Growing up together

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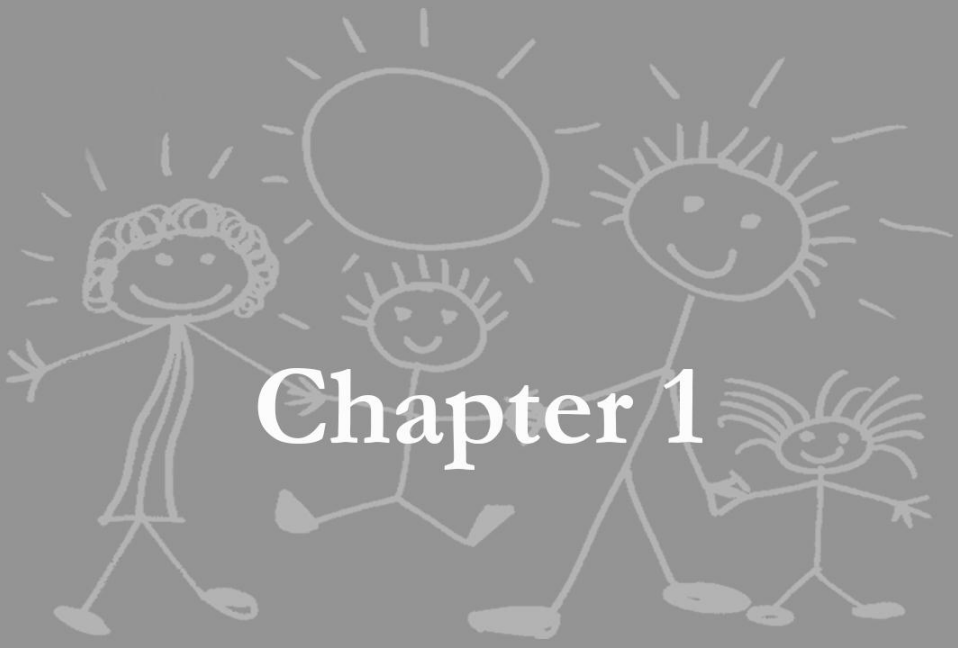
TABLE OF CONTENTS



Chapter 1

General Introduction

Relationships between siblings are unique in that siblings share the same family and have shared experiences both within and outside the family. Most children are raised in families with at least one brother or sister (Centraal Bureau voor de Statistiek [CBS], 2003; Volling, 2012) and siblings relations are the most long-lasting and enduring relationships of an individual. Due to the unique relation between siblings and the large amount of time they spend together, siblings may influence each other's socio-emotional development (Cassidy, Fineberg, Brown, & Perkins, 2005; Van Lange, Otten, De Bruin, & Joireman, 1997). These influences can be direct, as a consequence of siblings' numerous daily interactions, and indirect, through processes in which siblings influence parenting (Brody, 2004; McHale, Updegraff, & Whiteman, 2012).

To understand the development of an individual child within a family it is essential to investigate the mutual influence of siblings and their effect on parent-child interactions. In this dissertation, firstborns' interactions with their second-born sibling and parenting influences are examined in relation to socio-emotional development.

Siblings' Direct Influences

Interactions between siblings differ from parent-child interactions in that they are more equal, while parent-child interactions are primarily hierarchical. Parents provide different learning environments than siblings and have fewer conflicts with the child compared to siblings (Youngblade & Dunn, 1995). During play for example, parents more often observe and provide comments on a child's play instead of joining in and collaborating on the same level as the child. Sibling interaction may contribute to both cognitive and socio-emotional development (Tucker & Updegraff, 2009). For later-born children, interactions with siblings are their first experiences with interactions and relations with an individual similar in status, which offers them the opportunity to practice social behaviors and provides a training ground for later relations with peers (Howe, Rinaldi, Jennings, & Petrakos, 2002). In addition, these interactions provide opportunities for children to imitate the behavior of their siblings, which in turn helps them to acquire new skills (Barr & Hayne, 2003).

Interactions between siblings typically take place during play and sibling conflict (Howe & Recchia, 2005). During play and pretend play siblings learn to collaborate and to use internal state references (references

towards thoughts, feelings, and desires) when negotiating the rules of their play (Howe, Petrakos, Rinaldi, & LeFebvre, 2005). During sibling conflict children practice resolution strategies and learn to use various arguments to persuade others (Howe et al., 2002; Ross, 1996). When conflicts occur within a positive sibling relation they are related to the development of understanding others' perspective and emotions, and problem solving skills (Howe et al., 2002; Ram & Ross, 2001). Conflicts within positive sibling relations often end with constructive resolutions, such as compromises or collaboration, and satisfying outcomes for both parties (Howe et al., 2002). Conflicts within more negative sibling relations, on the other hand, are characterized by destructive conflict strategies, such as coercion and (physical) aggression (Recchia, & Howe, 2009). Furthermore, during adolescence, destructive conflicts have been related to more aggression and antisocial behavior, interactions with antisocial peers and more difficulties with peer relations (Bank, Burraston, & Snyder, 2004; Criss & Shaw, 2005; Garcia, Shaw, Winslow, & Yaggi, 2000).

Apart from interactions emphasizing siblings' equality, older siblings may take the lead and teach new skills to or help their younger siblings, as a consequence of having more knowledge compared to their younger siblings (Howe & Recchia, 2005). Such more hierarchical interactions between siblings are related to socio-emotional and cognitive development in both older and younger siblings (Azmitia, & Hesser, 1993; Howe & Recchia, 2005; Howe, Recchia, Della Porta, & Funamoto, 2012). Older siblings may profit from teaching their younger siblings because they have to organize their knowledge before giving instructions and explanations, and they have to adapt their instructions to the developmental level of their younger siblings (Howe et al., 2012; Smith, 1993). Indeed, children who frequently teach their younger siblings have better language skills, higher school achievement (Smith, 1990,1993), and a better understanding of other's perspectives and emotions than both singletons and children who did not teach their younger siblings (Howe et al, 2012). In addition, taking care of a younger sibling or comforting a distressed younger sibling has been related to a better understanding of others' emotions and perspectives (Garner, Jones, & Palmer, 1994). Younger siblings learn new skills from their older siblings and, when guided by their siblings, they are able to complete more difficult tasks. When interacting with older siblings, children are active learners and as a result gain more from the

guidance of older siblings than from guidance of peers (Azmitia & Hesser, 1993).

