
Conversational Effects of Gender and Children's Moral Reasoning

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Abstract

This thesis aimed partly to examine the effects of gender on conversation dynamics, partly to investigate whether interaction between participants with contrasting opinions promotes cognitive development on a moral task. Another objective was to explore whether particular conversational features of interaction would have any impact upon a pair's joint response or on each child's moral development. The conversations were coded with regard to simultaneous speech acts, psychosocial behaviour and types of justifications used. The results show no gender differences regarding psychosocial processes, but the boys used more negative interruptions, more overlaps and significantly proportionately more justifications in the form of assertions than the girls in the study. Gender differences were often more pronounced in same-gender as opposed to mixed-gender pairs, but children also altered their behaviour to accommodate to the gender of their conversational partner. Children who participated in the interaction phase of the study showed more overall progress on an eight-weeks delayed post-test than those who did not. However the only conversational feature that was related to the outcomes of conversation and development was the use of expiatory force justifications which were associated with a more advanced reply immediately after interaction as well as two weeks later.

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Table of contents

Introduction.....	1
1 Theoretical background	3
1.1 Gender and Interaction.....	3
1.1.1 Simultaneous Speech Acts.....	3
1.1.2 Psychosocial Processes.....	6
1.1.3 Talkativeness	8
1.2 Interaction and Cognitive Development	8
1.3 Moral development	11
1.4 The present study - Aims and Hypotheses.....	12
1.4.1 Hypotheses.....	12
2 Method.....	14
2.1 Design	14
2.2 Participants	14
2.3 Materials.....	14
2.4 Procedure.....	15
2.5 Analysis of conversations.....	17
2.5.1 Initiation	17
2.5.2 Time taken	17
2.5.3 Simultaneous speech acts	17
2.5.4 Psychosocial processes.....	18
2.5.5 Talkativeness	19
2.5.6 Conversational Content	19
2.6 Reliability	21
3 Results.....	22
3.1 The Issue of Nonindependence.....	22
3.2 Gender and Conversation Measures	22
3.2.1 Initiation	22
3.2.2 Simultaneous Speech Acts.....	23
3.2.3 Psychosocial Processes.....	24
3.2.4 Talkativeness	24
3.2.5 Conversational Content	25
3.3 Moral development	27
3.3.1 Pre-interaction test of moral reasoning (t1).....	27
3.3.2 Post-interaction test of moral reasoning (t2)	28
3.3.3 Two-week delayed post-test of moral reasoning (t3).....	28
3.3.4 Eight-week delayed post-tests of moral reasoning (t4).....	29
3.3.5 Change in moral reasoning over time (t1 to t4).....	29
3.4 Conversation measures and moral development	30
3.4.1 Initiation	30
3.4.2 Time taken until agreement	30
3.4.3 Other Conversation Measures.....	31
4 Discussion	33
4.1 Conversational Features	33
4.1.1 Initiation	33
4.1.2 Simultaneous speech acts	33
4.1.3 Psychosocial Processes.....	34
4.1.4 Talkativeness	35
4.1.5 Conversational content	35

4.1.6	Summary Conversational Features	36
4.2	Interaction and Moral Development	36
4.3	Conversation Measures and Moral Development.....	38
4.3.1	Time taken	38
4.3.2	Conversation Measures	38
4.4	Limitations and future directions.....	40
5	Conclusions.....	41
6	References.....	42
7	Appendix.....	45
7.1	Appendix 1. The Stories.....	45
7.2	Appendix 2. The booklet depicting the stories.....	47
7.3	Appendix 3. Psychosocial Processes Rating Scale.....	53
7.4	Appendix 4. Transcription Conventions	55

Introduction

In interaction, one element that has a strong impact on various features of conversation is gender. A range of studies have found differences in adults' as well as children's conversations. For example it has been observed that boys generally use more assertive speech and interrupt more than girls, and that girls generally use more affiliative language and are more talkative than boys (Leaper, 1991; Leaper & Smith, 2004; Leman, Ahmed & Ozarow, 2005). These differences have also been observed in the context of discussions on developmental tasks (Leman & Duveen, 1999; Leman, 2002; Psaltis & Duveen, 2006). But although the effects of gender on conversation dynamics can sometimes be quite dramatic, most studies have not found any short-term effects on cognitive development. One exception is a study by Psaltis and Duveen (2006) which compared interactions between boys and girls of different levels of reasoning on a conservation task. They observed that the pairs including female conserver and a male non-conserver was the only one that made significant progress compared to the control group on a post-test.

Gender does not only seem to have a strong impact upon conversation dynamics, but as suggested by Psaltis and Duveen (2006) it might also affect whether or not a subject can facilitate from social interaction and improve in cognitive reasoning. However, exactly if, or how, any feature of conversation is related to whether a child can benefit from social interaction or not has so far not been examined in much detail.

This study will examine how gender affects the conversations that evolve in children's discussions of a moral dilemma. In his investigations of children's reasoning on justice, Piaget (1932) observed that younger children, aged about 6-7 years, often believed in what he called *expiatory punishments* and regarded justice as what is advocated by an authority. Children in this age-group tended to see punishment as just and necessary. Older children aged approximately 11-12 years and older, on the other hand, often believe in punishment by reciprocity, i. e. that a punishment should be somewhat equivalent to the misdeed and the child no longer regard justice as objective, but sees punishment as a means to show the transgressor that the bond of solidarity has been broken.

The present study will explore whether interaction can promote long-term cognitive change in moral reasoning regarding justice and if or how the conversational styles adopted by the participants may impact on this development, as this has not yet been explored in much detail. It will also investigate what kinds of justifications children use to convince their partner of their view and how this might affect long-term development.

The study consists of four phases; the first is a pre-interaction phase, in which all the participating children are asked to give their individual replies to four different moral dilemmas. This phase is followed by an interaction phase where children are paired up to discuss one of these and together reach an agreement. The third and fourth phases consist of a two-weeks and an eight-weeks delayed post-interaction phase where the children are asked to again give their individual replies, as in the first phase of the study. All data used in the thesis was originally collected by Patrick Leman for a study on moral development.

The conversations are then analysed to investigate how gender affects conversation dynamics. The conversational styles adopted by the participants, together with the justifications used in discussion, will be examined in relation to the outcomes of the conversations as well as long-term cognitive development. All data will be analysed quantitatively.

The reason why this study is important is twofold. First, it is of theoretical importance; It has already been observed that gender can affect the stimulating effects of interaction for short-term cognitive change (Psaltis & Duveen, 2006), but is not clear whether it can also have an impact on longer-term cognitive development. Second, it has a practical importance as it is in interaction that children's development takes place. It is during the child's everyday engagement in activities with other people that he/she learns and progress. Whether certain characteristics of these interactions affect how this learning happens would therefore be very important to dismantle.

1 Theoretical background

This section is made up of three parts; first the theoretical background for gender and interaction will be outlined, then interaction and cognitive development and finally moral development.

1.1 Gender and Interaction

From a very young age boys and girls have been observed to engage in quite different types of activities (Maccoby, 1998). According to Fagot (1977) certain activities are associated with stereotypically masculine or feminine behaviour. Engaging in these stereotypical activities are often reinforced, whereas displays of counter-stereotypical behaviour is criticized by the surrounding peers and adults. Younger children (aged four to six) show more rigidity in their gender-stereotypes than older (aged about eight years) and young boys also seem to try to appear sex-typed in group interactions to a greater extent than older ones (Banerjee & Lintern, 2000). Furthermore it has been suggested that girls are not required to stick to gender-stereotypical behaviour to the same extent as boys, who instead have much stronger norms for gender-related behaviour and show more concern with self-presentation in this respect (Banerjee & Lintern, 2000).

Building on these observations, a theory to account for gender differences in verbal behaviour observed later in life has emerged. This *two-cultures approach* compares gender differences to cultural differences (Maltz & Borker, 1982; Maccoby, 1998). The theory regards men and women as part of two different sociolinguistic subcultures with differing conversational rules (Maltz & Borker, 1982). These social rules that govern adult conversation are argued to be learnt during childhood and adolescence, a period when, as noted above, girls and boys spend most of their time in same-sex interactions. This period when children play in gender segregated groups hence affects modes of relating to others in adulthood (Maccoby, 1998).

In addition to the two-cultures approach, another theory to explain gender differences is the so called *status-characteristic approach* (James & Drakich, 1993) which sees gender differences in the light of differences in status between men and women in the society as a whole. According to this approach individuals who participate in interaction evaluate themselves in relation to the other participant(s) in the interaction and the status differences affect how interactions are structured.

1.1.1 Simultaneous Speech Acts

As a measure of conversational style and power displayed in conversation, a common approach has been to investigate speaker production of simultaneous speech acts. Some studies (e.g. West & Zimmerman, 1983) have concluded that men interrupt more than women, whereas others (e.g. James & Clark, 1993) have found no such clear pattern.

In one often cited study by Zimmerman and West (1975), interruptions were regarded as violations of speaker rights and hence negative in nature, predominantly produced by male speakers in mixed sex conversations. In the study a distinction was made between overlaps and interruptions with definitions based on the turn-taking model presented by Sacks et al (1974). Overlaps were defined as instances of simultaneous

speech that occur when current speaker is at, or very close to a transition relevant place (TRP), a time in the conversation where speaker switch might occur, and the next speaker starts talking before the current speaker has finished. An interruption on the other hand was distinguished from overlaps in that this form of simultaneous speech occurred at a point in the current speaker's speech which would not be defined as being at or close to a TRP.

However, since these early findings, studies on gender differences in simultaneous speech have shown very varied results, which in part might be explained by the multifunctionality of simultaneous speech acts and, when it comes to interruptions, a lack of a general definition of the term. Later studies (James & Clark 1993; Anderson & Leaper 1998) have questioned whether *all* simultaneous speech should be regarded as indications of interactional dominance and have stressed the need for more specific definitions of simultaneous speech acts, to enable investigation of conversational style and expressions of power in interaction. The reason is that not all forms of simultaneous speech act are necessarily negative in nature. So called *back-channel utterances*, minimal responses such as 'um hm' or 'yeah', are for example often used to indicate active listenership (Coates, 1989; Fishman, 1978). These have been observed to be produced frequently by women (Fishman, 1978; Coates, 1989) and it has been suggested that men and women use them in different ways (Maltz &orker, 1982). As pointed out by James and Clark (1993) also other forms of simultaneous speech are not necessarily used to uphold power or show dominance – a speaker might interrupt in order to solve a problem in the conversational process or due to a 'mistiming error' where the listener mistakenly believes the current speaker is approaching a TRP and starts speaking before the turn is actually finished. In other cases speakers might collaborate in the production of discourse, e. g. by completing each other's turns or together contribute to a shared topic, which are all characteristics of conversations of active involvement (Coates, 1989).

Anderson and Leaper (1998) in their meta-analysis summarizing quantitative research published on the effects of gender on conversational interruption observed that the definitions of interruptions varied considerably amongst the studies examined, ranging from quite generalized specifications which might also include back channel utterances, to more specific ones characterized as being intrusive, attempting to or succeeding in taking the other speaker's turn. The results showed that gender differences were only statistically significant when the more precise definition of intrusive interruptions was adopted, indicating that men interrupt to a greater extent than women.

It can be concluded that a definition of the term 'interruption' is crucial in any study of the effect of gender in conversation. A distinction has to be made between simultaneous speech that mark conversational dominance or attempts to exercise power and simultaneous speech that characterize affiliative interactions (Anderson & Leaper, 1998; Marche & Peterson, 1993).

Also other factors may affect the results obtained. For example James and Clark (1993) observed that more studies of mixed sex group conversations compared to dyads found men to interrupt to a greater extent than women. Furthermore it is suggested that the topic of conversation might have an effect on the results since certain areas of expertise are "gender-typed" and that dominance related interruptions

might be more common in formal settings and high-conflict situations. Moreover results from the meta-analysis conducted by Anderson & Leaper (1998) show that gender differences regarding intrusive interruptions were greater in naturalistic than in lab settings and there was a slight tendency for gender differences to increase during longer observation times. Gender differences were also greater during unstructured activities than instrumental tasks, with men interrupting to a greater extent than women, a finding which the authors interpreted in relation to ecological-contextual models of gender, suggesting that depending on the activity, gender effects on interaction might be more or less likely to occur. They point out that “by controlling for the activity, one constrains the types of behaviours that may follow” (Anderson & Leaper, 1998, pp. 247). Consistent with James and Clark’s (1993) findings, group size was another significant moderator - that is, gender differences were observed in group interactions (of three or more participants) only. The authors suggested that larger groups or public settings might be more likely to evoke domineering behaviour in men.

When it comes to the study of simultaneous speech acts in children’s conversations, this has not been investigated to at all the same extent. One study by Esposito (1979) analysed children’s conversations for simultaneous speech acts in the form of interruptions and overlaps, with a distinction based on Zimmerman and West’s (1975) definitions. The children (aged between 3.5 and 4.8 years old) were playing together while their interactions were taped and later transcribed. It was found that boys in the mixed-sex pairs interrupted the girls more than vice versa, which the author interpreted as a sign of boys learning sex-typed behaviour in topic control, similar to that observed in adults, at a very young age.

In another study, where a distinction between four different kinds of interruptions was made, Marche and Peterson (1993) investigated the use of interruptions in Grade 4, Grade 9 and College students. They found no difference in use of interruptions between male and female speakers in same and mixed-gender pairs, with the exception of Grade 9 females who were interrupted more by their female partner.

Leman, Ahmed and Ozarow (2005) investigated eight year old children’s use of overlaps, positive interruptions and negative interruptions in both mixed and same gender pairs. It was concluded that boys in the study overall made more overlaps and interruptions of the negative kind than girls, but made fewer overlaps when talking with a girl. They also observed that all children produced more overlaps when talking with a boy and that boys produced more negative interruptions when talking with a girl than with a boy. It appears as if children alter their behaviour depending on the gender of the partner. The authors theorized that the greater use of negative interruptions by boys in mixed sex pairs was related to a greater conflict in this pair type. They conclude:

“In one sense, the girls use a persuasive strategy that involves more coaxing the boys into agreement and the boys use a less subtle strategy that combines negative interruption with disaffiliation.” (Leman, Ahmed & Ozarow, 2005, pp. 72)

In the present study an analysis of simultaneous speech in children’s conversations in both same- and mixed-gender pairs will be carried out in order to study any displays

of interactional dominance or differences in conversational style. Bearing in mind the importance of differentiating between different forms of simultaneous speech acts presented in previous studies, this study will adopt the same distinction between the different forms as in Leman, Ahmed and Ozarow (2005). This scheme was selected since it makes a clear distinction between overlaps, used to show active involvement in discourse, positive interruptions, which are interruptions that do not constitute a bid to take the floor, and negative interruptions that are attempts to take the floor in a negative, face-threatening manner. Using this scheme it is possible to investigate any differences in the use of each specific type of simultaneous speech act.

