing explanations, counter explanations, alternative suggestions and result statements to clarify their meanings, resolve ambiguity and engage in joint reasoning. We thus expected more of these types of utterances as well as agreements and disagreements during the jigsaw task.

Method

Design

This study was similar in design to Study 1, insofar as single-sex dyads of four-, six- and nine-year-olds interacted in two task contexts. This time the tasks consisted of two types of picture construction. The order in which the dyads worked on the tasks was counterbalanced.

Participants

Eighty-six children took part in this study and came from a similar range of schools to Study 1. There were 14 four-year-old dyads ($M = 4;0$: $SD = 0.5$), 16 six-year-old dyads ($M = 6;7$: $SD = 0.5$) and 13 nine-year-old dyads ($M = 8;10$: $SD = 0.3$). 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.

Materials and Procedure

The procedure was similar to that of Study 1 in that dyads were unobtrusively video and audio taped whilst sitting abreast and working on the tasks.

The Seaside Picture Task (SPT) was an information-gap task. It consisted of a picture of a seaside scene given to one child in the dyad, a bag of pieces given to the other child, and a background picture placed between the children. The pieces, which corresponded to parts of the seaside scene, were to be placed onto the background to produce a copy of the original scene. The child with the scene was asked to direct the other child as to where to place the pieces, without letting the other child see the original.

The House Picture Task (HPT) was a jigsaw task that was very similar to the SPT in that children copied a scene by placing pieces onto a background. The subtle difference was that each child had one-half of the scene (of a house and a garden) and a bag containing half of the pieces. Some of the pieces corresponded to the child's own half of the scene and some to their partner's half. Children were thus mutually reliant for task completion. Neither child was allowed to look at their partner's half of the scene or touch their pieces until they were placed onto the background. Children took turns at placing pieces.

The tasks were designed to encourage topic maintenance through topic expansion by introducing multiple features for consideration. They were intended to facilitate topic shading through the use of scenes to which the children could personally relate. To make both tasks more

complex and to introduce an element of ambiguity, additional pieces were included that were similar to the task pieces, but incorrect in some way. For example, a sun was the wrong colour, a wheelbarrow was overfilled with earth and so on. Some pieces were also split into components, which functioned to make the task hierarchical in structure, in that particular parts had to be placed onto the background before others. For example, in the SPT an ice cream van was broken down into the wheels, an ice cream logo, an ice cream man, and a board showing the products for sale, none of which could be placed onto the scene prior to the body of the van.

The instructions were the same as for Study 1 except that two practice tasks were introduced, and the children guided through them. This was necessary to explain that pieces should be placed on top of other pieces to make the picture look like a real scene and was particularly helpful for the four- and six-year-olds. The practice tasks were highly simplified versions of the two main tasks.

Transcription and Coding

The transcription and coding procedures were the same as for Study 1. The qualitative analysis of data in Study 1 suggested, however, that a number of additional categories should be introduced, to allow greater sensitivity. A distinction was made between utterances that functioned to contribute new information to the topic and utterances that also functioned to expand the topic in a new direction, along the lines of Keenan and Schieffelin's (1976) notion of incorporating discourse topic. The difference between adding and expanding and adding alone is illustrated in Dialogue 8.

Two further categories were introduced to include additional types of utterances typically used by adults during collaborative discussion. These were counter arguments and result statements and are illustrated in Dialogue 8.

Counter arguments are utterances that provide information or evidence that opposes a position, suggestion or statement that has been presented. These are often, but not always, marked using the connective 'but' (Schiffrin, 1987).

Result statements are utterances that represent a position or course of action taken as a result of taking other information into account. This type of utterance is sometimes fronted by the cue word 'so', although this is not always the case (Schiffrin, 1987).