Older and younger siblings' behaviors during teaching interactions are related to the quality of interactions during play. When play interactions are positive older siblings ask more questions and give more physical demonstrations and younger siblings are more involved learners (Howe & Recchia, 2005, 2009). As a result siblings may learn more from each other when they have more positive interactions. Finally, older siblings can provide younger siblings with a buffer against negative effects of stressful life events. Younger siblings who experience emotional support from an older sibling after experiencing negative life events show less internalizing problems than children without a supportive sibling relation (Gass, Jenkins, & Dunn, 2007). Moreover, when children are adopted together with a sibling, both children show fewer behavioral problems than children who are adopted without their siblings (Boer, Versluis-den Bieman, & Verhulst, 1994). In addition, older siblings who take care or feel responsible for a younger sibling may also develop better social skills (Boer, 2012). In conclusion, siblings may influence each other during interactions in which they have equivalent roles or in which the older sibling takes the lead, which stimulate social development of both siblings.

Siblings' Indirect Influences

In addition to direct influences, siblings can also indirectly influence each other through their influence on parenting. Parents may learn from their experiences with their firstborn child, which may lead to more effective parenting of second-born children. Indeed parents have been found to display more warmth towards and have less conflicts with their second-born adolescents compared to their firstborn adolescents, as a consequence of having more realistic ideas about behavioral changes during adolescence (Shanahan, McHale, Crouter, & Osgood, 2007; Whiteman, McHale, & Crouter, 2003). Regarding early childhood however several studies found that parents show more sensitivity towards their firstborn than towards their second-born child (Furman & Lanthier, 2002; Van IJzendoorn et al., 2000). Moreover, research on differences in parental stress after the birth of a child indicates that second-time mothers experience similar or higher levels of stress than first-time mothers (Krieg, 2007; Wilkinson, 1995). Although

second-time parents are more experienced in parenting one child, they are inexperienced in parenting two children and the associated challenges (Krieg, 2007). Studies on how these elevated levels of stress may influence parenting and on parents' learning experiences with younger children are lacking, and it remains unclear whether parenting of younger children becomes more effective with a second-born child or whether it is more difficult given that parents have to divide their attention between two children (Krieg, 2007; Whiteman, Becerra, & Killoren, 2009). In addition, parents develop expectations concerning their second-born child based on their experiences with their firstborn child, which influences their responses to a second-born child (Whiteman & Buchanan, 2002).

Furthermore, due to the presence of a sibling, children experience parenting directed towards another child, which may influence their behavior and their socio-emotional development as well (Fearon et al., 2006; Feinberg & Hetherington, 2001). This is in line with family-system theories that state that apart from the mutual influence of family members during dyadic interactions, all dyads within a family (mother-child, father-child, and sibling-child) influence each other (Minuchin, 1985; Volling, Kolak, & Blandon, 2009). Negative interactions between a parent and a sibling could thus influence parent-child interactions and the other way round. Research on relationships between family members during early and middle childhood, provide evidence for bidirectional influences of the quality of the parent-child relationship and quality of the sibling relationship (Boer, Goedhart, & Treffers, 1992; Criss & Shaw, 2005; Erel, Margolin, & John, 1998). Especially hostility and coercion are sensitive for a spill-over effect between parent-child and sibling relations (Criss & Shaw, 2005; Erel et al., 1998).

In addition, growing up with siblings enables children to compare the parenting they receive with the parenting their siblings receive. When parents treat children differently from their siblings, social comparison between siblings may lead to jealousy and rivalry over the love and attention of parents (Volling, Kennedy, & Jackey, 2010). Differential parenting has been related to more behavioral problems, such as more hyperactivity, less prosocial behavior, and more conduct problems in the less favored child (Asbury, Dunn, Pike, & Plomin, 2003; Caspi et al., 2004; Mullineaux, Deater-Deckard, Petrill, & Thompson, 2009). In addition, differential parenting has also been related to more internalizing problems (Lindhout, Boer, Markus, Hoogendijk,

Maingay, & Borst, 2003). Moreover, differential parenting has been found to have a system-wide effect in that it affects all children in the family negatively, irrespective of whether they are being favored or not (Boer et al., 1992; Meunier, Boyle, O'Connor, & Jenkins, 2013). This system-wide effect could be due to increased competition between siblings over parental resources, resulting in negative sibling relations, and possible fear over losing the "favored" position (Kowal, Krull, & Kramer, 2006; Meunier et al., 2013; Shanahan, McHale, Crouter, & Osgood, 2008). However, the negative effect of differential parenting partly depends on the perceived fairness of the differential treatment by the children (Kowal, Kramer, Krull, & Crick, 2002). Moreover, small differences in parenting between siblings can be adaptive when this is in line with differences between children in age or temperament (Meunier, Bisceglia, & Jenkins, 2012).

Birth order and sibling gender configuration

There are several structural features of sibling dyads that can explain differences in how siblings both directly and indirectly influence each other, such as birth order and sibling gender configuration (Steelman, Powell, Werum, & Carter, 2002). Results concerning the effect of these structural characteristics on child development are mixed (e.g. Cassidy et al, 2005; Dunn, Deater-Deckard, & Pickering, 1999; Klein & Zarur, 2002; Peterson & Slaughter, 2003) and various theories provide different explanations of whether and how birth order and sibling gender configuration could affect direct and indirect sibling influences.