1.1.2 Psychosocial Processes

Several studies (Leaper, 1991; Leaper & Smith, 2004; Leman, Ahmed & Ozarow, 2005) investigating gender differences in children's interaction have found boys to generally use more assertive language than girls and girls to use more affiliative communicative forms, a finding that is true also for adults (see for example Leaper, 2000). Assertive speech acts are self-emphasizing verbal acts which are characterized by for example directives, informing comments and criticism and are often used to influence others or establish dominance. Affiliative speech acts, on the other hand, are distinguished by agreement and support and are used to show active involvement in discourse.

One study (Leaper, 1991) investigating these gender differences in children's conversations used a two-dimensional coding scheme to classify speech acts by degree of influence and involvement. By using this scale the author grouped speech acts into four different categories: collaboration, oblige, control and withdrawal. Conversations in both mixed- and same-gender pairs of children in two different age groups (one around five years, the other around seven years) were analysed for the different forms of speech acts as well as sequences of speech acts. It was found that girls from the older all-female pairs used more collaborative speech acts and cooperative exchanges whereas boys in same-gender pairs produced more domineering exchanges and that the older ones also produced more controlling speech acts than the girls, showing that children stick to gender-roles to a greater extent in same-sex interaction than in mixed-sex interaction. They also found that the older children were more likely to show gender differences than the younger ones. Furthermore some cross-gender-typed conversational styles were more likely in the mixed-sex conversations, in which for example girls in the middle childhood, produced more controlling speech acts than in the same-sex pairs and boys produced more of one form of cooperative exchanges than in the same-sex pairs. The author suggests that girls might try to use more controlling strategies in these settings in order to be able to influence the boys and that boys use more collaborative exchanges 'once their female partner has indicated her willingness to oblige' (Leaper, 1991, p. 808). He also points out that the boys' overall use of collaborative speech did not differ between mixed- and same-gender interactions, which might indicate that boys in mixed-gender pairs in general are less likely than girls to show cross-gender-typed behaviour.

Another study (Leman, Ahmed & Ozarow, 2005), looking at conversations between eight-year-old children using the same coding scheme as Leaper (1991), also found girls to use more collaborative speech acts. Girls were also found to produce more obliging acts than boys and boys produced more controlling acts than girls.

Furthermore girls were found to overall use more high affiliative speech than boys and they used these forms more in mixed- than in same-gender dyads. They also noted that all-boy pairs used more controlling acts and all-girl pairs more affiliative.

Leaper & Smith (2004) conducted a meta-analysis to investigate any patterns in girls' and boys' use of affiliative and assertive speech. Several findings emerged, one being that girls overall used more affiliative speech than boys. A few moderators of this variable in peer interactions were revealed, for example operational definition, the child's age, activity type and type of setting. Greater gender differences were observed among preschool-aged children (specifically children aged 24-71 months and 120-155 months) and differences were also more likely in laboratory than in school settings. Furthermore the differences were larger during unstructured than during structured activities. Among the preschool-aged children, gender differences were more likely in mixed-gender conversations than in same-gender conversations, which according to the authors shows that the girls in this age-group are doing a greater part of the "interaction work" in mixed-gender conversations.

Regarding assertiveness, boys were found to be slightly more likely to use assertive speech than girls. Larger gender differences were observed in dyads than in groups, and differences were also marginally more likely in same-gender interactions than in mixed-gender interactions. Furthermore boys were more likely to use assertive speech with strangers. As the authors point out, it seems as if boys show more concern with self-presentation in these settings and that they, in unfamiliar situations, are more likely to rely on gender-typed behaviour. Among school-aged children there were gender differences in assertive speech in same-gender conversations only, which was explained with the fact that boys, over time, might be socialised into the norms of their male peer groups where there is a heavy emphasis on self-assertion and dominance. (Leaper & Smith, 2004)

In another study, of interactions between children and their parents, Leaper (2000) used a seven-grade scale for assertion and affiliation, to be able to explore each of these in more detail. He found fathers to be more assertive than mothers and children were more assertive with their mothers than with their fathers. It was also noted that type of activity was a significant moderator. It has previously been observed that girls and boys often engage in different types of activities (Fagot, 1977). Boys often participate in task-oriented and competitive games in larger groups, whereas girls often engage in role-playing types of games and participate in cooperative interaction that has no specific goal or endpoint and no winners (Fagot, 1977; Lever, 1976). The author suggests that if girls and boys participate in different types of activities, then, according to these findings, they will also have different opportunities to practice affiliative or assertive skills (Leaper, 2000).

Taken together it seems that both the context, the child's own gender and the gender of the partner are very important moderators of gender differences in use of affiliative and assertive speech. Children seem to show greater gender-differences in same-gender interactions, and both boys and girls alter their behaviour when interacting with someone of the opposite gender.

1.1.3 Talkativeness

In their meta-analysis of gender and verbal skill, Hyde and Linn (1988) found, although with a rather small effect size ($d = 0.33$), women to surpass men in verbal production.

Another meta-analysis conducted by Leaper and Smith (2004) found girls to be more talkative than boys. Gender differences were larger in child-adult conversations than in conversations among peers. They also found that gender differences were statistically significant only among the youngest age group with children aged 1-1^{1/2} years old.

Research has also found mothers to be more talkative than fathers in parents' interactions with their children (Leaper, Anderson & Sanders, 1998). In this last study mothers were also found to be more talkative with daughters than with sons, with effect sizes being larger for mothers to infants and toddlers compared to parents of older children. Moreover they found gender-differences to be greater when parent's and children engaged in unstructured as opposed to structured activities.

1.2 Interaction and Cognitive Development

Piaget (1932) regarded social interaction as one of the most fundamental processes for cognitive development. In his investigation of the moral development of the child he recognized two different types of social relations which he considered closely related to the child's development. Social relations of constraint are relations of asymmetry, where one party has more status or authority than the other. Relations of constraint are associated with heteronomous reasoning since one party shows unilateral respect for the other and accepts the rules advocated by the authoritarian person without questioning its right or wrong. Social relations of cooperation, on the other hand, are relations of symmetry and mutual respect, leading to autonomous reasoning. These types of interactions provide a context which stimulates discussion and exchange of perspectives which result in the construction of knowledge. For Piaget relations between child and adult were typical relations of constraint, in which one party possess more power than the other.

Since Piaget several studies have proven the stimulating effects of social interaction on cognitive development. Studies exploring for example moral development (Leman & Duveen, 1999; Leman, 2002; Damon & Killen, 1982), the development of the concept of conservation (Psaltis & Duveen, 2006) and development of the concept of flotation (Howe, Tolmie & Rogers, 1992) have demonstrated that the participants, when jointly elaborating a response to a problem, usually agree upon the developmentally more advanced answer and display progress from pre-interaction test to post-interaction tests.

Even though not many would dispute the fact that social interaction leads to cognitive development, a major question has been exactly *what* in interaction it is that stimulates progress. For example Russell, Mills and Reiff-Musgrove (1990) have argued that for collaboration to elicit cognitive development, the interactants need to differ in their level of cognitive reasoning. This approach, often referred to as the transmission account, emphasize the importance of transmission of knowledge from one individual with a more advanced form of reasoning to one with a less advanced form of reasoning, for change in reasoning to take place.

Others have argued that this asymmetry of knowledge is not necessary for development. For example Ames and Murray (1982) found that it sufficed that children interacted with someone with a conflicting – but not more advanced – opinion on a conservation task, for development to occur. Doise and Mugny (1984) have made similar findings in a range of studies, which made them put forward a theory of *sociocognitive conflict*. When someone asserts an opposing centration to that of the child (but not necessarily more advanced), the child is presented with this sociocognitive conflict, a conflict which according to Doise and Mugny cannot be denied as easily as when the child reflects on his own individual alternating contrasting centrations. One prerequisite for sociocognitive conflict to lead to change is that the child must realise that his or her position differs from those of others. For example children in the preoperational stage, whose thinking is often characterized by egocentrism, often fail to recognize that other solutions might exist and therefore stick to their original position. They also point out that sometimes the social overrides the cognitive. When the child participate in an asymmetrical interaction, as for example when an adult interacts with a child, several factors (as for example the child's expectation that the adult knows better) might make the child comply with the arguments of the adult without realising the underlying reasons and hence without making any progress. In their studies they found that children who deferred to others did not make any advancement in reasoning.

Also work by Howe, Tolmie and Rogers (1992) found collaboration to promote advances in reasoning on a flotation task, given that the children possessed opposing ideas. The study consisted of a pre-test, a collaborative task and post-test four weeks after the collaboration. What was particularly interesting with this study was that pre- to immediate post-test change was less than pre- to delayed post-test change and performance on the collaborative task was worse than performance on pre-test. The authors suggest that this might indicate that the experiences the children made during the interactions created conflicts to be resolved rather than solutions to be remembered. A more plausible explanation for these delayed effects of collaboration was presented in a later study (Howe, McWilliam & Cross, 2005). In this work the authors explored various possible explanations, which gave no support to the proposal that collaboration might create non-productive mental sets that require time to be broken down or the proposal that collaboration prompts reflective appraisal of ideas created during collaboration. Rather the research gave support to the idea that collaboration primes children to make use of and respond differently to subsequent events, and that this priming might be dependent upon represented contradiction.

Some studies have also attempted to explain what aspects of discussion are associated with cognitive development. For example Damon and Killen (1982) explored moral development with regard to a hypothetical problem of distributive justice. They found that certain features of the conversations were related to change in moral reasoning. Specifically, those who changed both used and received accepting and transforming acts, i. e. acts that extended, clarified or compromised with the partner's statements. Another study (Berkowitz & Gibbs, 1983) found that the best predictor of change in moral reasoning by the lower stage member was the pair's use of operational transactive communicative forms; i e use of communicative forms that elaborate on or transform the partner's reasoning rather than merely elicit or *re-present* it.

As has been pointed out Piaget (1932) regarded the relation between child and adult as a typical relation of constraint, which foster heteronomous thought. But others have recognized that there are alternative forms of social relations of constraint, where one party is *perceived* to have more status or authority than the other, as for example asymmetries with regard to gender, social class or academic reputation (Leman & Duveen, 1999; Psaltis & Duveen, 2006). In one study, Leman and Duveen (1999) used a moral dilemma originally developed by Piaget, and paired children with contrasting positions, one associated with autonomous reasoning (a more advanced form of moral reasoning, for explanation see 2.3 below) and the other with heteronomous reasoning (the less advanced form, see 2.3), to discuss the issue and negotiate an agreement. The pairs were not only composed of one autonomous and one heteronomous child, but also differed in the gender composition, to form four different pair types where the parties were either in a developmentally more advanced position (where the persuasive power lied in the arguments) or had status authority (where the persuasive power lied in the person's position within a social system), both of these or none. The pairs consisted of either an autonomous and a heteronomous female (*Ff*), an autonomous and a heteronomous male (*Mm*), an autonomous female and a heteronomous male (*Fm*) or an autonomous male and a heteronomous female (*Mf*). They found significant differences between the *Mf* pairs, where status in form of gender and developmental position coincided in the male participant, and the *Fm* pairs where status in form of gender and developmental position conflicted. In the *Fm* pair the conversations were much more extended and the *m* subjects provided justifications associated with heteronomous thought, compared to the *f* subjects in the *Mf* pairs who gave less opposition to their *M* partner. Furthermore in the *Mf* pairs less sophisticated forms of justifications were needed to convince the heteronomous subject – in this pair type the highest use of assertions as justifications, i. e. straightforward statements of belief, was observed. However, even though the gender mix of the pair was found to have a great impact upon the conversations, this did not affect the outcomes of the conversations (see also Leman, 2002 for a similar finding).

Also other studies have demonstrated that the gender composition of pairs of peers as they are engaged in jointly approaching a problem has a strong impact on the type of conversation that evolve. For example a similar study by Leman and Duveen (2003) also observed an impact of gender on how agreement was negotiated – it was noted that one or both children in the *Fm* pair spent more time talking about their own views than discussing the partner's position. The authors suggest that in these pair types the status differences arising from the participants different genders seem to constrain those parts of discussion associated with the exchange of perspectives.

A recent study (Psaltis & Duveen, 2006) explored which particular features of the interactions that might constrain the development of those types of conversations which might lead to cognitive change. They observed that the type of conversation that emerged in interaction was strongly related to the outcomes of the conversations. The conversation types were not independent of pair type; for example in the *Mf* pairs there was a higher frequency of discussion where no resistance was presented, and it was also in this pair that none of the (few) female subjects who made progress used novel arguments for their position in the post-test. As the authors point out, this indicates that female conservers who was conversing with a male non-conserver promoted more involvement and challenge from her partner than males in the same position did. The *Fm* pair was the only pair type that made significant progress

compared to the control group, with half the males who made progress also using novel arguments in the post-test. Moreover the results showed that boys and girls were equally likely to initiate the conversations but when a developmentally more advanced position was combined with status in form of the male gender, the participant was more likely to initiate the conversation. They also found that girls in the *Mf* pairs talked less than their partner, to be compared with the boys in the *Fm* pairs who talked to an equal extent as their partner.

1.3 Moral development

Piaget (1932) in his investigation of moral development, identified two forms of moral reasoning; a morality of constraint, or heteronomous reasoning, and a morality of cooperation, referred to as autonomous reasoning. According to Piaget young children as they develop transfer from heteronomous reasoning to the more advanced autonomous reasoning. These two forms of thinking follow upon one another but do not, according to Piaget, constitute completely separate stages.

Heteronomous reasoning is characterized by unilateral respect and egocentrism in the child. The child accepts the rules advocated by an authoritarian person without questioning its right or wrong. Right is showing obedience to a rule or to a command advocated by an authoritarian person, and responsibility is objective. At this stage intention is not important for justice. Autonomous reasoning on the other hand is moral reasoning based on cooperation and equality between individuals. Good is no longer advocated by a rule or an authority, but is instead based on subjective responsibility and mutual respect. The child has now learnt to coordinate its' own perspective with that of others.

Piaget carried out a number of studies of children's reasoning on justice. In these studies he used a range of stories developed particularly for this purpose. The stories describe a number of situations in which someone, often a child, has behaved badly in some way or other. He then asked the children which of a number of punishments they considered to be the fairest. Using these stories Piaget found children to display different types of reasoning on justice. Younger children were found to believe in *expiatory punishment* and regarded justice as what was advocated by an authority in the form of adults or older peers. These children tended to see punishment as just and necessary. The more severe a punishment the better or more effective it was and the greater the prospects that the transgressor would act more appropriately in the future. There did not have to be any relation between the content of the misdeed and the type of punishment, apart from that the severity of the punishment matches the severity of the offence. Older children, on the other hand, tended to regard a just punishment a punishment that entailed putting right what was wrong, or *punishment by reciprocity*, i. e. the punishment should be equivalent with, or related to the misdeed. The transgressor should endure the consequences of his deed, in that the wrongdoer should have to experience exactly what he did himself to someone else. The child no longer regards punishment as objective, but sees it as a means to show the transgressor that the bond of solidarity has been broken.