Dialogue 8

R) What is it?	[Topic: what is the piece?]
B) A sandcastle	[Adding: new information]
R) Where do you think it should go?	[Adding + expand: request new]
R) Up here? [Puts in the hills on the background. Looks at B]	[Adding: suggestion]
B) No because sandcastles are made of sand.	[Adding + expand: justification]
B) so it should go on the beach	[Adding: result statement]
R) But there's no space there	[Adding: counter]

Inter-observer reliability for these categories ranged from 78% to 82% agreement with Kappa equal to .78 ($p < .01$).

Results and Discussion

Tables 3 and 4 show the data from Study 2. An age by context interaction indicates that although the older children produced more communicative acts than the younger children in both task contexts, this difference was greater in the HPT than the SPT ($F(2, 39) = 9.2, p = .001$). Sex differences were not found, and therefore are not reported here.

*****Table 3 about here*****

Topic Initiation and Maintenance

Topic initiations constituted about one-fifth of the total acts, with no variation as a function of age or context.

There was a main effect of age for the proportion of topic initiating utterances that were maintained ($F(2,38) = 4.57, p < .05$), with the six- and nine-year-olds maintaining a higher proportion of topic initiations than the four-year-olds. There was also a main effect of context ($F(1, 38) = 26.81, p < .001$). Topic initiations were less likely to be maintained with the HPT than with the SPT. Topics ranged between four and five utterances in length. They did not vary by age or task, although they were longer than those produced in Study 1.

Minimally Related Acts

Approximately one third of the communicative acts in each task context were minimally related utterances. Levels of these utterances differed significantly across the age groups ($F(2,38)=4.16, p < .05$), with the four-year-olds producing significantly more minimal responses than the six-year-olds. The bulk of minimally related utterances were repetitions and a main effect of age was found where repetitions decreased with age ($F(2,38) = 13.96, p < .001$). Agreements showed the opposite pattern and increased with age ($F(2,38) = 4.23, p < .05$). In neither case did levels differ between the tasks. Yes/no responses, requests for reconfirmation and acknowledgements increased with age ($F(2,38) = 8.81, p < .001$; $F(1,38)=6.38, p < .01$; $F(2,38) = 4.79, p < .05$ respectively). Disagreements and yes/no responses were more prevalent with the HPT ($F(1,38) = 10.85, p < .01$; $F(1,38) = 4.41, p < .05$ respectively), while requests for reconfirmation were more prevalent with the SPT ($F(1,38) = 6.63, p < .05$).

*******Table 4 about here*******

Adding New Information to the Topic

Adding information to the topic accounted for between 32% and 41% of total acts and levels increased with age ($F(1,21) = 28.32, p < .001$). Topic expansions also increased with age ($F(2,38) = 4.25, p < .05$), with the nine-year-old children expanding the topic more often than the four- or six-year-olds.

The vast majority of adding utterances were statements and directives, categorised as 'New information'. Levels of 'New information' interacted with age and task ($F(2,38) = 3.62, p < .05$), with the nine-year-olds producing fewer instances during the HPT but not during the SPT. In contrast to the previous study, the younger children produced similar levels of justifications to the older children, although as anticipated justifications were more frequent with the HPT than the SPT ($F(1,38) = 25.00, p < .001$). Despite low use of suggestions generally, there was a main effect of age ($F(2,38) = 8.14, p < .001$), nine-year-olds producing more than four-year-olds. Counter arguments also increased with age ($F(2,38) = 3.63, p < .05$). These utterance types as well as result statements were produced more often during the HPT than the SPT (Counter arguments – $F(1,38) = 15.12, p < .001$; Result statements – $F(1,38) = 7.62, p < .01$).

Topic Shading and Returns

Topic shading and hierarchicalisation were both rare, despite efforts to create tasks that might encourage these types of talk, each constituting less than 1% of communicative acts. Unplanned topic returns were more common than planned returns and frequencies did not differ across the age groups or task contexts. As in Study 1, topic returns functioned to make adjustments and corrections to the joint picture constructions rather than to hold the conversational floor.