Siblings might directly influence each other through imitation or de-identification. The effect of these processes on child development may depend on birth order and sibling gender configuration. Imitation of behavior is, as proposed by the social cognitive learning theory (Bussey & Bandura, 1999), important for social development. Especially later-born children imitate their older siblings and as a result may acquire social skills at a younger age than firstborn children (Barr & Hayne, 2003). In addition, from the age of three years children have a preference for interacting with and imitating behaviors of individuals of their own gender (Bussy & Bandura, 1999; Serbin, Moller, Gulko, Powlishta, & Colburne, 1994). This may lead to more imitation of behavior between same-sex siblings compared to mixed-sex siblings.

In contrast to imitation, sibling de-identification is the tendency of siblings to (un)consciously develop different behaviors and different qualities to avoid direct competition and social comparison (Whiteman et al., 2009). The family niche model (Sulloway, 1996, 2001) argues that de-identification leads to differences between siblings, because second-born children need to differentiate their behavior from their firstborn siblings to receive an equal amount of attention from their parents. Given that differentiation from a sibling to avoid social comparison is more important for sibling dyads that are more similar (Whiteman et al., 2009), same-sex siblings may try to differentiate their behaviors to a greater extent than mixed-sex dyads.

Birth order and sibling gender configuration may also affect siblings' indirect influences, including parental investment and differential parenting. Parental resources such as attention and time spent with parents are limited. As a consequence a larger number of children in a family results in a decline in parental resources each individual child receives. The resource dilution model (Blake, 1981) and evolutionary theories (Trivers, 1974) presume that parents will (unconsciously) not equally invest in all their children, and that it may be adaptive to invest more in children that increase their fitness. Firstborns would then have an advantage over second-born children, because they experienced a period in which they were the only child and received all parental resources. In addition, given that firstborn children have survived for a longer period of time than their younger siblings, they have a greater chance to reach reproductive maturity (Sulloway, 1996), and would thus receive more parental investment.

In addition to birth order, sibling gender configuration has been found to influence parental investment, especially of fathers, with boys receiving more time with their parent, money, and parental care than girls (Raley & Bianchi, 2006). In addition, parents may treat their sons and daughter differently as a result of their ideas concerning traditional gender roles and characteristics associated with these roles (Eagly, 2009; Eagly, Wood, & Diekman, 2000). This gender-differentiated parenting may result in parents stimulating nurturing behavior more often in girls than in boys, while stimulating assertive and guiding behaviors more often in boys (Hastings, Utendale, & Sullivan, 2007). Both gender-differentiated investment and gender-differentiated parenting may lead to more differential parenting in

families with mixed-sex siblings than with same-sex siblings, leading to more social comparison in mixed-sex siblings (Meunier et al., 2013).

Sibling influences may thus be different for firstborn and later-born children and may vary with sibling gender configuration. However, the theories describing how siblings influence each other and how this is related to structural characteristics of the sibling dyad are contradictory and research on the influence of these characteristics shows mixed results, which makes it difficult to draw firm conclusions on how these characteristics influence child development (Whiteman & Buchanan, 2002).

Within-family versus between-family design

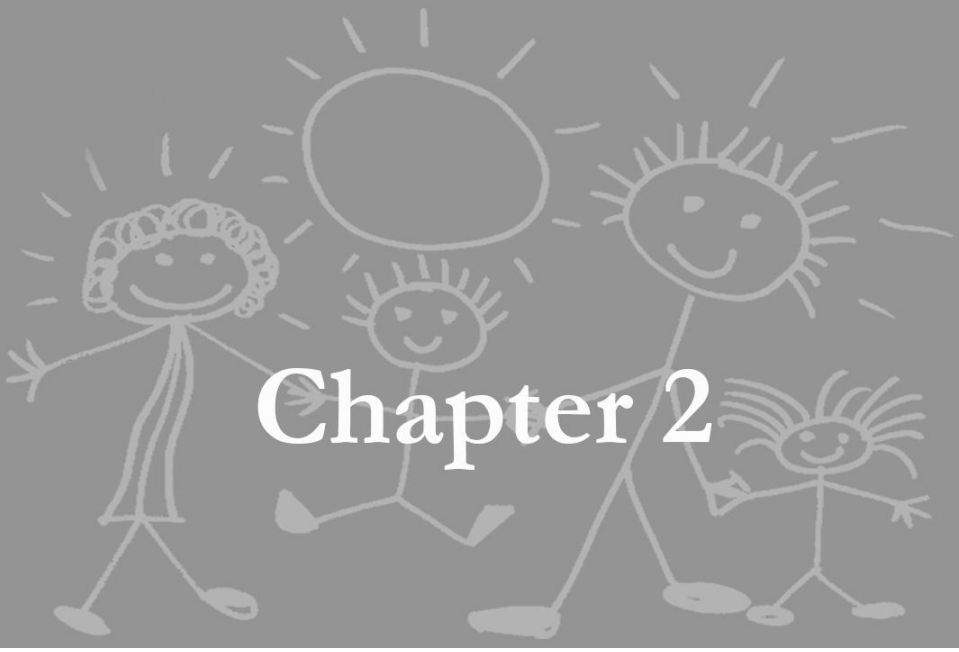
Although differences in development between siblings is a within-family factor, many studies concerning sibling influences, especially studies investigating birth order, use cross-sectional between-family designs comparing singletons with firstborn and second-born children from different families (Rogers, 2001; Whiteman et al., 2003). By using cross-sectional data, within-family processes can only be estimated instead of truly observed. Previous research has shown that results of between-family studies do not always match with those of within-family studies. As an example, birth-order effects on intelligence with firstborns outperforming second-born children have been found repeatedly in between-family studies, whereas within-family studies show a less consistent pattern (Rodgers, Cleveland, Van den Oord, & Rowe, 2000). This indicates that other process, namely differences between families, influence the results of between-family research (Rogers, 2001). Adopting a within-family approach offers other challenges when comparing siblings, namely distinguishing age from birth order effects. To address these issues, this study uses a longitudinal within-family design, in which social development of firstborn and second-born children from the same family can be observed at the same age.