Piaget's initial Swiss sample consisted of 65 children who had been read "around 4 stories each". He found that at 6-7 years 28% of the children gave the more mature response associated with reciprocity, whereas at 8-10 years 49% gave this response and at 11-12 years 82% gave the more mature response. From these data and data

from a number of other studies Piaget (1932) proposed that children aged up to 7-8 years still regard punishment as dictated by an authority. During the age of 8-11 children is in an intermediate period when egalitarian thought is developing, and at the age of 11-12 thought is autonomous.

1.4 The present study - Aims and Hypotheses

As has been outlined earlier in this section, gender differences with regard to conversational style, although dependent upon contextual factors, have been observed in both adults' and children's' conversations. In the present study one aim was to investigate whether gender would have an impact also on interactions between children discussing a moral dilemma, where one child in each pair has previously given a reply associated with reciprocity and the other a reply associated with expiation. The conversational styles adopted by the participants will be examined with regard to initiation, simultaneous speech acts, talkativeness and psychosocial processes.

As described earlier several studies on a range of tasks have shown that interaction stimulates cognitive development and that different types of relations between the participants might promote or inhibit this process. In this study another aim was to investigate whether interaction would promote short- as well as long-term cognitive change when it comes to children moving from expiation to reciprocity, and to see whether this progress was related to the different pair types in which the children participated. A final objective was to explore whether conversational features and justifications used in the different pair types are related to a pairs' joint response or children's advancements in moral reasoning, as this has not yet been explored in much detail. Thus, the study aims at investigating both how social interaction is related to cognitive development, in this case moral reasoning, and whether the social dynamics of interaction not only affects the conversations that emerge, but whether it might also influence the children's short- and long-term cognitive change.

The questions asked in the study to address these aims were the following:

- How are the conversational styles and arguments used by the participants related to the gender of the child, the different pair types and to the outcomes of conversation?
- Does interaction promote moral development when it comes to moving from expiation to reciprocity and is progress related to the conversational features of the discussions in the different pair types or to the arguments children use in conversation?

1.4.1 Hypotheses

The study aimed to address the following sets of hypotheses:

1. Based on the findings by e. g. Leaper (1991, 2000), Leaper and Smith (2004) and Leman, Ahmed and Ozarow (2005), boys were anticipated to overall show more domineering and controlling behaviour in the form of assertive speech and use of negative interruptions.

2. Girls were expected to generally show more affiliative behaviour, produce more overlaps and positive interruptions, as studies by e. g. Leaper (1991) and Leman, Ahmed and Ozarow (2005) have found girls to be more affiliative in interaction.

3. Girls were anticipated to generally be more talkative than boys.

4. Since previous studies have found boys to use more assertive language, boys were expected to use more assertion justifications than girls in all pair types. No other predictions were made on the use of different justification types with regard to gender.

5. Since several previous findings have shown positive effects of interaction for cognitive development, it was anticipated that the children who participated in the interaction phase of the study would show more overall progress with regard to moral reasoning than those who did not.

6. It would take longer for a reciprocal girl in a mixed gender pair to convince her heteronomous partner than it would for the autonomous reasoners in the other pair types to do the same.

No predictions were made regarding how the other conversational features would be related to outcomes and moral development, as this has not yet been explored in much detail in previous research.

2 Method

This section will start with a presentation of the design and method used for the collection of the data used in the study, gathered by Dr. Patrick Leman for a study of children's moral reasoning (unpublished). This is followed by a detailed explanation of how the analysis of the conversations was carried out.

2.1 Design

To test the hypotheses and to address the research questions a pre-test, interaction, post-tests design was adopted. Two post-interaction tests were conducted, one two weeks and the other eight weeks after the interaction phase. A control group who did not participate in the interaction phase was also used, to be compared with the experimental group. Gender was used as a blocking variable. The children's responses to the stories and each of the conversation measures (initiation, time taken until agreement, simultaneous speech acts, justifications and psychosocial processes) were dependent variables.

2.2 Participants

A total number of 133 children participated in the study, of which 78 were boys and 55 girls. The mean age was 9 years and 7 months and all children went to the same primary school in Berkshire, South England. The mix of ethnicities in the school was broadly homogenous, with mainly Europeans, and they were all of middle class backgrounds. Children were recruited through letters home to their parents or guardians who were required to give written consent for their child's participation. The children were also required to verbally consent to their participation, in line with the ethical standards of APA (American Psychological Association) and BPS (British Psychological Society).

2.3 Materials

A pilot test with five children of the same age as the participants was carried out. The children were read a total number of five stories, based loosely on those originally developed by Piaget (1932, p. 200-209), in order to reveal whether (a) the stories would be good discriminators of moral reasoning, and (b) if they would invoke sufficient numbers of differing responses to make discussions possible. Each story provided a choice between two options, either an expiatory punishment or a reciprocal punishment.

Following the pilot study four different stories were chosen to be utilized in the main study (see Appendix 1). Only these four were chosen because it kept the number of stories down and made the process more bearable for the children. For all stories the child had to make choices between alternative punishments that corresponded to more mature (reciprocal) and less mature (expiatory) answers. One of the stories, story A, was used as the stimulus story for the children to discuss together in a pair. The story went:

Late one afternoon there was a boy who was playing with a ball on his own in the garden. His dad saw him playing with it and asked him not to play with it so near to the house because it might break a window. The boy didn't really listen to his dad, and carried on playing near the house. Then suddenly, the ball bounced up high and broke the window in the boy's room. His dad heard the noise and came out to see what had happened.

The father wonders what would be the fairest way to punish the boy. He thinks of two punishments.

Children were then asked to choose the fairest punishment for Sam; he either had to pay for the window to be mended (reciprocity) or he had to stay in his room for the rest of the evening (expiatory). The story text was read out to the children and they were all shown a picture of the act (i.e., Sam breaking the window). Each child was given an accompanying booklet (see Appendix 2) with pictures depicting the two choices of punishment, and children were asked to indicate, by ticking the relevant picture, which punishment they felt was the fairest. The procedure was the same for all of the four stories.

In the interaction phase of the study, children discussed their differing responses to the first story about the boy who broke the window in pairs in order to together arrive at an agreement on which was the preferable punishment. Children's conversations were video-taped using a camera and specialist microphone, and were later transcribed.

2.4 Procedure

In the first part of the study the participating children were presented a booklet (see Appendix 2) in a 'paper and pencil' test of moral reasoning, which was carried out in larger groups of 15-20 children (the size of a class in that school). On the first page the children had to complete basic biographical information (date of birth and sex). The subsequent pages of the booklet depicted the alternative punishments available to choose for each story (see above). Each story was read out to the children and alongside this the child was shown a picture of the event or misdeed that lead to the punishment. The two punishments were then read out to the child who was also shown the corresponding pictures alongside one another (see Appendix 2). The child was asked to indicate, by ticking the relevant picture, which response he or she felt was the fairest. This same procedure was then repeated with all four stories.

For the second part of the study children were paired together with a partner who in the first phase had given a contrasting response to the first story about the boy who broke the window. This story was selected because it had the closest to a 50% response rate for each of the alternatives (reciprocal and expiatory) and, consequently, constituted the most economical solution in terms of setting up pairs of children with differing replies. It was furthermore ensured that each child in the pair overall was classified as either reciprocal (three out of four responses to the stories had been reciprocal) or expiatory (three out of four expiatory). Children were also placed in pairs on the basis of their sex. There were, thus, four different types of gender

pairings: all boy pairs, all girl pairs, Boy-girl pairs where the boy had given the reciprocal response, and Girl-boy pairs where the girl had given the reciprocal response. The different pair types are summarized in Table 5.1. A further group of children were used as control group that never participated in the interactional phase, and were thus never placed in a pair.

Table 5.1 Definition of pair types

	Independent response		Pair type	Description
	Reciprocal	Expiatory		
Female	Girl	girl	Girl-girl	Reciprocal female with expiatory female
			Girl-boy	Reciprocal female with expiatory male
Male	Boy	boy	Boy-boy	Reciprocal male with expiatory male
			Boy-girl	Reciprocal male with expiatory female

Since they went to the same school, all children knew each other relatively well since before. However it was made sure that each child was paired with a partner with whom they were not best friends (but also not enemies).

Pairs were seated in a quiet room and were read the story about the boy who broke the window. They were reminded of their individual responses given in the first phase, in order to set up the discussion, and were then asked to discuss the task together and to try to reach agreement. During the discussion, the test leader (a European male) left the room so the children could talk undisturbed. In cases when the test leader returned before consensus was reached, the children were asked to continue their discussion. All pairs reached an agreement after 5 minutes.

After all conversations had been completed children were debriefed and given a full description of the task and the research aims in child-friendly language. They were reassured that all data collected would be treated as confidential and that their identities would not be revealed.

In the third part of the study, which was carried out two weeks after the children had given their independent responses, all children, including those in the control group, were again read the first story about the boy who broke the window and shown the corresponding pictures (again in groups of 15-20 individuals). As in the previous phases of the study the children were also given the booklet and asked to give their individual responses by ticking the picture that corresponded to the response they thought was the fairest.

The last part of the study was conducted eight weeks after children had given their first independent replies. This was made in order to investigate the children's development over a longer period of time. After having been read the stories, all children who participated in the interaction phase as well as those in the control group, had to give their individual responses to all of the four stimulus stories, following the same procedure as in the very first phase of the study. Hence, children

were again asked to tick the relevant picture in the booklet provided to indicate which response they considered to be most fair.

2.5 Analysis of conversations

In order to get a deeper understanding of the dynamics present in the conversations a range of variables were examined in the analysis. This section will provide a detailed explanation of how the analysis was carried out and present the different features of the conversations that were examined in the study.

2.5.1 Initiation

Included in the conversational measures was an initiation index, which indicated whether or not a child initiated the conversation. A speaker was considered the initiator of the conversation if he/she was the first one to start the dialogue in uttering a phrase, clause or other syntactic unit. As Linell (1998) has pointed out, the one who initiates a dialogue consequently has a stronger influence on the topic of the conversation. Initiation has also previously been used as a variable to study conversational dominance (Itakura & Tsui, 2004) since the one initiating is also partly in control of what is a correct response.

2.5.2 Time taken

The time taken for a pair until an agreement was reached was measured. This allowed for an investigation of how effortlessly a particular pair type could negotiate a joint response, which might reveal information about the social dynamics present. As pointed out by Leman and Duveen (1999) this might provide an indication of the ease with which certain pair types can reach agreement. In their study they found that when the expert was a girl in a mixed gender pair, it took her significantly longer to convince her partner than it did for any of the other pair-types, indicating that the male non-expert had greater difficulty accepting the arguments presented by a female expert than a male one. In the present study it was of interest to investigate if certain pair types, with regard to gender as well developmental level, could have an impact on the time taken until consensus was reached.

2.5.3 Simultaneous speech acts

As mentioned in the Theoretical background, following Leman et al (2005) three categories of simultaneous speech acts were examined in the study; *Overlaps*, *Positive Interruptions* and *Negative Interruptions*.

Overlaps have been defined as simultaneous speech that occurs when current speaker is at, or very close to a transition relevant place and the next speaker starts talking before the current speaker has finished (Zimmerman & West, 1975; Coates, 1993). These include so called *back channel utterances*, which are minimal responses such as ‘um hm’ or ‘yeah’, indicating active listener ship (see theoretical background).

In the present study an *overlap* was defined as simultaneous speech which constituted no bid to take the floor. This included back channel utterances and simultaneously uttering the same word or phrase. It also covered cases when speaker B thought speaker A had finished his turn, started speaking but immediately stopped as he/she noticed that the partner was not yet done. Below is an example of an overlap produced by speaker B in turn 2 (see Appendix 4 for transcriptions conventions):

- Girl A: (1) It depends how much money he had=
 Girl B: (2) // yeah
 Girl A: (3) // =and how much the window costed

Simultaneous speech that fell under the label *positive interruptions* comprised bids to take the floor that were not performed in a hostile or negative manner. These also included interruptions to make clarifications, reassertions of own position or interruptions made to help the other finish his/her sentence. The latter seemed to be a sign of active listenership and was performed in a somewhat collaborative manner, as the speakers could be perceived as constructing the utterance together. An example of a positive interruption produced by speaker B follows:

- Boy A: (1) But on the other hand it could be something like fo- four
 o'clock and he'd have to stay in //for two //hours
 Girl B: (2) ehm bu-
 but he did say the rest of the evening (1s) so (3s) ehm if it's
 the evening when he's done wrong then it depends

Negative interruptions were interruptions where the speaker attempts to take the floor in a negative or hostile fashion. The next speaker here starts speaking at a point in the current speaker's turn which would not be defined as being at or close to a transition relevant place (Coates, 1993). These included successful interruptions, i. e. when the interrupter succeeds in taking the turn, and interruptions made in an aggressive or dominant manner. Below follows an example where speaker B negatively interrupts speaker A on two occasions (turn 4 and turn 6).

- Boy A: (1) but staying in your room isn't really a good punishment if
 he actually broke a window //which costs- which costs-
 Boy B: (2) (unintelligible)
 Boy A: (3) -about a hundred pounds or more //or something
 Boy B: (4) I know but that's why
 he wouldn't pay it (1.5s)
 Boy A: (5) he he wasn't //listening
 Boy B: (6) he's a chi::ild

2.5.4 Psychosocial processes

To rate the children's behaviours the Psychosocial Processes Rating Scheme (henceforth PPRS) was utilized. The PPRS consists of two separate seven-point scales developed by Leaper (2000, 2006) to rate personal assertion and interpersonal affiliation. These two scales relate to agency and affiliation respectively, terms that are, as pointed out in the theoretical background, often associated with psychologically typical feminine or masculine behaviour. The assertion scale ranges from (1) Highly Non-Direct, e.g. sitting passively or withdrawing, to (7) Highly Assertive, e.g. command, demand or strong disagreement. The affiliation scale ranges from (1) Highly Distant, e.g. strong disagreement or preoccupation with self/task without regard to the other, to (7) Highly Interdependent/Joining, e.g. praise or reassurance, shared amusement or laughter. A more detailed description of the scale and its different levels is given in Appendix 3.

The videotapes were subsequently examined with regard to PPRS so that every five seconds each child's behaviour was assigned a score ranging from one to seven on each of the two scales, consistent with Leaper's (2000, 2006) instructions. That is, each child was given a separate measure for both personal assertion and interpersonal affiliation so that during a one minute long conversation a total number of 12 ratings would be made for each child on each scale. The mean rating score across the conversations for assertion and affiliation was computed for each child. A high score on the two separate rating scales indicated high assertion and high affiliation respectively.