In summary, age differences were found in the way topics were maintained, with the younger children less likely than the older children to maintain topics through responsive feedback,

suggestions, counter arguments or to expand topics. Children were mutually reliant for task completion in both tasks, but only in the HPT were they expected to use justifications, suggestions, counter arguments, result statements, agreements and disagreements to engage in collaborative discussion. Frequencies of these utterance types were relatively low, although differences between the task contexts indicate that the HPT involved more controversy and discussion than the SPT. Nine-year-old children produced more suggestions and counters than four-year-olds, but there were few differences between the age groups over justifications and result statements. This suggests that younger children are able to use justifications and result statements during co-operative activities. However it is important to establish the context of their use, that is whether they are used during disputes or to engage in collaborative discussion. We thus examined, post-hoc, children's use of justifications by considering their function in relation to the utterance they were addressing.

Of all the codable justifications produced by the four-year-olds in Study 2, 42% were used in a dispute setting (i.e. after a direct physical or verbal opposition from a partner), reinforcing the point that disputes are a main context where justifications are produced (Howe & McWilliam, 2001; 2006). The remaining 58% of justifications were used to explain points to partners, in the absence of opposition but not in the context of extended collaborative discussion. That is, justifications were used only to support a particular perspective when there was doubt about a decision to be made, conceivably to pre-empt opposition. This use of justifications is similar to that reported by Goetz and Shatz (1999) in a study of eight- to ten-year-olds. These authors found that justifications were used as self expansions to support claims that are likely to be open to different interpretations by different speakers. In contrast to the use of justification by the four-year-olds in this study, only 9% of the justifications produced by nine-year-olds were used in conflict situations, the remaining 91% being used during joint reasoning to support or invalidate a perspective.

General Discussion

This research found that the topic management performances of four-, six- and nine-year-old

children varied across the four task contexts and across the different age groups. Therefore, the findings emphasise the importance of considering both task structure and developmental change in accounting for topic management skill.

In both studies and across all tasks, children's dialogue was co-operative. There were few topic fights, most topics were maintained and most talk focused upon completing the tasks. This finding contrasts with previous studies where young children's topic management skills were reported to lack coherence (Brinton & Fujiki, 1984; Dorval & Eckerman, 1984). The main difference between these studies and the present research was in the use of task settings that provided children with joint goals about which to talk, and to varying degrees, made them mutually reliant. The joint establishment of topics may have been further hindered in the Dorval and Eckerman study by the size of the interacting groups. The presence of eight participants, with whom to co-ordinate turn taking and establish joint attention on a single topic, may be difficult for children. In simple dyadic contexts where participants are mutually reliant, interactions may be more easily regulated and topics jointly managed. This finding emphasises the importance of comparing talk across different contexts.

Two task effects appeared particularly significant, and are worth highlighting. First, the interactive structure of the CT, SPT and HPT promoted mutual reliance, which in turn encouraged the maintenance of topics. The absence of interactive structure in the PST meant that children were not mutually reliant, and thus had to organise their interactions themselves. The findings suggest that interactive structure supported or 'scaffolded' the young children's dialogues, while constraining those of the older children. Without this supportive structure, the young children may have had difficulties organising their interactions, establishing joint attention, and maintaining topic sequences. The second notable aspect of task context is ambiguity or the need to go beyond the information available. This aspect of task, particularly as used in the PST and HPT, facilitated the generation and discussion of ideas to reach solutions, at least amongst the older children. These

aspects of task may be useful for teachers and others interested in supporting discussions between children to bear in mind.