Aim and outline of the dissertation

The overall aim of the studies presented in this dissertation is to address the gap in family research concerning the role of siblings in children's social development. Firstborns' interactions with their younger sibling and parenting towards all children in the family are investigated in a four-year longitudinal

study following families with two children from the first birthday of the youngest child.

In Chapter 2 the prediction of individual differences in sharing with a younger sibling by family and situational factors was investigated. In Chapter 3 the association between parental sensitivity towards both children and compliance and sharing behavior of the firstborn child was investigated. Chapter 4 focuses on sibling discipline and sibling support during parental limit-setting, and associations with inhibitory control, empathy, and gender. Finally, the effect of birth order on toddlers' social development was examined with a longitudinal within-family design in Chapter 5.



Chapter 2

To Share or Not to Share: Parental, Sibling, and Situational Influences on Sharing with a Younger Sibling

Sheila R. van Berkel, Lotte D. van der Pol, Marleen G. Groeneveld, Joyce J. Endendijk, Elizabeth T. Hallers-Haalboom, Judi Mesman, and Marian J. Bakermans-Kranenburg

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ABSTRACT

Sharing is an important indicator of internalized prosocial values. We examined predictors of sharing of 302 preschoolers with their younger siblings in a one-year longitudinal study. Sharing was observed during different home visits, once with father and once with mother. We examined the following predictors: both children's externalizing behavior, observed parental sensitivity, and situational factors. Preschoolers' sharing was stable and increased with age. Preschoolers shared more when sharing was preceded by a structured interaction with a parent compared to free play with an unfamiliar adult. At age 4 they shared more in fathers' presence than in mothers' presence. Parental sensitivity nor child behavior were related to sharing. These findings demonstrate stability and the importance of situational factors in the development of prosocial behavior.

Keywords: prosocial development, siblings, sensitivity, sharing, externalizing behavior

INTRODUCTION

Children with siblings experience what it means to share from an early age (Hastings, Utendale, & Sullivan, 2007). Several studies have shown a stable positive relation between prosocial behaviors of siblings (Abramovitch, Corter, Pepler, & Stanhope, 1986; Dunn & Munn, 1986), which can only partly be explained by genetic influences on prosocial behavior as half of the variance in prosocial behavior has been related to non-shared environmental factors (Knafo, Israel, & Ebsteina, 2011). In this study we examined preschoolers' sharing behavior with their younger siblings and its predictors, including child characteristics, parenting behavior of both parents, and situational factors.

Prosocial behavior comprises several different behaviors like helping, sharing, and comforting. Sharing is an important indicator of internalized prosocial values (e.g., Knafo & Plomin, 2006). Variations in the development of sharing behavior have often been related to parenting practices (e.g., Hastings, Utendale et al., 2007; Van IJzendoorn, 1997). Positive parenting behaviors such as maternal warmth and sensitivity are associated with more prosocial behavior including sharing in children (e.g., Kiang, Moreno, & Robinson, 2004; Knafo & Plomin, 2006). The imitation of other-orientated behavior of parents is fundamental for the internalization of social values in children. Especially inductive reasoning and parental warmth are important factors contributing to the internalization of prosocial behavior (Hastings, Utendale et al., 2007). However, several studies have indicated that parenting practices explain only a modest part of the variance in child prosocial behavior (Koenig, Cicchetti, & Rogosch, 2004; Van IJzendoorn, Bakermans-Kranenburg, Pannebakker, & Out, 2010). Instead, prosocial behavior may be influenced primarily by situational factors that vary from one situation to another. For example, individuals have been found to show more prosocial behavior when they are being observed, because of a desire for approval and the expectancy that 'good' behavior will be rewarded by the observer (Van Rompay et al., 2009). In addition, preschoolers were found to share more generously when they were observed by the peer recipient (Leimgruber, Shaw, Santos, & Olson, 2012). Even the presence of images of observing eyes appears to increase prosocial behavior (Powell, Roberts, & Nettle, 2012). This suggests that the presence of a parent observing the child's sharing behavior, even without the parent's explicit interference and irrespective of parental

sensitivity, could influence the child's tendency to share. For example, the child's previous experiences of being rewarded for sharing by that parent might influence the level of sharing when being observed by the parent. The effects of parental presence may be different for mothers versus fathers. Mothers praise their children more often in general and stimulate their children to show prosocial behavior more than fathers do (Hastings, McShane, Parker, & Ladha, 2007; Julian, McKenry, & McKelvey, 1994). It follows then that effects of the mother's presence on sibling sharing may also be more pronounced than that of father's presence. Nevertheless there is some evidence that parental presence is not related to helping a stranger in 2-year-olds (Warneken & Tomasello, 2013). Reluctance to help or comfort a stranger in young children could be due to the unnaturalistic setting and fear of strangers (Young, Fox, & Zahn–Waxler, 1999), both of which are not relevant to sibling sharing in the home environment. In addition, other situational factors have proven to influence prosocial behavior, including the social context in that individuals act more prosocially when there are others who act prosocially, and the individual's mood such that a positive mood is related to more prosocial behavior (Isen, 1987; Van IJzendoorn et al., 2010).