2.5.5 Talkativeness

To get a better understanding of the contribution made by each child to the conversation both the total number of words uttered and the total number of turns taken was calculated. Following Levinson (1983) a turn was defined as a syntactic unit, i. e. a sentence, clause, noun phrase or the like, produced by one speaker within an orderly arrangement with minimal overlap or gap until the next speaker, identified using prosodic as well as intonational information. From these data the average number of words per turn per child could be computed.

2.5.6 Conversational Content

The justifications used by the children to convince their conversational partner were examined using an iterative qualitative process commencing with noting all justifications used throughout the conversations. The aim of this process was to identify themes that arose from the conversations themselves. This was quite straightforward as many of the justifications used by the children were somehow related and the children often used very similar types of justifications in favour of their own or against their partner's position. Hence a few general themes could be observed among the justifications, themes that constituted the base to form a set of seven final categories. All justifications were then merged into these seven categories, which covered all justifications observed throughout the corpus that were relevant to the study (see Table 5.1). Three of these, the categories *Assertion*, *Intention* and *Moral*, were previously identified in a study by Leman and Duveen (1999), investigating the effect of alternative sources of authority on children's moral reasoning.

All justifications observed in the study were assigned to a category and the total number of justifications used within each category was counted. A child could use more than one justification. One turn could in some cases contain more than one justification (combined using conjunctions) but predominantly one turn corresponded to only one single category. The total use of each justification category by one child as well as the proportionate use of each category was later calculated. The proportionate use was calculated dividing all uses of one justification category with the total uses of justifications by one child. The final justification categories are summarized in Table 5.2. Below is a more detailed outline of the justification categories.

Assertions are straightforward statements of a belief. These are the least advanced types of justifications since they provide no underlying explanations for a particular point of view.

Some justifications were references to the *intention* of the transgressor; i.e. if the deed was committed on purpose or if it happened by accident. These are according to Piaget (1932) associated with autonomous reasoning, since the child focuses on internal or psychological factors rather than external ones.

Justifications related to the category *authority* are justifications that constitute references to an authority figure's opinion and include both references to the subjects own experience of what should be the correct punishment according to an authority and references to what he/she assumes an authoritarian person would think is correct. When references to authority are used as a justification the child seemed to regard justice as a means to uphold a law, imposed on him/her by an authority. It is a duty that must be carried out and not a means to sustain mutual respect. These types of justifications are therefore associated with expiatory thought and heteronomous reasoning.

References to *reciprocity* are justifications that emphasize putting right what is wrong. The subject stresses that the punishment should be somewhat equivalent to the deed or that the transgressor should endure the consequences of his own actions. When using justifications such as these it is quite clear that the child no longer regards punishment as inflicted upon the guilty one for its own sake but is instead seen as a means to show him/her that the bond of solidarity has been broken. These justifications are associated with autonomous reasoning (Piaget, 1932) and include acknowledgements of the fact that someone else has to put things right again if the guilty one him/herself does not.

A *moral* justification is a reference to a moral rule or principle, either explicitly or implicitly. In a sense these justifications provide nothing more than general assertions in that they do not provide any reasons in support of a certain position. However they do play an important role in conversation since they raise the discussion to a moral plane and the speaker, when using justifications of this sort, makes a claim to moral expertise or authority.

Justifications with *expiatory force* are expressions of the belief that the more severe a punishment is, the better or more effective. Whether a punishment is considered just or not in this case depends on how well the severity of the punishment matches the severity of the offence, but apart from this there does not have to be any relation between the content of the misdeed and type of punishment. The prime function of punishments is regarded as that of "teaching the guilty one a lesson" so that he or she will act more appropriately in the future. These types of justifications are linked with heteronomous reasoning since they are closely associated with constraint and put emphasis on justice as administered by authority (Piaget, 1932).

Avoiding expiation are arguments which state that a punishment is preferred because it is mild or because the alternative is considered too severe. These include cases where the child identifies or empathizes with the child in the story. Here, the children turn the question around to a question of whether or not they would prefer the punishment themselves. Responses related to this category would be effective justifications for heteronomous respondents in their quest to convince their autonomous conversational partners.

Table 5.2. Justification Categories with corresponding examples

Category label	Definition	Example
Assertion	Assertions which only state the subject's belief, without any justifications.	"I think staying in his bedroom"
Intention	Reference to the intention of the transgressor; i.e. whether or not the deed was committed intentionally or by accident.	"It might have been an accident" / "He didn't mean to do it"
Reference to Authority	Reference to what is right according to an authority figure.	"My mum and dad did that to me"
Reciprocity	Putting right what is wrong.	"He broke it and it's only fair that what he breaks he will replace I think"
Moral	Reference to a moral rule or principle	"He didn't do as he was told"
Expiatory force	The punishment is preferred because it is severe.	"If he just went to his room he might think that he can do it again because that's not a bad punishment but then if he had his pocket money taken off him he wouldn't want to do it again"
Avoiding expiation	The punishment is preferred because it is mild, or the alternative is too severe.	"It should be stay in his room because then he can play"

2.6 Reliability

The author trained using the PPRS on a total number of ten conversations from the corpus. When there was significant agreement between these ratings and ratings made by an experienced rater, all of the conversations were rated by the author using the PPRS. To assess the coding reliability for the conversational measures a second rater coded seven (10 % of the total number of conversations) randomly selected conversations from the corpus for PPRS. The interrater reliabilites between the coders were as follows: Spearman $r(14) = .90$ ($p < .01$) for assertion ratings; Spearman $r(14) = .81$ ($p < .01$) for affiliation ratings.

For simultaneous speech acts and justification categories a total number of 15 conversations (about 30 % of the total number of conversations) were also coded by a second rater. Inter-judge agreement for simultaneous speech acts was excellent ($k = .97$). There was also excellent agreement between judges for the justification categories ($k = .88$).

3 Results

The results section is organized as follows; first the results for the impact of gender on the conversation measures will be presented. This is followed by the results for the children's moral development from pre- to post-tests of moral reasoning. Last, the findings on the relation between the conversational measures and moral development will be given. First of all a note on the issue of nonindependence.

3.1 *The Issue of Nonindependence*

As the focus of this study is dyadic interactions the issue of nonindependence needs to be accounted for. In conversation with their partner the participants are likely to adapt their behaviour according to the behaviour of the other. As has been pointed out (Carli, 1989; Leman, Ahmed & Ozarow, 2005) in a study where the gender mix of the pair varies, it is likely that the participants change their conversation and interaction according to both their own gender and the gender of their conversational partner. In the present study this issue of nonindependence has been addressed using the same approach as Carli (1989) and Leman et al (2005). This same technique was used when analysing the data relating to talkativeness, simultaneous speech acts, conversational content and psychosocial processes. Following this procedure, separate analyses of variance (ANOVA) for the data for same- and mixed-gender pairs were performed. In the mixed-gender pairs, sex was the within-groups variable whereas in the same-gender pairs it was treated as a between-groups variable since girls and boys in this case were not in a pair together. The means and mean error scores are then used in a set of formulae which yield separate *t* statistics concerning gender. The different comparisons all have the following denominator: $[(2MS_e + 2MS'_e)(1/n)]^{1/2}$, in which MS_e is the mean error score for gender effects in same-gender pairs, MS'_e is the mean error score for gender effects in mixed-gender pairs and n is the number of observations on which the means were calculated. The numerator for speaker gender effects is $(M_{gs} + M_{gm} - M_{bs} - M_{bm})$ and for partner gender effects $(M_{gs} - M_{gm} + M_{bm} - M_{bs})$, where M_{gs} is the mean for girls in same-gender pairs, M_{gm} the mean for girls in mixed-gender pairs, M_{bs} the mean for boys in same-gender pairs and M_{bm} the mean for boys in mixed-gender pairs. The interaction effect contrasts any gender differences found in same- and mixed-gender pairs, to investigate in which pair type greater gender differences can be observed. The interaction effect has the numerator $(M_{gs} - M_{gm} - M_{bm} + M_{bs})$. For the speaker and partner gender effects a negative value of *t* indicates a higher score for boys than girls. Regarding the interaction effects a negative value of *t* demonstrates that a greater difference can be observed in the mixed-gender compared to the same-gender pairs.

3.2 *Gender and Conversation Measures*

Below the results for the impact of gender on the conversation measures will be presented.

3.2.1 *Initiation*

Due to difficulties in distinguishing who initiated the conversation, one pair was excluded from this analysis. In this pair the girl starts with uttering a prolonged 'uhm' immediately followed by the boy starting to talk, producing a complete sentence. The analysis was therefore conducted on the remaining 46 pairs.

No effect of gender on initiation was found - boys and girls were equally likely to initiate the conversations.

3.2.2 Simultaneous Speech Acts

Simultaneous speech acts were analysed using the correction for nonindependence outlined earlier. Mean values for the different forms of Simultaneous speech acts (overlaps, positive interruptions and negative interruptions) by gender and pair type are given in Table 4.1 below. Table 4.1 also includes the results from between groups (boys and girls in mixed gender pairs) and the within-group (boys and girls in same gender pairs) ANOVAs.

In Table 4.2 the t-scores and significance tests for children's use of simultaneous speech acts are presented. Boys used more overlapping speech than girls. There were no significant differences regarding partner gender or interaction effects.

Table 4.1. Mean number of overlaps, positive interruptions and negative interruptions for boys and girls in same- and mixed-gender pairs and associated univariate effects.

Variable	Same-sex pairs						Mixed-sex pairs					
	Boys N=24		Girls N=24		F(1,46)	η^2	Boys N=23		Girls N=23		F(1,44)	η^2
	M	SD	M	SD			M	SD	M	SD		
Overlaps	.83	1.01	.67	.96	.343	.007	.83	1.30	.52	.79	.92	.020
Positive interruptions	.50	1.18	.25	.44	.945	.020	.17	.39	.22	.52	.10	.002
Negative interruptions	.63	1.06	.21	.41	3.24	.066	.04	.21	.04	.21	.00	.000

Note: According to Cohen's (1988) conventions for η^2 .01 corresponds to a small effect size, .06 to a medium effect size and .14 or above to a high effect size.

Table 4.2. Speaker gender, partner gender, and interaction effects relating to Simultaneous speech acts.

Variable	Speaker gender <i>t</i> (92)	Partner gender <i>t</i> (92)	Interaction <i>t</i> (92)
Overlaps	-2.25*	0.66	.73
Positive interruptions	-1.22	-1.73*	2.12*
Negative interruptions	-2.84**	-2.84**	5.09***

Note: For speaker and partner effects a negative value of *t* indicates a higher score for boys than girls. A negative value of *t* in the interaction effect indicates that there was a greater gender difference in mixed-gender compared with same gender pairs.

* $p < .05$. ** $p < .01$. *** $p < .001$.

There were no significant differences attributable to the gender of the speaker when it comes to positive interruptions. However all participants used more positive interruptions when talking with a boy than with a girl. An interaction effect was also observed indicating that there was a greater gender difference in the same-gender pairs than in the mixed-gender pairs; both boys and girls use less positive interruptions when talking to someone of the opposite sex, with a greater decrease in the boys' use of positive interruptions when talking to a girl (see Table 4.1).

When it comes to negative interruptions boys used these more than girls and all children used more negative interruptions when paired with a boy. It needs to be noted though that overall there were very few negative interruptions (22 in total) and the results should therefore be interpreted with caution. Furthermore there were greater gender differences in the same-gender pairs than in the mixed-gender pairs. This difference was due to both boys and girls producing less negative interruptions in mixed-sex conversations, with a larger decrease in the boys' use of negative interruptions in mixed-gender pairs (see Table 4.1).

3.2.3 Psychosocial Processes

Also the PPRS scores were analysed using the correction for nonindependence. The mean values as well as the between-groups and the within-group ANOVAs are presented in Table 4.3 below. In Table 4.4 the t-scores and significance tests are presented. As can be observed from Table 4.4 no differences were found in the use of assertive or affiliative speech, for either speaker gender, partner gender or interaction effects.

Table 4.3. Mean displays of assertiveness and affiliation and mean number of words per turn for boys and girls in same- and mixed-gender pairs and associated univariate effects.

Variable	Same-sex pairs				Mixed-sex pairs				F(1,46)	η^2					F(1,44)	η^2
	Boys N=24		Girls N=24		Boys N=23		Girls N=23				M	SD	M	SD		
Assertiveness	4.17	.52	3.92	.54	2.613	.054	3.93	.68	3.92	.48	.003	.000				
Affiliation	4.08	.69	4.19	.53	.382	.008	4.26	.48	4.25	.50	.003	.000				
Words per turn	13.35	8.55	14.80	11.56	.246	.005	9.98	5.98	10.11	6.93	.004	.000				

Note: According to Cohen's (1988) conventions for η^2 .01 corresponds to a small effect size, .06 to a medium effect size and .14 or above to a high effect size.

Table 4.4. Speaker gender, partner gender, and interaction effects relating to assertiveness, affiliation and words per turn.

Variable	Speaker gender <i>t</i> (92)	Partner gender <i>t</i> (92)	Interaction <i>t</i> (92)
Assertiveness	-1.68	-1.56	1.49
Affiliation	0.67	0.76	-1.51
Words per turn	2.6586**	2.2321*	13.5366***

Note: For speaker and partner effects a negative value of *t* indicates a higher score for boys than girls. A negative value of *t* in the interaction effect indicates that there was difference in mixed-gender compared with same gender pairs.

* $p < .05$. ** $p < .01$. *** $p < .001$.

3.2.4 Talkativeness

The number of words per turn uttered by each child was analysed with regard to the correction for nonindependence described above. Results from the between-groups (boys in all-boy pairs and girls in all-girl pairs) ANOVA and the within-group (boys

and girls in mixed gender pairs) ANOVA are presented in Table 4.3. Table 4.3 also shows the mean values for the children's proportionate number of words uttered per turn by gender and by pair type. The t-scores and significance tests, also calculated using the correction for nonindependence, for the number of words per turn produced by each child are given in Table 4.4.

There were significant speaker gender differences in talkativeness, with girls uttering more words per turn than boys. Also a partner gender effect was observed, indicating that all participants produced more words per turn when talking with a girl than with a boy. Furthermore an interaction effect could be noted, suggesting that gender differences were more prominent in the same-gender pairs than in the mixed-gender pairs. Both girls and boys being less talkative when in the mixed-gender pair than in the same-gender pair (see Table 4.3).

3.2.5 Conversational Content

The justification categories (Assertion, Reciprocity, Intention, Authority, Moral, Expiatory force and Avoiding expiation) were analysed using the correction for nonindependence described above. The results from the between-groups (boys in all-boy pairs and girls in all-girl pairs) ANOVA and the within-group (boys and girls in mixed gender pairs) ANOVA are shown in Table 4.5 below. Table 4.5 also includes the mean values for the children's use of the different justification categories by gender and by pair type. The t-scores and significance tests for the justifications used by the children are given in Table 4.6. There were significant gender differences in the use of assertion justifications – boys used significantly more assertion justifications than girls and all participants used more assertion justifications when talking with a boy than with a girl. No significant difference according to pair type was found.