As regards age effects, the presence of general and task specific age differences indicates that development in topic management skill over middle childhood involves participants engaging in more active and mutually responsive dialogue where children connect with and comment on each other's contributions. The data suggest developments in children's awareness of their role as active listeners in dialogue, that is, to provide explicit feedback communicating that they have heard or misheard their partner's utterance. This is indicated by the older children's greater use of agreement, acknowledgements, yes/no responses, and requests for reconfirmation. This contrasts with the approach evident in younger children's dialogue where the speaker informs or directs the listener and the listener passively listens. This scenario may lead the speaker to repeat as listener feedback is limited. Increases with age in the adding of information to build on the previous speaker's utterances also indicate active listening as well as mutual co-operation in dialogue (Anderson et al., 1994).

The rarity of topic shading in both studies contrasts with previous research with this age group where shading was found (Brinton & Fujiki, 1984; Dorval & Eckerman, 1984). The absence of topic shading suggests that children understand that this form of topic shift is inappropriate during cooperative interaction. The presence of a joint goal may have discouraged the present children from shading topics to their own personal interests. Further research should examine topic shading in task-based and 'casual' contexts to shed further light on this interesting and controversial form of topic shift.

Topic hierarchicalisation was also rare, although in both studies children of all ages produced planned returns and thus a few topic sequences were hierarchical. This suggests that the skill is available to some young children. It may be, as Reichman (1990) suggests, that topic hierarchicalisation only begins to be signalled regularly in early adolescence once the relevant cue phrases have been adopted. Similarly it may develop through the maintenance of clarification

requests and subordinate utterances. These suggestions would be consistent with the current findings of an increasing tendency for speakers and listeners to collaborate actively in talk and engage with each other's ideas. But there is still a scarcity of direct evidence, via exploration of planned returns, of the extent of topic hierarchicalisation in dialogue, even in adult discourse.

Consistent with previous research were the findings that the older children were more likely than the younger children to maintain topic initiations, add information to topics, and expand topics in new directions (Bedrosian, 1985; Brinton & Fujiki, 1984; Dorval & Eckerman, 1984). In relation to the SPT and HPT at least, they seemed to be doing this by engaging in a different mode of discourse from that of the younger children. The older children collaborated in discussions to make decisions whereas the younger children informed and directed each other, conducting their reasoning more individually. Findings with the HPT suggest that task support can go some way towards encouraging young children to use the types of utterances associated with collaborative discussion and to use justifications at similar levels to older children. Nevertheless, even here, the younger children used these forms in isolation, and only to support or explain their own ideas. As a result, they used relatively few counter arguments, suggestions and agreements. Thus it seems that young children can use some of the utterance types associated with collaborative discussion, but they are unable to use these types in a fully collaborative fashion.

Detailed analysis of the justifications produced by the four-year-olds in Study 2 showed that these forms regularly occurred in the context of disputes, with the remainder used in other contexts to self expand on, and explain, a claim to the listener. Similar patterns of usage have been reported for five- and seven-year-olds (Howe & McWilliam, 2006) and eight- to ten-year-olds (Goetz & Shatz, 1999). Goetz and Shatz (1999) did not report evidence of collaborative discussion within the context of the activity of gossiping about others, but did find instances of co-constructed justifications along with an elaborated style of discourse. This they suggest may be due to a combined engagement in the task on the part of some of the dyads. These findings, along with the levels of counters, suggestions and agreements detected in this research, indicate developmental

change in the use of these utterance types, from defending or getting one's own way, through helping the listener to understand the speaker's perspective, to a use that involves a collaborative perspective in the service of making decisions. Collaborative discussion may thus develop from the combined use of justification to support claims during conflict situations and their increasing one-off use during non-conflict talk to assist the listener's understanding or to pre-empt opposition. The next stage in this development may involve an increase in the questioning of another's justifications and thinking, through the use of counter arguments and evidence, and the use of suggestions to convey uncertainty and personal distance from an assertion. This interpretation is consistent with, but also provides additional detail to, Piaget's general model of dialogue development, since it was the nine-year-olds, and to a lesser extent the four- and six-year-olds, who used explanations outside of a dispute setting and increasingly as part of a process of reflective and then collaborative dialogue. However, rather than being based on adjustments in communicative intent, development in discourse topic management and discussion skills may be linked to a changing use of language due to modifications of one's own understanding of other perspectives and adapting language to these perspectives.