In addition to external factors like parenting and the situational aspects, internal factors such as child characteristics of both siblings influence sharing (e.g., Knafo & Plomin, 2006). For example, gender of both siblings may be relevant, because girls tend to be more prosocial towards their younger sisters than towards their younger brothers (e.g. Kier & Lewis, 1998). One other important child characteristic that might influence sharing is externalizing behavior, which is characterized by a lack of behavioral control and self-regulation, and is negatively associated with prosocial behavior in interaction with peers (Hastings, Zahn-Waxler, Robinson, Usher, & Bridges, 2000; Pursell, Laursen, Rubin, Booth-LaForce, & Rose-Krasnor, 2008). Moreover, externalizing behavior is related to less sibling warmth and intimacy and more conflicts between siblings (Kramer, 2010). The amount of sharing children experience depends on the prosocial skills of their sibling as well as on their own prosocial skills (Dunn, Slomkowski, & Beardsall, 1994). Thus, externalizing behavior of both siblings may be negatively related to sharing.

Most studies investigating predictors of prosocial behavior are cross-sectional and focus on either situational factors or parenting (Knafo &

Plomin, 2006; Koenig et al., 2004; Leimgruber et al., 2012). Combining these factors in one study would provide more information on the relation between parenting and prosocial behavior over and above situational factors. In the current study we investigated situational, child and parenting factors, in relation to child sharing behavior in a longitudinal design. This design makes it possible to examine the unique effects of each factor and to explore changes over time.

The aim of the current study is to examine the development of sharing behavior of preschoolers with their younger sibling. In addition, we investigate predictors of sharing, including sibling characteristics (gender, externalizing behavior), parental sensitivity, and situational factors (gender of parent present, preceding task). Our hypotheses are: (1) Preschoolers' sharing behavior increases with age, while individual differences in sharing remain stable over time; (2) Externalizing behaviors of the sharer and the receiver are related to less sharing; (3) Preschoolers' sharing behavior is more influenced by situational factors than by parental sensitivity; (4) Preschoolers share more in the presence of their mothers than in the presence of their fathers.

METHOD

Sample

This study is part of the longitudinal study *Boys will be Boys?* examining the influence of gender-differentiated socialization on the socio-emotional development of boys and girls in the first four years of life, including both fathers and mothers. This paper reports on data from the first two waves.

Families with two children in the Western region of the Netherlands were eligible for participation. They were selected from municipality records. Families could be included if the second born child was 12 months of age at the time of recruitment and the first born child was around two years older. Exclusion criteria were single parenthood, severe physical or intellectual handicaps of parent or child, and being born outside the Netherlands and/or not speaking the Dutch language. Between April 2010 and May 2011 eligible families were invited by mail to participate and 31% (n = 390) of the 1,249 families agreed to participate. The participating families did not differ from the non-participating families in age, educational level of both parents, or degree of urbanization of the place of residence. In the second wave five families did not participate as a result of moving out of the Netherlands,

family problems, or because families considered further participation as too much of a burden. For the current paper, families were excluded (1) if neither parent had completed the CBCL in both waves (n = 10), (2) if a parent interfered in the sharing task or if the children refused to participate during this task (n = 59), and (3) if a family had more than one missing value on the main variables in one of the two waves (n = 19). These exclusion criteria resulted in a final sample of 302 families. More information about both the computer task and the sharing task is provided in the Measures section. The included families did not differ from the excluded families in any of the background variables (all ps >.21). The distribution of family constellations was as follows: 81 boy-boy (27%), 68 girl-girl (23%), 77 boy-girl (25%), and 76 girl-boy (25%).

At the time of the first visit at Wave 1 preschoolers were between 2.5 and 3.6 years old (M = 3.0, SD = 0.3) and their younger siblings were, on average, 12.0 months old (SD = 0.2). In the second wave, preschoolers were between 3.3 and 4.6 years of age (M = 4.0, SD = 0.3) and their younger siblings were 24.1 months old (SD = 0.3). At Wave 1 mothers were aged between 25 and 46 years (M = 34.0, SD = 3.8) and fathers were between 26 and 63 years of age (M = 36.7, SD = 5.1). At Wave 1 most participating parents were married or had a cohabitation agreement or registered partnership (93%), and the remaining 7% lived together without any kind of registered agreement. With regard to educational level, most mothers (81%) and fathers (77%) had a high educational level (academic or higher vocational schooling). At the time of Wave 2 a third child had been born in 31 (10%) of the families and parents of one family were divorced. Analyses with and without these families yielded similar results, so these families were retained in the current data set.

Procedure

Each family was visited twice at every wave, once for observation of the mother and the two children and once for observation of the father and the two children, within about two weeks after the younger sibling's birthday. The order of father and mother visits was counterbalanced. Families received a gift of 30 Euros after two visits and small presents for the children. Before each home-visit both parents were asked to individually complete a set of questionnaires. During the home-visits parent-child interactions and sibling

interactions were filmed, and children and parents completed computer tasks. All visits were conducted by pairs of trained graduate or undergraduate students. Informed consent was obtained from all participating families. Ethical approval for this research was provided by the Research Ethics Committee of the Institute of Education and Child Studies of Leiden University.

Measures

Sharing. Preschoolers received a small box of raisins (a common children's treat in the Netherlands) and were instructed by the experimenter to share these with their younger siblings. The sharing task was administered during both the father and mother visits. During the first minute of the task, the parent was present but was instructed not to interfere with the task and not to encourage the preschooler. After one minute parents were free to interfere if they considered this necessary. The task was filmed and the number of treats shared with the younger sibling during the first minute (i.e. without verbal or nonverbal interference or encouragement of the parent) was counted. Treats shared with or by the parent were not counted; when a preschooler took treats back from the younger sibling these were subtracted from the total number of shared treats. Parents within the same family were coded by different coders to guarantee independency among ratings. Interobserver reliability was adequate; the intraclass correlations (single rater, absolute agreement) between all pairs of seven independent coders were all above .70. Both coders and experimenters were blind for the hypotheses of this study.