No significant differences between boys and girls were found in the use of justifications related to the categories reciprocity, intention, authority, moral and avoiding expiation for either speaker gender, partner gender or interaction effects.

As regards the expiatory force justifications boys used these types of justifications significantly more than girls. However no differences for partner gender effects or interaction effects were observed.

Table 4.5. Mean use of Justifications for boys and girls in same- and mixed-gender pairs and associated univariate effects

Variable	Same-gender pairs						Mixed-gender pairs					
	Boys N=24		Girls N=24		F(1,46)	η^2	Boys N=23		Girls N=23		F(1,44)	η^2
	M	SD	M	SD			M	SD	M	SD		
Justifications:												
Assertions	1.00	.98	.29	.46	10.27	.183	.70	.82	.35	.71	2.35	.051
Reciprocity	.13	.34	0	0	3.29	.067	.13	.34	.09	.29	.22	.005
Intention	.25	.61	.13	.34	.78	.017	.17	.39	.30	.56	.85	.019
Authority	.08	.28	.08	.28	0	0	.09	.29	0	0	2.10	.045
Moral	.08	.28	0	0	2.09	.043	.13	.46	.17	.39	.12	.003
Expiatory force	.42	.78	.13	.45	2.54	.052	.22	.52	.17	.49	.09	.002
Avoiding Expiation	1.00	1.32	.92	1.06	.06	.001	.82	.98	.96	1.33	.14	.003

Note: According to Cohen's (1988) conventions for η^2 .01 corresponds to a small effect size, .06 to a medium effect size and .14 or above to a high effect size.

Table 4.6. Speaker gender, partner gender, and interaction effects relating to the justification categories

Variable	Speaker gender <i>t</i> (92)	Partner gender <i>t</i> (92)	Interaction <i>t</i> (92)
Assertions	-5.84***	-1.99*	1.37
Reciprocity	-1.55	-0.75	-0.85
Intention	0.04	-1.78	-0.72
Authority	-0.85	0.85	0.78
Moral	-0.35	-1.10	-1.92
Expiatory force	-2.15*	-1.59	0.97
Avoiding expiation	0.21	-0.95	0.60

Note: For speaker and partner effects a negative value of *t* indicates a higher score for boys than girls. A negative value of *t* in the interaction effect indicates that there was difference in mixed-gender compared with same gender pairs.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Since the conversations varied in length also the proportionate use of the justification categories were calculated. This was done by dividing the number of times one type of justification was used by a subject by the total number of justifications used by the same subject. To correct for non-normal distribution a square-root transformation was conducted on the data. The transformed data was then analysed using the correction for nonindependence. The results from the between-groups ANOVA and the within-group ANOVA of the mean proportionate use of the different justifications are shown in Table 4.7 below. The table includes the mean scores for the children's proportionate use of the different justification categories by gender and by pair type. The t-scores and significance tests for the justifications used by the children are given in Table 4.8. Significant gender differences in the proportionate use of assertion justification were observed, with boys using these more than girls. No partner- or interaction effects were observed, and there were no other gender-differences relating to the proportionate use of any of the other justification categories.

Table 4.7 Mean proportions for justifications for boys and girls in same- and mixed-gender pairs and associated univariate effects

Variable	Same-gender pairs						Mixed-gender pairs					
	Boys N=24		Girls N=24		F(1,46)	η^2	Boys N=23		Girls N=23		F(1,44)	η^2
	M	SD	M	SD			M	SD	M	SD		
Justifications:												
Assertions	.43	.36	.24	.39	3.12	.064	.37	.38	.19	.33	2.90	.062
Reciprocity	.07	.19	0	0	3.14	.064	.09	.24	.06	.22	.22	.005
Intention	.10	.24	.11	.31	.02	0	.10	.23	.21	.38	1.48	.033
Authority	.04	.13	.05	.18	.09	.002	.07	.24	0	0	1.94	.042
Moral	.03	.12	0	0	2.08	.043	.05	.18	.11	.25	.80	.018
Expiatory force	.20	.33	.07	.23	2.62	.054	.15	.34	.10	.27	.32	.007
Avoiding Expiation	.42	.40	.49	.50	.29	.006	.40	.38	.42	.43	.02	.001

Note: According to Cohen's (1988) conventions for η^2 .01 corresponds to a small effect size, .06 to a medium effect size and .14 or above to a high effect size.

Table 4.8. Speaker gender, partner gender, and interaction effects relating to the proportionate use of justification categories

Variable	Speaker gender	Partner gender	Interaction
	<i>t</i> (92)	<i>t</i> (92)	<i>t</i> (92)
Assertions	-2.97**	-.11	.88
Reciprocity	-1.15	-.41	-.94
Intention	1.09	-.91	-.91
Authority	-.65	.99	.29
Moral	.29	-1.15	-1.64
Expiatory force	-1.64	-.73	.17
Avoiding expiation	.66	.39	.69

Note: For speaker and partner effects a negative value of *t* indicates a higher score for boys than girls. A negative value of *t* in the interaction effect indicates that there was difference in mixed-gender compared with same gender pairs.

* $p < .05$. ** $p < .01$. *** $p < .001$.

3.3 Moral development

Here the results from pre- to post-interaction tests on the children's moral reasoning will be presented.

3.3.1 Pre-interaction test of moral reasoning (t1)

There were no sex-differences in terms of responses to any of the four stories at any stage. However, in order to explore any possible developmental differences in reasoning on the stories, which would be anticipated if Piaget were correct in suggesting that the shift from expiatory to reciprocal thinking occurs at around 8-10 years, the sample was split into older and younger "halves" around the mean age. The mean age of the younger half was 9 years, 2 months and the older group had a mean age of 9 years, 11 months.

There was a significant association between age group and response on story A (about the boy who broke the window) at t1, $\chi^2(1)=3.86$, $p < .05$, contingency coefficient=.20.

In the younger age group, 43% gave reciprocal response compared with 65% in the older age group. These proportions seem to be consistent with Piaget's findings. There was also a significant association between age group and response on story C (taking turns) at t1, $\chi^2(1)=3.97$, $p<.05$, contingency coefficient=.20. The more mature, reciprocal response was given by 75% of the younger age group and 90% of the older age group respectively.

An overall reasoning score was calculated by adding together the total number of reciprocal responses to each story (where 4 was the maximum, indicating all reciprocal responses, and 0 the minimum, indicating all expiatory responses). A 2-way univariate ANOVA examined the effect of sex and age group on this overall moral reasoning score. The ANOVA revealed main effects of both sex, $F(1, 132)=5.29$, $p<.05$, $\eta^2=.039$, and age group, $F(1, 132)=4.17$, $p<.05$, $\eta^2=.031$. Boys (2.62) gave more reciprocal answers overall than girls (2.27). And older children (2.63) gave more reciprocal answers than younger children (2.32). There were no differences between those who were selected for interaction and those who were not in terms of overall score.

3.3.2 Post-interaction test of moral reasoning (t2)

The post-test, i. e. the joint response given by the children in the different pairs, which was also carried out at a similar time for those who did not participate in interaction (the control), asked for responses only on story A (about the boy who broke the window). There were no differences in terms of responses after interaction by the gender-mix of the pairs. In the *Boy-boy* pair 10 (out of 24) responses were reciprocal, 14 in the *Boy-girl* pair, 10 in the *Girl-boy* pair, and only 6 in the *Girl-girl* pair. Of those children not placed in a pair (and who did not engage in interaction, but responded once again after a similar time period) 13 (out of 37) responses were reciprocal. As stated earlier, the pairs consisted of one child who had initially given a reciprocal answer to this story and one who had given an expiatory answer. It thus seem as if children give a less mature response immediately after interaction compared to the replies given before interaction, although this difference is not significant when comparing those involved with those not involved in interaction. There were no differences attributable to pair-gender type in this immediate post-test.

3.3.3 Two-week delayed post-test of moral reasoning (t3)

A two-week delayed post-test (t3) asked children individually once again for their responses only to the stimulus story (story A). This individual post-test revealed no differences between those who had been in a pair and those who had not in terms of their responses to the stimulus story. Of those who had participated in interaction 62 (68%) gave a reciprocity response whereas 34 (32%) gave an expiatory response. By comparison, 25 (65%) of those who had not been in a pair gave a reciprocity response compared with 12 (35%) who gave an expiatory response. Overall, the proportion of reciprocal responses appeared to increase between sessions t2 and t3.

There were, again, no differences in terms of the pair gender type and responses to the story. Of those who had 2 weeks earlier participated in the *Boy-boy* pair, 14 gave a reciprocal response. There were 16 reciprocal responses in the *Boy-girl* pair, 17 in the *Girl-boy* pair and 15 in the *Girl-girl* pair.

3.3.4 Eight-week delayed post-tests of moral reasoning (t4)

In the eight-week delayed post-test, responses were again collected individually for all four stimulus stories. There was no significant difference in responses to any of the individual stories between those who had and those who had not been involved in interaction. However, overall there was a significant difference between the moral reasoning scores (total number of reciprocal responses out of 4) of those who had and had not been involved in interaction, $t(131)=3.73$, $p<.001$. Specifically, those who had been involved in interaction had much higher scores overall (3.50) than those who had not (2.92). However, again, the gender mix of the pair had no effect on the final level of reasoning over all four stories.

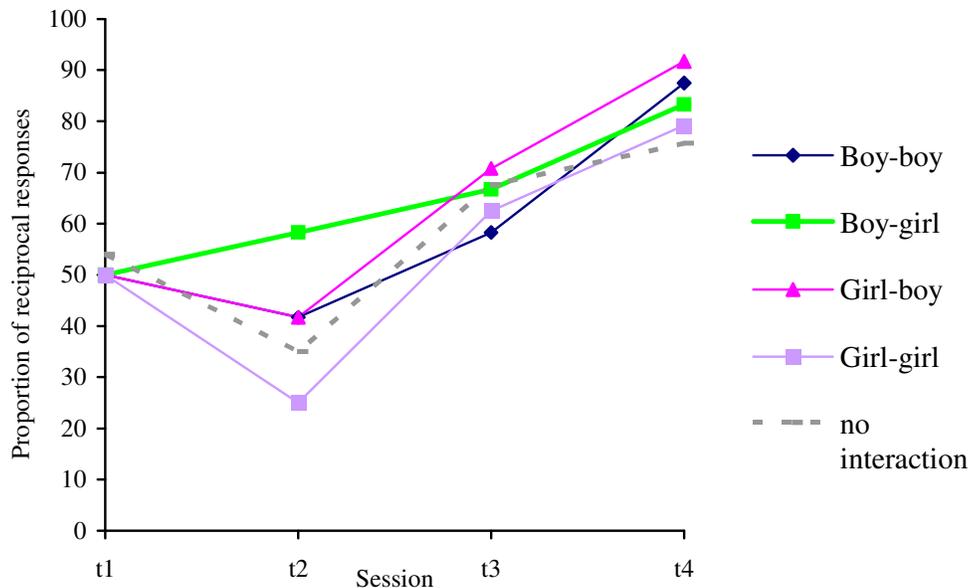
3.3.5 Change in moral reasoning over time (t1 to t4)

Here the results for the change in moral reasoning over time will be presented. In the first part are the results of the stimulus story only. The second part presents the results for change in overall moral reasoning (replies to all four stories).

3.3.5.1 Stimulus story

Figure 4.1 shows the changes in the proportion of responses to the stimulus story (the boy and the window) over testing sessions by pair type. As is evident from the figure, there is a general trend for a higher proportion of reciprocity responses over time. The exception is the immediate post-test phase, where *all* pair types (including the control-group, who did not participate in the interaction) show a dip in the number of these more advanced responses, apart from the Boy-girl pair that shows an increase. These trends remain intriguing because, as we have seen, there is no significant difference between pair types.

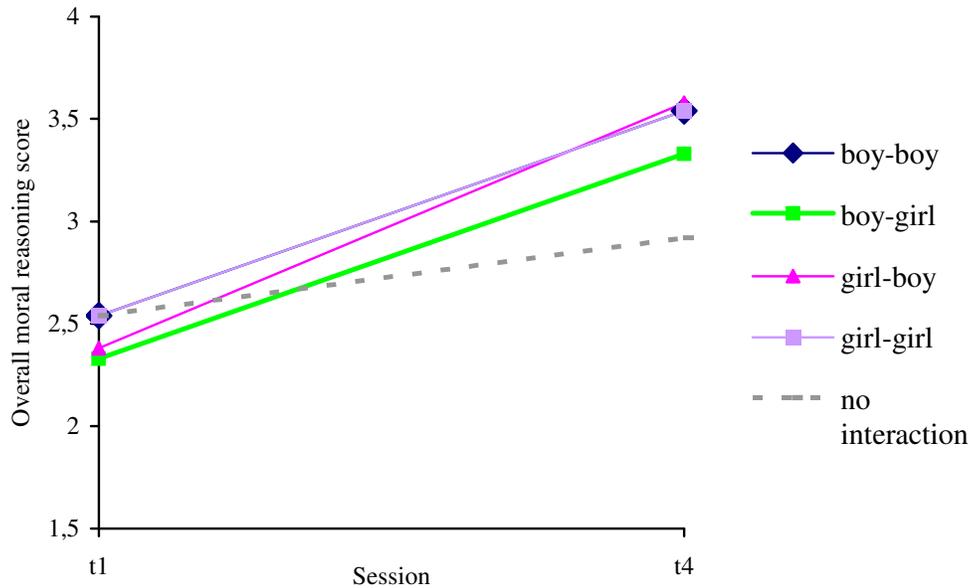
Figure 4.1. Proportion of reciprocal responses to story A (the boy who broke the window) by pairtype over testing sessions



3.3.5.2 Overall Score

It is possible to compare the overall moral reasoning score between pair types. Figure 4.2. shows the changes in this measure between t1 and t4 by pair type. A repeated measures ANOVA comparing responses by pair type with t1 and t4 overall measures reveals a significant effect of the repeated measure, $F(1, 128)=127.95$, $p<.001$, $\eta^2=.500$ with overall reasoning scores increasing from 2.47 (t1) to 3.34 (t4). However, this was qualified by an interaction – no interaction effect, $F(4, 128)=3.80$, $p<.01$, $\eta^2=.106$. Post hoc tests revealed that there were no significant differences between pairs. However inspection of figure 4.2. suggests that, in terms of overall moral reasoning, those children who engaged in interaction showed improved reasoning compared with the control group who did not. This is borne out by a further repeated measures ANOVA comparing only those who did with those who did not engage in interaction which reveals a significant effect, $F(1,131)=14.51$, $p<.001$, $\eta^2=.100$.