There may be additional reasons why the young children did not engage in genuinely collaborative discussion. It is notable that collaborative discussion is subtly different from argument, since participants, rather than being in competition, have convergent goals and jointly orient to resolve a problem. Early disputes are typified by conflicting goals, high emotion and the use of justification to persuade others, and justifications may, in the minds of children, be associated with these contexts and goals. However the use of 'education like' tasks may also discourage young children from engaging in collaborative discussion. While these tasks provide convergent goals, this may not provide sufficient momentum for children to be drawn into extended interaction. Collaborative discussion may therefore first develop in other activity settings, such as play and games, which are more meaningful and valued by children (Blatchford, Baines, & Pellegrini, 2003). However, it may not be beyond educators to assist in the development of collaborative discussions

and sustained topics of conversation among young children. Task design has an important role to play in facilitating sustained dialogue on topics and affording opportunities for the use of collaborative discussion to solve problems. A sensitive adult may also be able to stimulate and mediate extended discussions during non-conflict talk. This may be a promising line for future research.

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Table 1

Mean Total Acts, Topic Length and Percentage of acts that Function to Initiate and Maintain Topics in each Task Context for each of the Different Age Groups in Study 1.

	Picture Sequencing Task				Construction Task			
	4 years	6 years	9 years	Total	4 years	6 years	9 years	Total
Mean total acts	22 _a	33 _a	60 _b	38 ₊	74 _a	110 _a	188 _b	117 ₊
% Topic initiations	54 _a	40 _{ab}	31 _b	43 ₊	31	31	31	31 ₊
% Topic initiations maintained*	59	61	74	65 ₊	83	80	81	81 ₊
Mean topic length	2 _a	2.6 _{ab}	3.6 _b	2.7 ₊	3.3	3.2	3.3	3.3 ₊
% Minimally related acts	26	33	23	27 ₊	43	42	40	42 ₊
% Repeats*	59 _a	15 _b	15 _b	32 ₊	20	13	11	15 ₊
% Agreements*	19 _a	39 _{ab}	59 _b	38 ₊	9	13	18	13 ₊
% Disagreements*	6	12	10	9 ₊	3	4	4	3 ₊
% Y/N response*	2	0	0.8	1 ₊	4	5	6	5 ₊
% Req. reconfirm*	0	3	2	1 ₊	5	4	9	6 ₊
% Acknowledgements*	2	3	8	4 ₊	9	12	16	13 ₊
% Others*	12	28	6	15 ₊	51	51	36	46 ₊
N dyads	10	7	8	25	12	8	8	28

* Percentage of super-ordinate category (either topic initiations or minimally related acts)

+ Indicates significant main effect of context at $p < 0.05$

Differing subscripts indicate significant differences between independent means using post-hoc

Tukey hsd tests $p < 0.05$.

Table 2

Percentage of acts that Function to Maintain, Shade and Reintroduce Topics in each Task Context for each of the Different Age Groups in Study 1.

	Picture Sequencing Task				Construction Task			
	4 years	6 years	9 years	Total	4 years	6 years	9 years	Total
% Adding information	14 _a	20 _{ab}	29 _b	21	21	19	22	21
% New information*	83 _a	53 _{ab}	44 _b	60	74 _a	60 _{ab}	58 _b	65
% Justifications*	1 _a	6 _a	21 _b	9 ₊	1	1	2	1 ₊
% Suggestions*	4 _a	29 _{ab}	28 _b	20 ₊	5	9	6	6 ₊
% Clarification requests*	0	0	1	0.4	0.3	0.6	6	2
% Req. new information*	12	11	7	10 ₊	20	28	28	25 ₊
% Topic shading	0	0	0	0	0	0	0	0
% Planned returns	0	0.3	0.9 _b	0.4	0.3	0.3	0.3	0.3
% Unplanned returns	3 _a	4 _a	14 _b	7 ₊	3	4	4	4 ₊
N dyads	10	7	8	25	12	8	8	28

* Percentage of adding information

+ Indicates significant main effect of context at $p < 0.05$

Differing subscripts indicate significant differences between independent means using post-hoc

Tukey hsd tests $p < 0.05$.