Parental Sensitivity. Each dyad received a bag with toys and was invited to play with the toys for eight minutes. In Wave 1 this free play situation was the first and in Wave 2 the second observed parent-child interaction of the visit. The Sensitivity scale from the fourth edition of the Emotional Availability Scales (EAS; Biringen, 2008) was used to measure parental sensitivity during free play. The scale is divided into seven subscales; the first two subscales are coded on a 7-point Likert scale and the other subscales are coded using a 3-point Likert scale. The sixth author, who is an experienced coder of parent-child interactions, completed the online training provided by Zeneyp Biringen and then trained a team of coders.

During the team training some alterations were made to improve intercoder agreement, for more information about these alterations see Hallers-Haalboom et al. (2014). Fathers and mothers of the same family were coded by different coders to guarantee independency among ratings. Moreover, sensitivity and sharing behavior were coded by different coders. Intraclass correlations (single rater, absolute agreement) for all pairs of the seven coders were higher than .70 (n = 60). During the coding process, the first 100 videotapes were coded independently by separate coders and regular meetings were organized to prevent coder drift.

Task order. The task preceding the sharing task was counterbalanced between families, and could therefore be used as a measure of a situational factor of sharing behavior. Prior to the sharing task, half of the preschoolers were involved in a structured interaction task with the parent, in which the child had to follow the parent's lead. In Wave 1 the child had to follow instructions regarding a cleanup task and in Wave 2 the child followed the parent in a structured picture book reading activity. The other half of the preschoolers were involved in free play with one of the researchers, in which they could choose what they wanted to do and what toys to play with. Their younger siblings were not present during these tasks. Within each wave the task order was the same for the father and mother visit.

Child Externalizing Behaviors. The Child Behavior Checklist for preschoolers (CBCL/1½-5; Achenbach & Rescorla, 2000) was used to assess externalizing behaviors of both children. The broadband Externalizing Problems scale of the CBCL/1½-5 was shown to be applicable to 1-year-old children (Van Zeijl, Mesman, Stolk et al., 2006). Both fathers and mothers indicated whether they observed any of the 55 behavior problems in the last two months on a three-point scale. The internal consistencies on the externalizing scale ranged from .88 to .92. Externalizing problem scores reported by fathers and mothers were significantly correlated for both preschoolers (Wave 1: r = .58, p < .01. Wave 2: r = .49, p < .01) and the younger siblings (Wave 1: r = .46, p < .01, Wave 2: r = .54, p < .01), and scores of fathers and mothers were not significantly different from each other at either wave for either sibling (ps >.16). We therefore combined the scores of fathers and mothers (for the preschoolers and the younger sibling separately).

Data Analysis

All measures were inspected for possible outliers that were defined as values larger than 3.29 *SD* above the mean (Tabachnick & Fidell, 2012). Outliers were winsorized to make them no more extreme than the most extreme value that fell within the accepted range conform a normal distribution (Tabachnick & Fidell, 2012). Sharing behavior was positively skewed, and a logarithmic (log10) transformation was used for analyses (Tabachnick & Fidell, 2012). All other measures were normally distributed.

Analyses were conducted using SPSS 19.0. For the four repeated measures of sharing multi-level analysis was used. A linear mixed-effects model with the four measurements of sharing (two measures each wave; once during the father visit, once during the mother visit) was used to test the associations with time at Level 1 (L1) and situational, family, and child measures at Level 2 (L2; i.e., Gender of the parent, parental sensitivity, task preceding sharing, age, and gender and externalizing behavior of both children).

RESULTS

In all visits the number of treats shared by the preschooler ranged from not sharing any treats to giving all the treats to the younger sibling (n = 0-30). Within both waves, the number of treats shared during the first and second visit was positively correlated (Table 1). Moreover, a positive correlation was also found between the second visit of Wave 1 and the first visit of Wave 2 (r (253) = .15, $p < .05$). This implies that children who shared a large number of treats with their younger sibling were also more likely to share a large number of treats during the subsequent visit, within 2 weeks as well as 1 year later.

The means, standard deviations, and bivariate correlations of the predictors and the outcome measures are presented in Table 1. Parental sensitivity and externalizing behavior of both siblings showed stability over time. More externalizing behavior of the younger sibling was associated with less sharing during the first visit of Wave 1. Externalizing behaviors of both siblings were positively correlated at both waves.

To investigate the effects of situational factors, parenting, and characteristics of both siblings on sharing in the presence of a parent, a two-level model was estimated, in which the four subsequent measures of sharing were nested within families.

Table 1.

Summary of Means, Standard Deviations and Correlations for All Variables

	Wave 2								
Wave 1	1	2	3	4	5	6	7	*M*	*SD*
1. Sharing by oldest during first visit	**.14**	.17**	-.07	-.06	.07	-.03	.05	5.39	7.26
2. Sharing by oldest during second visit	.31**	**.09**	.04	-.07	-.03	-.05	.03	5.42	6.02
3. Paternal sensitivity	-.15	-.04	**.30****	-.04	-.00	-.04	-.02	23.86	3.06
4. Maternal sensitivity	-.03	-.02	.16**	**.22****	-.06	-.06	-.04	24.52	2.81
5. Age oldest child	.02	.11	.00	.02	**.98****	-.00	-.00	4.02	0.31
6. Externalizing behavior oldest	-.10	-.10	-.05	-.09	-.03	**.74****	.40**	19.71	8.60
7. Externalizing behavior younger	-.24**	-.06	.02	-.02	-.01	.40**	**.56****	21.32	8.75
M	3.66	3.73	24.13	24.93	3.02	17.67	12.99		
SD	5.16	4.26	2.95	2.66	0.30	8.13	6.46		

Note: $n = 302$. * $p < .05$ ** $p < .01$. Correlations below the diagonal refer to associations between variables within Wave 1, correlations above the diagonal refer to associations between variables within Wave 2, and correlations on the diagonal reflect longitudinal associations between Wave 1 and Wave 2. Possible scores for sharing range from 0 to 30. Parental sensitivity is rated on a scale ranging from 7 to 29. Child externalizing behavior is rated on a 3-point Likert scale, ranging from 0 to 2. For all variables, higher scores indicate more of that behavior.