Figure 4.2. Overall moral reasoning score (4 equals all reciprocal) by pairtype over testing sessions



3.4 Conversation measures and moral development

Here the results for how the conversation measures were related to moral development will be outlined.

3.4.1 Initiation

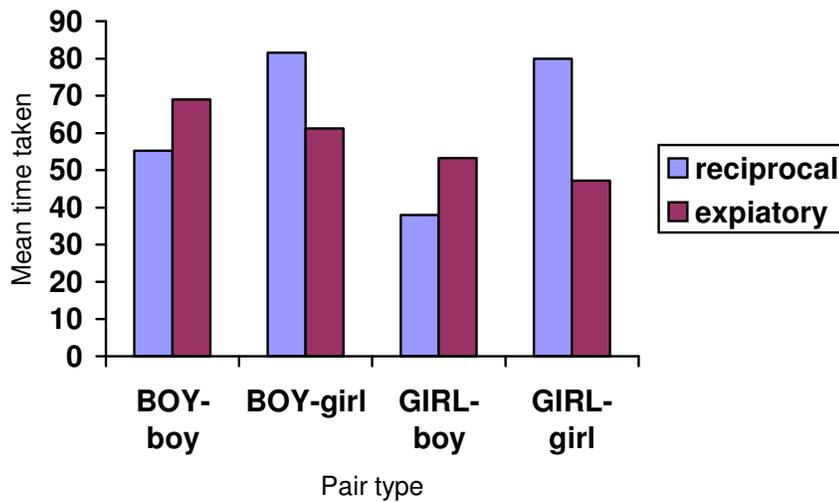
There was a significant association between initiation and the joint response of the pair. The view held by the one initiating the conversation was more likely to be chosen as the joint answer by the pair $X^2(1) = 6.26$, $p < .05$, $\Phi = -.261$.

3.4.2 Time taken until agreement

The mean length of the conversations across all pair types was 60.13 seconds. The minimum length was 18 seconds and the maximum 149 seconds.

There was no significant main effect of pair type on the time taken until an agreement was reached. However, an interaction effect was observed between pair type and the joint response of the pair on the time taken until agreement, $F(3, 94) = 3.12, p < .05, \eta = .10$. This indicates that depending on which reply the different pairs agreed upon the length of the conversations varied. Figure 4.3 shows how the time changed with the different pair types and the joint responses given by these pairs.

Figure 4.3. Mean time taken (in seconds) until agreement, by pair type and joint response



From the figure some distinctions can be made between the different pair types and the ease with which they reach agreement. It can be observed that the expiatory boys are relatively slow in persuading their partner and relatively quick to be persuaded. With the expiatory girls the exact opposite can be found; they are quick to persuade their reciprocal partner and relatively slow to be persuaded.

No differences were found at neither the two-weeks delayed post-test nor at the eight-weeks delayed post-test.

3.4.3 Other Conversation Measures

To examine the impact of the other conversation features (talkativeness, simultaneous speech acts and PPRS) and the use of justifications on the outcomes of conversation and development, a logistic regression (forward stepwise, likelihood ratio) was used for all the different times of measure (joint response, two-weeks delayed post-test and eight-weeks delayed post-test). No analysis was conducted for the effects of the conversational features and justifications with regard to each particular pair type, since the number of participants then became too small.

At t2 (immediately after interaction) the joint response of the pair variable (expiatory vs. reciprocal) served as the dependent variable, and the conversational features (i.e., talkativeness, initiation, simultaneous speech acts and PPRS) and proportionate use of each justification served as the covariates. As shown in Table 4.9 the only predictor of

the overall outcomes of conversation was the proportionate use of expiatory force justifications, $X^2(1) = 9.02$, $p < .001$. The relation was positive, indicating that the use of these justifications often lead to a reciprocal joint reply.

Table 4.9. Significant variables for outcomes of conversations (at t2).

	B (SE)	Wald	95% CI for exp <i>b</i>
			Exp <i>b</i>
Included			
Constant	-0.65 (0.24)	7.76	0.52.
Proportionate expiatory force	2.81 (1.11)	6.40	16.59

Note: $R^2 = .12$ (Nagelkerke). * $p < .05$ ** $p < .01$ *** $p < .001$.

To investigate whether the conversational features and the justifications had any effects on long term moral reasoning, another regression analysis (forward stepwise, likelihood ratio) was conducted for the two-weeks delayed post-test, with the children's individual replies on story A serving as dependent variable and the same covariates as before. As displayed in Table 4.10 the only predictor of the children's replies (expiatory or reciprocal) at the two-weeks delayed post-test was again the proportionate use of the expiatory force justification, $X^2(1) = 6.02$, $p < .001$. At t3 the relation was positive, indicating that the use of these justifications often lead to a reciprocal joint reply.

At the eight-weeks delayed post-test, no factor was significantly associated with the children's replies.

Table 4.10. Significant factors for two-weeks delayed post-test (t3)

	B (SE)	Wald	95% CI for exp <i>b</i>
			Exp <i>b</i>
Included			
Constant	0.33 (0.23)	2.04	0.06.
Proportionate expiatory force	2.91 (1.55)	3.53	0.72

Note: $R^2 = .09$ (Nagelkerke). * $p < .05$ ** $p < .01$ *** $p < .001$.

4 Discussion

Below the results will be discussed in more detail and put in relation to the hypotheses addressed in the study. The first part of the discussion will concentrate on the effect of gender on conversation, the second part on the effect of social interaction on moral development and the last part on the relation between the conversational measures and development.

4.1 *Conversational Features*

Below the results for the conversational features will be discussed.

4.1.1 Initiation

Consistent with Psaltis and Duveen's (2006) results boys and girls were equally likely to initiate the conversations. A significant association between initiation and the joint response of the pair was found. This seems to confirm Linell's (1998) and Itakura & Tsui's (2004) theories that the one who initiates the conversation later has a stronger influence on the topic and might also possess more power to influence the outcome of the conversations.

4.1.2 Simultaneous speech acts

A number of predictions were made regarding the children's use of simultaneous speech acts. Boys were found to produce more overlapping speech than girls, which is contrary to the predictions and to other studies showing that women use these speech acts to a greater extent than men. However the finding is consistent with Leman et al's (2005) finding on use of overlaps in children's conversations.

It was hypothesized that girls would use more positive interruptions than boys. Contrary to the hypotheses no speaker gender effects were found regarding these speech acts. However, all participants produced more positive interruptions when talking with a boy than with a girl. Also the gender mix of the pair was an important moderator; the effect of gender was greater in same-sex as opposed to mixed-sex pairs, with particularly boys using less positive interruptions when talking to someone of the opposite sex.

Consistent with the predictions as well as with previous findings from research on children's and adults' conversations (Leman, Ahmed & Ozarow, 2005; Anderson & Leaper, 1998), boys produced more negative interruptions than girls. Furthermore all children used more negative interruptions when talking with a boy and the effect of gender was greater in same-sex than in mixed-sex pairs, due to both boys and girls producing less negative interruptions in conversation with someone of the opposite sex, with a greater decrease in the boys' use of these forms of simultaneous speech acts.

The fact that children produced more positive and negative interruptions in the same-gender pairings could be interpreted in the light of findings suggesting that girls and boys in this age group are used to spending more time with same-gender peers than peers of the opposite gender (Maccoby, 1998; Lever, 1976). Perhaps then children in this age are more used to being involved (and hence produce more positive interruptions) in discourse during same-gender interactions.

Taken together the results on simultaneous speech acts seem to show very clearly that the children here also adopt their behaviour according to the gender of their conversational partner. Children used both more positive and negative interruptions with a boy and less when talking with someone of the opposite sex. In both cases, looking at the means, it was the boys who significantly reduced their use of positive and negative interruptions when talking with a girl whereas girls increased their use of negative interruptions when interacting with a boy. The findings seem to be in line with the findings from research in psychosocial behaviour, where for example Leaper (1991) found that children stick to typical gender-typed behaviour to a greater extent in same-sex interaction than in mixed-sex interaction. These results show that boys and girls not only adopt different conversational styles when interacting with same-gender peers, but that they also alter their behaviour when talking to someone of the opposite gender. The findings consequently provide some support for both the two-cultures and the status-characteristics approaches; On the one hand girls use less positive and negative interruptions in the mixed-gender conversations. On the other hand the effects of gender are more prominent in the same-gender pairs than the mixed-gender pairs. The fact that the girls show less involvement in the mixed-gender interactions, indicated by their reduced use of positive interruptions, might also indicate a greater conflict of perspectives in this pair type, which is consistent with previous findings (Leman et al, 2005).

It needs to be added that overall there were very few negative interruptions in the conversations, which one should bear in mind when interpreting the results. Tannen (1993, p. 246) suggests that there might be more simultaneous speech acts in high-conflict situations. In the present study the degree of conflict was not very high, which might be one reason for the few instances of negative interruptions.

4.1.3 Psychosocial Processes

Contrary to the predictions, gender differences relating to assertive and affiliative speech were found neither for speaker gender, partner gender, nor interaction effects. This finding contradicts previous research showing that boys generally use more assertive speech than girls and that girls generally use more affiliative speech than boys (Leaper, 1991; Leaper, 2000; Leaper & Smith, 2004; Leman, Ahmed & Ozarow, 2005). Several factors might explain why no gender differences were found in this study. As was pointed out in Leaper and Smith (2004) there are many different contextual moderators that might affect the results obtained regarding boys' and girls' use of assertive and affiliative speech. For example, they found that there were less gender differences in use of affiliative speech in structured as opposed to unstructured activity settings and less in school settings compared to laboratory settings, which might provide some explanation why no differences were found here. Possibly the contextual setting of the present study provides some explanation for why no differences were observed. As noted by Leaper (2000) the activity type is a very important moderator, since different activities demand a greater or lesser degree of assertion or involvement in discourse. Perhaps the task the children in this study engaged in was not one that would be likely to give rise to these sorts of communication acts. Furthermore the task was not one of high conflict, where these types of differences might be more likely to emerge. Some of the children might not have felt a very strong commitment to the task, which could partly account for the results obtained.

Another explanation might be the children's familiarity with each other. All children went to the same school, and even though it was controlled that they were not paired with their best friend, they might have already encountered each other on some earlier occasion. Leaper and Smith (2004) did find that boys used more assertive speech in interactions with strangers than with familiar persons and suggested that they rely more on gender-typed behaviour in these settings than in familiar ones.

4.1.4 Talkativeness

The girls produced more words per turn than the boys in the study, which is consistent with the predictions. This finding is compatible with other findings suggesting that girls are more talkative than boys (Leaper & Smith, 2004; Hyde & Linn, 1988). That the girls produce more words per turn might indicate that they are somehow less efficient in getting their ideas across – they seem to use more words per turn to express themselves in comparison to the boys who seem to express themselves more economically.

Furthermore all children were more talkative with a girl than with a boy and the effect of gender was more evident in same-gender pairs than in mixed-gender pairs - both boys and girls were less talkative in the mixed-gender setting. The fact that the children were more talkative in the same-gender pairs provide partial support for the two-cultures approach, since this might indicate that the children are more used to interacting with same-gender peers.

4.1.5 Conversational content

There was a significant speaker-gender effect in the use of expiatory force justifications, showing that the boys used these justifications to a greater extent than girls. However this effect was no longer present when looking at the proportionate use of the different types of justifications.

Significant differences in the mean use of assertion justifications were also observed, showing that, consistent with the predictions, boys used these more than girls and all participants used these to a greater extent when talking with a boy than with a girl. When looking at the proportionate use of justifications, gender-differences were observed with regard to speaker-gender only, indicating that boys used assertions as justifications proportionately more than girls. One explanation for this observation might be that boys generally engage in task-oriented games (Fagot, 1977; Lever 1976) in which it might be more natural to talk using directives or assertive speech forms. As Leaper (2000) pointed out, if boys engage in different activities than girls, where assertive speech and assertions are more common, then boys will have more practice in communicating through these speech forms. This might give some explanation for why the boys in the present study tended to use assertions as justifications to a greater extent than girls.

Regarding the girls' greater mean usage of assertions as justifications when talking with a boy than with another girl, one possible explanation might be the suggestion that girls generally tend to be more likely to adopt cross-gender typed behaviour than boys (Banerjee & Lintern, 2000). The results seem to indicate that the girls also use different persuasive strategies in form of use of different types of justifications depending on the gender of their conversational partner.

4.1.6 Summary Conversational Features

As noted earlier the results from the use of simultaneous speech acts seem to give partial support for both the two-cultures approach and the status-characteristics approach. Gender differences were more prominent in the same-gender as opposed to mixed-gender pairs when it comes to both positive interruptions, negative interruptions (although these were very few) and talkativeness. At the same time children seem to alter their behaviour to accommodate to the gender of their conversational partner. However, with regard to use of assertive and affiliative speech, no speaker-, partner or interaction effects were found. It has been suggested by Leman, Ahmed and Ozarow (2005) that it might be possible that the measures of communication acts (here the PPRS) and the measures of simultaneous speech acts could be related to different aspects of conversation. They proposed that measures of PPRS might be related to more global features of the conversations, or an overall approach to discourse adopted by the children, whereas the measures of simultaneous speech acts might be more related to local argumentation strategies or situational features of the interactions. Perhaps this would also provide partial explanation for why differences were found with regard to simultaneous speech acts in this study, while there were no differences in the use of the different communication acts (PPRS).

The somewhat surprising findings on the use of positive interruptions, considering earlier results from studies on gender differences in affiliation and active involvement in discourse (Leman, Ahmed & Ozarow, 2005; Leaper & Smith, 2004) that generally have found girls or women to produce these kinds of communication acts, taken together with the very few instances of negative interruptions and the lack of differences in the use of assertive and affiliative communication, might possibly be explained by the nature of the task used in the study. Perhaps the children were not very engaged in this assignment or did not have a very strong opinion in this matter and therefore did not get as involved in the discussion as they would have with a different type of task. On the other hand several studies on a range of tasks have found effects, which makes this explanation less probable.

Perhaps a more plausible explanation for the few instances of positive and negative interruptions and the results showing no differences in use of assertive and affiliative speech acts, would be the fact that the children in this study were engaged in a developmental task, and that half of the participants were more advanced in their moral reasoning, the focus of the discussions, than others. Taking into account that one participant in each pair was in a developmentally more advanced position than the other, the effect of gender might have become less salient in these interactions. It seems possible that status, in the form of gender *as well as* developmental position or social standing, affect how the use of simultaneous speech acts are distributed among the participants. It is not only gender that is *the one* predictor of use of more domineering or affiliative speech styles, but a web of status- and social relations as well as features of the contextual setting interwoven in the interactions that affect the behaviours displayed. A child's developmental position might have a stronger affect on conversation than other forms of status, as here in the form of gender.