Table 3

Mean Total Acts, Topic Length and Percentage of acts that Function to Initiate and Maintain Topics in each Task Context for each of the Different Age Groups in Study 2.

	Seaside Picture Task				House Picture Task			
	4 years	6 years	9 years	Total	4 years	6 years	9 years	Total
Mean total acts	166	209	234	203 ₊	127 _a	258 _b	318 _b	236 ₊
% Topic Initiations	21	22	21	21	24	21	21	22
% Topics initiations maintained*	80 _a	86 _{ab}	89 _b	85 ₊	75	79	77	77 ₊
Mean topic length	5.0	5.0	5.0	5.0	4.3	4.8	4.9	4.7
% Minimally related acts	38 _a	30 _b	31 _{ab}	33	35	31	32	33
% Repeats*	47 _a	35 _b	33 _b	38	45 _a	36 _{ab}	24 _b	35
% Agreements*	5 _a	11 _b	8 _{ab}	8	8	11	10	10
% Disagreements*	6	8	6	7 ₊	11	12	9	11 ₊
% Y/N response*	6	13	14	11 ₊	7 _a	16 _b	22 _b	15 ₊
% Req. reconfirm*	5 _a	5 _a	9 _b	6 ₊	2 _a	5 _{ab}	5 _b	4 ₊
% Acknowledgements*	18	23	23	21	15 _a	19 _a	27 _b	20
% Others*	9	4	6	6	6	2	2	4
N dyads	13	16	13	42	13	16	13	42

* Percentage of super-ordinate category (either topic initiations or minimally related acts)

+ Indicates significant main effect of task context at $p < 0.05$

Differing subscripts indicate significant differences between independent means using post-hoc

Tukey hsd tests $p < 0.05$.

Table 4

Percentage of acts that Function to Maintain, Expand, Shade and Reintroduce Topics in each Task Context for each of the Different Age Groups in Study 2.

	Seaside Picture Task				House Picture Task			
	4 years	6 years	9 years	Total	4 years	6 years	9 years	Total
% Adding information	32 _a	38 _{ab}	41 _b	37	32 _a	38 _b	38 _b	36
% Topic expansions†	48	50	61	53	52	51	61	55
% New information*	76	73	71	73	78 _a	67 _b	62 _b	69
% Justifications*	2	2	2	2 ₊	4	5	6	5 ₊
% Suggestions*	1 _a	2 _a	5 _b	3	2 _a	4 _b	5 _b	4
% Counters*	1	1	2	1 ₊	2 _a	3 _{ab}	5 _b	4 ₊
% Results*	1	1	1	1 ₊	1	2	2	2 ₊
% Clarification requests*	0.4	0.6	1	0.6	0.5	0.6	1	0.7
% Req. new information*	19	20	17	19	12	19	17	16
% Topic shading	0.1	0.1	0.1	0.1	0.1	0.2	0.05	0.1
% Planned returns	0.03	0.2	0.2 _b	0.1	0.03	0.04	0	0.03
% Unplanned returns	6	9	6	7	7	8	8	8
N dyads	13	16	13	42	13	16	13	42

† Percentage of adding information that were topic expanding the remainder up to 100% functioned to add information without expanding the topic

* Percentage of super-ordinate adding information category

+ Indicates significant main effect of task context at $p < 0.05$

Differing subscripts indicate significant differences between independent means using post-hoc

Tukey hsd tests $p < 0.05$.