Level 1 was the time level, which estimates the influence of the repeated assessments, and Level 2 the family level, with factors that differed between families. Predictors at Level 2 were gender of the parent present, parental sensitivity, task order, gender and externalizing behavior of both children, and preschoolers' age. All continuous predictors were centered at their grand mean. The intraclass correlation of the unconditional model (i.e., the model without predictors) was .11, which indicates that 11% of the variance in sharing was explained by the four repeated measures of sharing within a family. The linear mixed-effects models are presented in Table 2. The fixed effects indicate that at Level 1 there was a significant effect of visit number, indicating that children shared more during the two visits of Wave 2 (M = 5.38, SD = 6.55, non-transformed), than during both visits of Wave 1 (M = 3.70, SD = 4.71, non-transformed). Therefore it is not surprising that this effect of visit number disappeared when age of the oldest sibling was entered in the model, due to the overlapping variance of these variables. At Level 2 a significant main effect of the task preceding the sharing task was found, indicating that children who were involved in a task with their parent (either structured interaction or clean up) prior to the sharing task shared more treats (M = 4.82, SD = 6.12, non-transformed) with their younger sibling than children who were involved in free play with the research assistant (M = 4.22, SD = 5.33, non-transformed). No main effects were found for presence of father or mother, parental sensitivity, or sibling characteristics.

For gender of the parent present a significant interaction was found with age of the preschooler. To examine the interaction effect, separate regression analyses for fathers and mothers were conducted (Figure 1). Preschoolers' amount of sharing increased with age, and this effect was stronger when they shared in the presence of their father than in the presence of their mother. No differences were found in the amount of sharing in the presence of father and mother during Wave 1 (father: M = 0.54, SD = 0.27; mother: M = 0.58, SD = 0.31), t (541) = 1.46; p = .15, or Wave 2 (father: M = 0.68, SD = 0.36; mother: M = 0.63, SD = 0.34), t (532) = -1.56; p = .12.

The random parameters revealed that the random intercept accounted for a significant proportion of variance, even after adding various Level 2 predictors (Table 2).

Table 2.
Multilevel Model of Fixed and Random Effects for Sharing Behavior (LG10)

Parameter	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	b (*SE*)	*b* (*SE*)	*b* (*SE*)	*b* (*SE*)	*b* (*SE*)	*b* (*SE*)
			Fixed factors			
Intercept	.61**(.01)	.68**(.02)	.68**(.03)	.61**(.05)	.58**(.07)	.58**(.07)
Level 1 (Time)						
Visit number 1		-.15**(.03)	-.14**(.03)	-.15**(.03)	-.09 (.05)	-.08 (.05)
Visit number 2		-.10**(.03)	-.10**(.03)	-.10**(.03)	-.04 (.05)	-.04 (.05)
Visit number 3		-.05 (.03)	-.05 (.03)	-.05 (.03)	-.03 (.03)	-.02 (.03)
Level 2 (between family)						
Gender present parent			.00 (.02)	.00 (.02)	.00 (.02)	.00 (.02)
Parental sensitivity			-.00 (.00)	-.00 (.00)	-.00 (.00)	-.00 (.00)
Task order				.04*(.02)	.05*(.02)	.05*(.02)
Gender oldest child					-.02 (.02)	-.02 (.02)
Gender younger child					.01 (.02)	.01 (.02)
Age oldest child					.05 (.04)	-.07 (.06)
Externalizing oldest child					-.00 (.00)	-.00 (.00)
Externalizing younger child					.00 (.00)	-.01 (.00)
Externalizing younger * Age oldest						-.00 (.00)
Gender parent*Age oldest						.08** (.03)

Note: $n = 302$. * $p < .05$ ** $p < .01$. Possible scores for sharing range from 0 to 30. Parental sensitivity is rated on a scale ranging from 7 to 29. Child externalizing behavior is rated on a 3-point Likert scale, ranging from 0 to 2. For all variables, higher scores indicate more of that behavior.

Table 2.
Multilevel Model of Fixed and Random Effects for Sharing Behavior (LG10) (Continued)

	Variance components					
Level 1						
Residual variance	0.09** (0.00)	0.09** (0.00)	0.09** (0.00)	0.09** (0.00)	0.09** (0.00)	0.09** (0.00)
Intercept variance	0.01** (0.00)	0.01** (0.00)	0.01** (0.00)	0.01** (0.00)	0.01** (0.00)	0.01** (0.00)
-2 log likelihood	626.90	592.81	592.13	588.04	555.86	545.86

Note: $n = 302$. * $p < .05$ ** $p < .01$. Possible scores for sharing range from 0 to 30. Parental sensitivity is rated on a scale ranging from 7 to 29. Child externalizing behavior is rated on a 3-point Likert scale, ranging from 0 to 2. For all variables, higher scores indicate more of that behavior.

The chi-square test of the difference in *-2 log likelihood,* which is an indication of the fit of each model, showed a significant increase in explained variance between Model 1 (the random intercept model) and Model 2 (with the repeated measures of sharing included, L1), $\chi^2(5) = 34.09$, $p < .001$, between Model 3 (with gender of the parent present and parental sensitivity) and Model 4 (with task order), $\chi^2(1) = 4.08$, $p < 0.05$, between Model 4 and Model 5 (with age, gender, and externalizing behavior of the preschooler and gender and externalizing behavior of the younger sibling included, L2), $\chi^2(5) = 32.18$, $p < .01$, and between Model 5 and Model 6 (with the two interactions included , L2), $\chi^2(2) = 10.00$, $p < .01$. The difference in *-2 log likelihood* between Model 2 and Model 3, $\chi^2(2) = .68$, $p = 0.71$, was not significant. These results correspond with the significant fixed effects.