4.2 Interaction and Moral Development

The study provides support for the hypothesis that social interaction stimulates moral development. The children who participated in the interaction phase of the study

scored significantly higher on the eight-week delayed overall moral reasoning test than those who did not. However the same results were not found regarding the stimulus story (about the boy who broke the window). Here, no significant differences were observed between the children who participated in the interaction phase and those who did not, at any time of measure. Perhaps a measure of reasoning on one story only is too specific and does not fully show any benefits that the children might have had through participating in the interactions. Even if the children did benefit from the discussions and did show progress in their overall moral reasoning, this might not be evident when looking at this one story only, although it was this particular story they had discussed. Rather, the progress of the overall moral reasoning score from pre- to post-test ought to be a better way to identify whether the children gained any valuable insights from participating in the interactions that made them able to generalise this knowledge to other similar situations and that enabled them to score higher on this measure on the test a few weeks later.

Generally there was an increase in reciprocal responses to the stimulus story (story A) over time, but immediately after the interaction phase all pair types, except for the *Boy-girl* pair, showed a decrease in these more advanced replies. This finding is consistent with previous research on interaction and cognitive development; Howe, Tolmie and Rogers (1992) also found children to give less advanced responses immediately after interaction compared to pre-interaction. As they suggest, this might be due to conflicting ideas that are made salient to the child during interaction. As noted in the theoretical background, Howe, McWilliam and Cross (2005) found a plausible explanation for the delayed positive effects of interaction to be that participation in a collaborative developmental task prime children to make use of subsequent events that will stimulate delayed progress. They also suggested that opposing ideas might be necessary to make sufficient use of later experiences. In this study children in all pair types did possess opposing opinions on the task, and the increase in number of reciprocal responses over time, and the significant progress in overall moral reasoning, might suggest that also in this study the interaction phase made salient to the child these conflicting ideas, which required subsequent reflection in encounters with similar problems before they were fully realised.

Contrary to the hypotheses and the findings made by Psaltis and Duveen (2006) no effect of the gender mix of the pair was found at any time of measure. However Leman and Duveen (1999) and Leman (2002) also found that although gender had a strong impact upon the structural features of conversation, this was not in the end related to short-term cognitive change. Similar findings were made by Leman, Ahmed and Ozarow (2005), although this was not in a developmental context, who found gender to have a strong influence on conversation, but that this impact was not in the end related to the decisions the children made after interaction.

To sum up, interaction does seem to have stimulating effects on cognitive development since the children who participated in the interaction phase of the study did show overall progress compared to the control, but this does not in this case seem to be related to whether the child has status in form of gender or not, since there were no differences between the different pair types on the post-interaction tests.

4.3 Conversation Measures and Moral Development

In this section follows a discussion of the relation between the conversational measures and moral development.

4.3.1 Time taken

Contrary to predictions, no significant differences between the different pair types related to the time taken were found. Thus, the results did not replicate the findings made by Leman and Duveen (1999) who found the *Fm* pair to take significantly longer to reach agreement than any of the other pair types. Instead it seems that the relation between the pair types and the ease with which they reach agreement in this study is more complex and cannot be attributed solely to developmental level or status in form of the child's gender.

When looking at the effect of both joint response of pair and pair type in relation to time, a significant interaction was found. This indicated that the different pairs, depending on what answer they agreed on, took more or less time to reach this agreement.

It was observed from figure 4.3 that when a girl had initially given the expiatory reply it took longer for her reciprocal partner to "win" the argument than it did for the expiatory girl to do the same. Expiatory girls therefore seem to be less willing to "give in" to their partner's opinion than expiatory boys, who seem to take slightly longer in trying to convince their reciprocal partner. Remember that the only justification that had an impact upon the joint response of the pair was the expiatory force justifications, which had a positive effect, indicating that these arguments often lead to a reciprocal joint response. This seems to indicate that the alternative associated with reciprocity is also considered to be the most harsh or severe punishment. Remember also that the children in this study belong to an intermediate stage where a shift in moral reasoning is taking place. Perhaps then the girls, who have not yet realised the underlying reasoning behind reciprocity (the ones who initially gave an expiatory reply), find the arguments used in favour of the expiatory punishment (or against the reciprocal punishment) much more compelling, and these girls might subsequently tend to regard a milder punishment as being fairer. The girls who individually gave a reciprocal answer on the other hand, might be the ones who have already reached the more advanced level of reasoning, and the arguments belonging to the expiatory force category therefore do not have the same effect on which answer they think is more fair. Hence, with regard to this particular story the expiatory force justifications used in favour of the expiatory punishment might be more compelling to a girl who has not yet reached the higher level of moral reasoning than it is for a boy at a similar stage, and this is reflected in the time it takes for the one or the other to convince, or be convinced by, their partner.

4.3.2 Conversation Measures

No feature of the different conversational styles used by the participants was significantly related to the outcomes of the conversations or to progress from pre- to delayed post-tests. This suggests that, with this particular task, the effects of gender on conversation do not in turn affect learning.

The only significant predictor of the outcomes of conversation immediately after interaction and two weeks later was the proportionate use of expiatory force justifications. The relation was positive, indicating that this type of justification often led to a reciprocal joint response by the pair. This seems to imply that the justifications related to this particular category are the most persuasive, since this was the only type of justification that was related to the outcomes of conversation. Recall that the expiatory force justifications are justifications related to how well the severity of the punishment matches the severity of the offence, and that the more severe punishments are here considered better or more effective. Thus, it seems that the children regard the reciprocal alternative in this study as being the most severe in this case. In Piaget's (1932) original study these types of justifications were linked to heteronomous reasoning since they put emphasis on justice as administered by an authority. Here, on the contrary, these justifications are related to the more advanced answer, favouring a reciprocal punishment. One possible explanation for why this was the only justification that could predict the outcome might be that in this case this particular type of justification appeal to both the reciprocal *and* the expiatory children. The justification appeal to the expiatory children because to them it is important that the transgressor is taught a lesson that will make him/her regret what he/she did and teach him/her not to do it again - hence the more severe a punishment the more just. To the reciprocal children, on the other hand, this justification is appealing simply because it is used in favour of the punishment they think is the more just, although they might not agree with the argument itself. Hence, by using an argument related to this category the child might be in a better position to persuade a reciprocal *as well as* an expiatory partner (of course as long as it is used in favour of a reciprocal reply) and this might also explain why this is the only category related to the outcomes as well as the children's replies two weeks after interaction.

That no other justifications or aspects of the conversational features were related to the outcomes or to advancement in moral reasoning might not be all that surprising after all. The study by Psaltis and Duveen (2006) found that the pair in which a boy was paired with a girl of a developmentally more advanced position was the only pair type that made significant progress compared to the control group. However no previous study has specifically looked at whether or how specific features of conversation are related to learning. The results from the present study might imply that the behavioural features of conversation (e. g. Simultaneous speech acts, talkativeness, initiation, PPRS) explored in this thesis are not related to the outcomes of conversation or cognitive reasoning up to eight weeks later. Rather the results suggest that the persuasive power is somewhat related to the arguments used in discourse. On the other hand it was only one of the seven different types of justifications that were significantly related to the children's replies, and this only immediately after and two weeks following interaction, not at the eight-weeks delayed post-test. Therefore it remains intriguing exactly what feature of interaction enabled the participants to score higher on the general test of moral reasoning eight weeks after interaction. Perhaps some of the answer is partly related to findings by Damon and Killen (1982) and Berkowitz and Gibbs (1983) suggesting that one important factor for progress is that the child, during the interaction, elaborates on or extends the other participant's statements; partly to the theory proposed by Howe et al (2005) that interaction in some way prime children to later use and respond to subsequent events. However this is something that needs to be explored in more detail in future studies.

4.4 Limitations and future directions

There were a few limitations with the study, which ought to be considered. When coding the conversations for the justification categories it was noted that the moral justifications were somewhat problematic. There were a number of participants who made statements of the type “I think he should stay in his room, it’s more fair”, which can be ambiguous. With these forms of statements it is not clear whether the speaker uses them as mere assertions, since the issue of fairness is addressed in the question, or whether these should be regarded as belonging to a moral category, since by expressing him/herself in this way the speaker might also be referring to a moral rule or principle as he/she refers to the aspect of justice in the statement. In a future study statements of this type should probably be coded to the category of assertion justifications, as it is impossible to know the underlying intentions of the speaker in these cases.

For future research it would be of interest to see whether the results obtained here can be generalised to interaction between children of various ethnical backgrounds or to cultures other than the western. Further research is also needed to establish whether the effects of gender on conversation dynamics might in some way influence the stimulating effects of interaction for learning and cognitive development.

Another objective for future research would be to try to further uncover exactly what features of interaction stimulate cognitive development in general and moral development in particular.

5 Conclusions

The study has shown that, among children aged about nine years, gender does have some impact upon conversation. It was noted that boys and girls in some ways do adopt different conversational styles, where boys use more overlaps and negative interruptions than girls, and girls are generally more talkative than boys. The exception were the results for psychosocial processes, where no differences with regard to gender were found. Regarding the proportionate use of the different types of justifications, only one category, assertion justifications, was related to gender, with the boys using these types of arguments significantly more than girls. Since gender differences were often more pronounced in the same-gender as opposed to the mixed-gender pairs, but the children also altered their behaviour to accommodate to the gender of their conversational partner, the study provide partial support for both the two-cultures and the status-characteristics accounts. The study also demonstrated the stimulating effects of interaction on cognitive development, as the children who participated in discussion overall gave more reciprocal replies to the four stimulus stories eight weeks after interaction than those who did not.

Although gender differences with regard to conversational style were found, and these seemed to affect the conversation dynamics in the different pair types the use of expiatory force justifications was the only feature of the conversations that was related to outcome and to the children's individual replies two weeks after interaction. This implies that even though a child's gender has a strong impact upon the conversation that emerge, this might not affect the outcomes of conversation or have any longer-term consequences on cognitive development, while the types of arguments used might be more important. However, these are results from one study only, limited to one particular context – it is plausible that in other settings with other types of tasks, gender, or other forms of status-relations, might actually affect long-term cognitive change, as the results from Psaltis and Duveen's (2006) study suggest.

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7 Appendix

7.1 Appendix 1. The Stories

Story A

Late one afternoon there was a boy who was playing with a ball on his own in the garden. His dad saw him playing with it and asked him not to play with it so near to the house because it might break a window. The boy didn't really listen to his dad, and carried on playing near the house. Then suddenly, the ball bounced up high and broke the window in the boy's room. His dad heard the noise and came out to see what had happened.

The father wonders what would be the fairest way to punish the boy. He thinks of two punishments.

The first is to say: "Now, you didn't do as I asked. You will have to pay for the window to be mended, and I am going to take the money from your pocket money." [RECIPROCITY]

The second is to say: "Now, you didn't do as I asked. As a punishment you have to go to your room and stay there for the rest of the evening". [EXPIATORY]

Which of these punishments do you think is the fairest?

Story B

Sarah had been talking at school when a teacher had told all the children in the class to be quiet. Her teacher had told her off. When she went home her mum asked her if she had been good at school that day. Because Sarah didn't want her mum to find out that she had been told off, she said that she had been very good. But the next day Sarah's mum sees the teacher, and the teacher tells her mum that she had told Sarah off the day before.

Sarah's mum is very cross about the lie, and wonders what would be the fairest punishment. She thinks of two punishments.

The first is to say to the girl: "You told me a lie. Now I am going to tell you a lie and you can see how it feels." The next day the mum comes back from the shops. The girl sees that she has bought some ice cream and asks her mum if she can have one. But her mum says, "No, I don't have any ice cream." [RECIPROCITY]

The second is to say to the girl: "You told me a lie. Now I am going to take away one of your toys and you cannot have it back for three days until you have learnt not to lie again." [EXPIATORY]

Which of these punishments do you think is the fairest?

Story C

A boy was playing on a slide in the garden with his little brother, and wouldn't let his brother have a turn. The little brother got very upset and started to cry. The boys' dad

saw this and decided he needed to punish the older boy. He thinks of two punishments.

The first is to say: “You wouldn’t let your little brother have a turn. Now, I’m going to let your little brother have two turns, and you will miss a turn” [RECIPROCITY]

The second is to say: “You wouldn’t let your little brother have a turn. Now, I’m going to take away one of your favourite toys until you learn to play properly” [EXPIATORY]

Which of these punishments do you think is the fairest?

Story D

A girl was playing with her little sister’s things and wasn’t being careful. She broke her little sister’s favourite doll. Her mum finds out what has happened and thinks of two ways to punish her.

The first is to say to the girl: “You broke your sister’s doll, so now you must go and buy her another one from your own money” [RECIPROCITY]

The second is to say: “You broke your sister’s doll, so now you are not allowed to go and play at your friend’s house.” [EXPIATORY]

Which of these punishments do you think is the fairest?

7.2 Appendix 2. The booklet depicting the stories

Research Questionnaire - MRPart1

British Academy study into children's conversations

If you have understood what you have been asked to do, and if you are happy to answer these questions, please put a tick in this box:

Please write your answers in these boxes:

Your school

Your class

Your name

Your date of birth

Are you a boy?

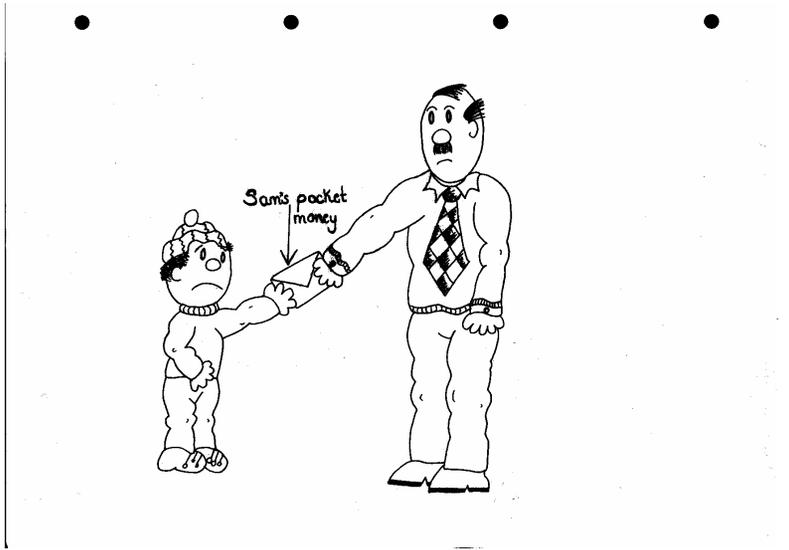
Or are you a girl?

Please wait. Do not turn over the page.

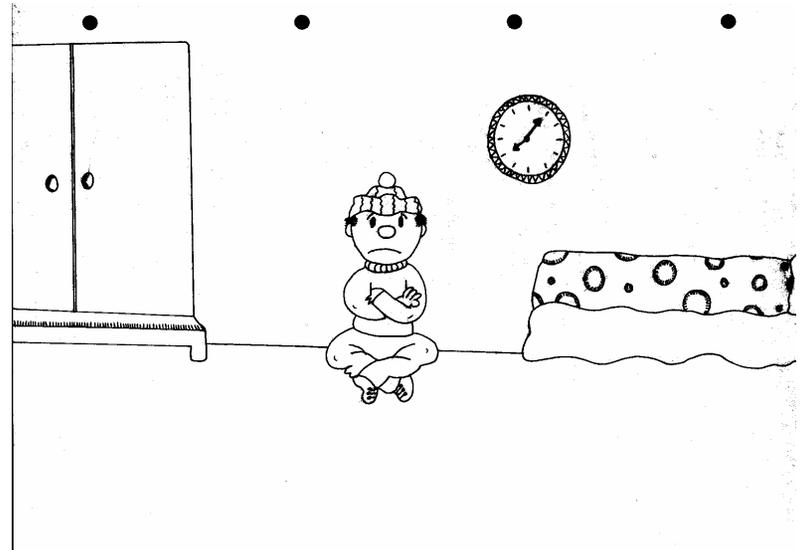
In a moment you will be told some short stories. When you have heard each story you will be asked to tick one of the pictures to show your answer on each page.

STORY A: The broken window
Which of these punishments do you think is the fairest?

To pay for the window to be mended



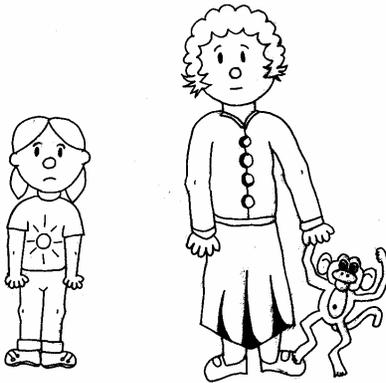
To stay in his room



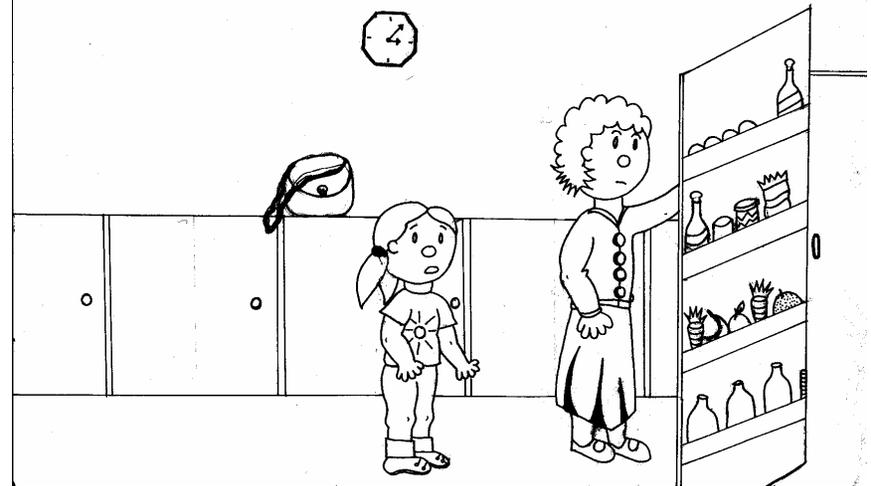
STORY B: Sarah's lie

Which of these punishments do you think is the fairest?

To take a toy away

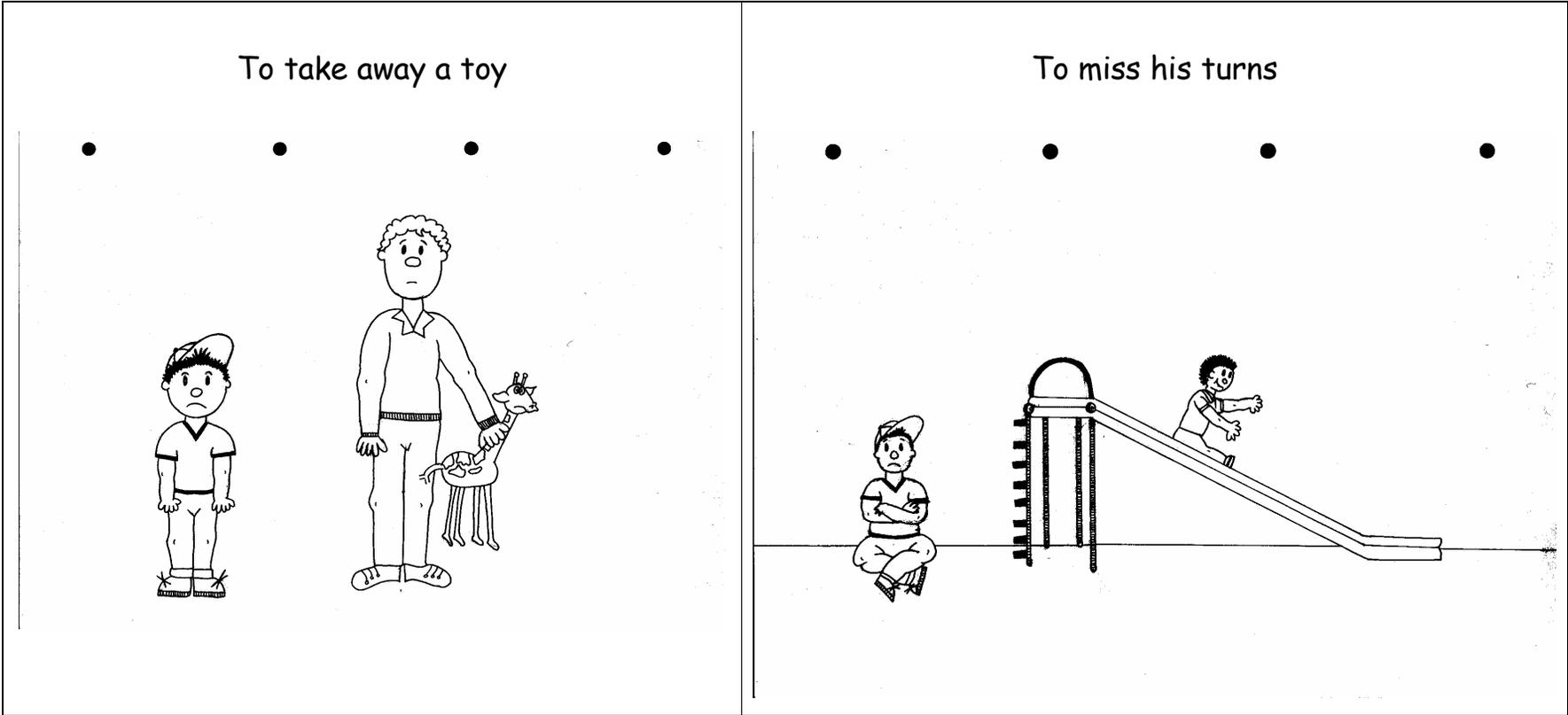


Not to believe her in the future



STORY C: Not taking turns

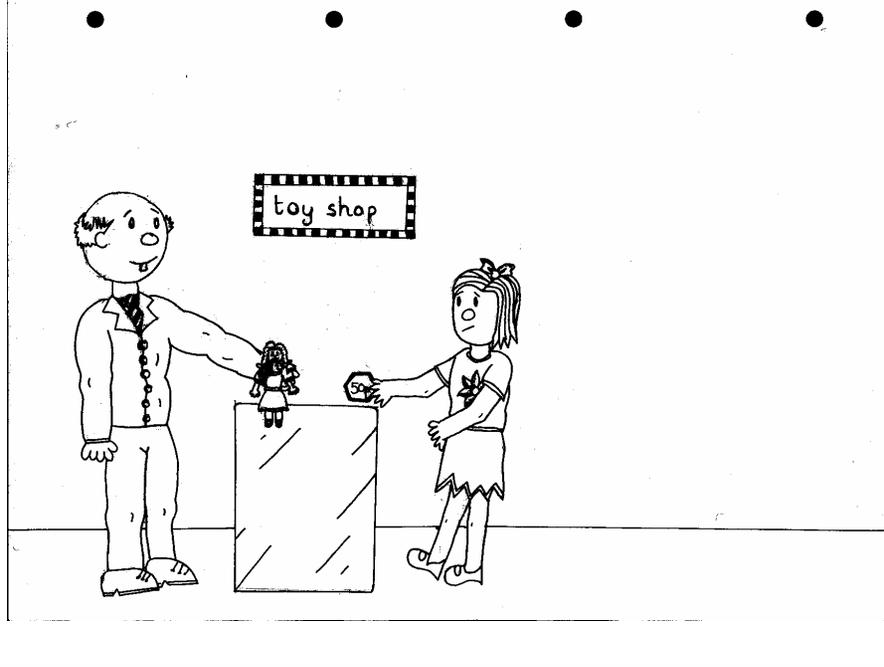
Which of these punishments do you think is the fairest?



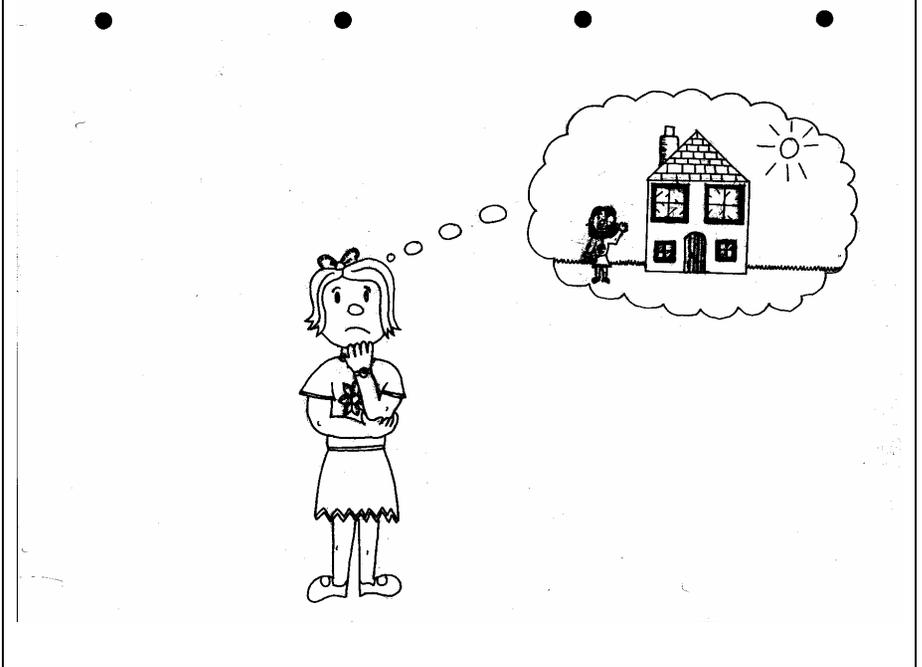
STORY D: The broken doll

Which of these punishments do you think is the fairest?

To buy another doll with her own money



Not to be allowed to play at her friend's house



Thank you very much for answering these questions!

7.3 Appendix 3. Psychosocial Processes Rating Scale

Personal Assertion Scale		Interpersonal Affiliation Scale	
1 Highly Non-Direct	<ul style="list-style-type: none"> • Sitting passively • Withdrawing • Clinging 	1 Highly distant	<ul style="list-style-type: none"> • Anger, hostility • Active resistance, rejection • Strong disagreement • Preoccupation with self/task without regard to the other
2 Moderately Non-Direct	<ul style="list-style-type: none"> • Following other's orders or suggestions • Repeating other 	2 Moderately distant	<ul style="list-style-type: none"> • Slight resistance • Mild disagreement
3 Slightly Non-Direct	<ul style="list-style-type: none"> • Minimal acknowledgement of other's contribution • Backing away from previous position • Obliging/going along without adding 	3 Slightly distant	<ul style="list-style-type: none"> • Close-ended response to other's query
4 Maintain	<ul style="list-style-type: none"> • Perpetuating one's existing influence without moving things in a new direction • Continuing to play with objects in a similar way • Commenting about own ongoing behavior 	4 Available/Permitting	<ul style="list-style-type: none"> • Eye-gaze towards other but no participating in other's activity • Independent activity with apparent shared awareness • Minimal acknowledgement of other's comment/contribution • Giving appropriate response to other's initiation

5 Slightly Assertive	<ul style="list-style-type: none"> • Most spontaneous informing comments • Task-oriented questions • Mild disagreement 	5 Slightly interdependent/approaching	<ul style="list-style-type: none"> • Descriptive comments or explanations • Asking factual questions • Asking task-oriented questions • Elaborated acknowledgement of other • Elaborated answers • Directing other's activity in guiding manner
6 Moderately Assertive	<ul style="list-style-type: none"> • Suggestion or proposal for new initiative • Reassurance • Building on the other's activity in a new way • Adding to situation in response to other's initiative 	6 Moderately interdependent	<ul style="list-style-type: none"> • Asking for other's opinion or wish • Suggestion for shared activity
7 Highly Assertive	<ul style="list-style-type: none"> • Expressing wishes or desires • Command or demand • Aggression or rejection • Strong disagreement • Praise 	7 Highly Interdependent/Joining	<ul style="list-style-type: none"> • Interdependent cooperative activity • Praise or reassurance • Shared amusement or laughter

Leaper 2000, 2006

7.4 Appendix 4. Transcription Conventions

The transcription conventions are taken from Levinson (1983).

//	point at which the current utterance is overlapped by that transcribed below
(0.0)	pauses or gaps
::	lengthened syllables
-	glottal stop, self-editing marker
= =	latched utterances, with no gap
()	uncertain passage of transcript

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Sammanfattning <p>This thesis aimed partly to examine the effects of gender on conversation dynamics, partly to investigate whether interaction between participants with contrasting opinions promotes cognitive development on a moral task. Another objective was to explore whether particular conversational features of interaction would have any impact upon a pair's joint response or on each child's moral development. The conversations were coded with regard to simultaneous speech acts, psychosocial behaviour and types of justifications used. The results show no gender differences regarding psychosocial processes, but the boys used more negative interruptions, more overlaps and significantly proportionately more justifications in the form of assertions than the girls in the study. Gender differences were often more pronounced in same-gender as opposed to mixed-gender pairs, but children also altered their behaviour to accommodate to the gender of their conversational partner. Children who participated in the interaction phase of the study showed more overall progress on an eight-weeks delayed post-test than those who did not. However the only conversational feature that was related to the outcomes of conversation and development was the use of expiatory force justifications which were associated with a more advanced reply immediately after interaction as well as two weeks later.</p>
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Nyckelord Gender, Cognitive Development, Moral Reasoning, Conversation Dynamics, Social Interaction