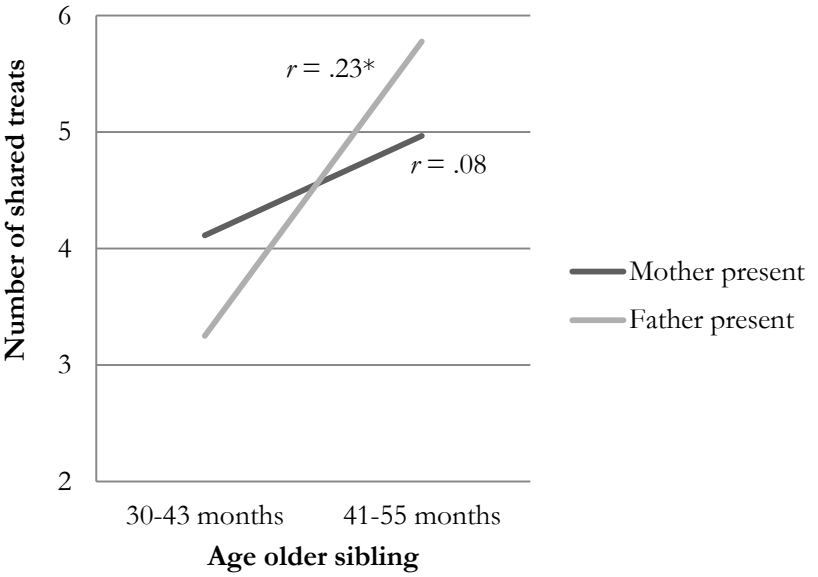


Figure 1.
Interaction of gender of the present parent and age of the older sibling on sharing (non-transformed).

Note: $n = 302$. * $p < .05$.

DISCUSSION

Preschoolers' sharing with their younger siblings increased with age, and children who shared more at Wave 1 also shared more during the second wave one year later. Furthermore, preschoolers shared more if they interacted in a structured task with one of their parents before the sharing task and, at the age of 4 years, when their father was present. Parental sensitivity and externalizing behavior of both siblings were not related to preschoolers' sharing behavior.

Sharing was related to the person children interacted with and the type of interaction preschoolers were involved in just before the sharing task. Children who participated in a structured activity with one of their parents shared more in the presence of this parent than children that were participating in free play with a research assistant before the sharing task. Previous interaction with the parent may make children more aware of parental expectations concerning their behavior, and may therefore make them more likely to share (Powell et al., 2012). However, the task the children were involved in before the sharing task, rather than the person they interacted with, could also have influenced their willingness to share. It could be that free play situation (with the research assistant) was more amusing for the children and evoked more pleasure than a structured task (with the parent). Previous research found that after watching an amusing film clip individuals showed less prosocial behavior (Bartlett & DeSteno, 2013), especially when costly prosocial behavior, like sharing, was involved which could be a threat for maintaining their positive mood (Carlson, Charlin, & Miller, 1988; Isen & Simmonds, 1978). Therefore, it may be that children involved in free play before sharing were less willing to share treats with their younger sibling.

Contrary to our expectations children shared more with their younger sibling at Wave 2 than at Wave 1 only when their father was present. Other studies found that mothers praise their children more often and stimulate prosocial behavior more than fathers do (Hastings, McShane et al., 2007; Julian et al., 1994). It could be that in our study children were more inclined to share in order to avoid penalty. Our result is consistent with previous findings that 2-year-old children are more compliant with their mothers' requests (Kwon & Elicker, 2012; Power, McGrath, Hughes, & Manire, 1994),

while by the age of 4 years they are more compliant with their fathers (Power et al., 1994).

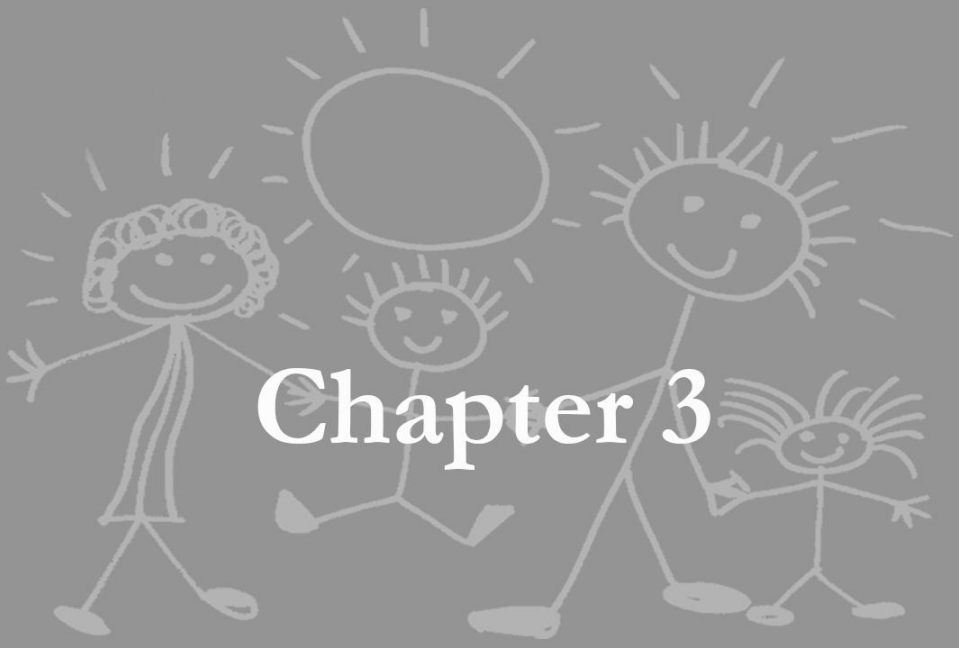
Externalizing behavior of both siblings did not influence preschoolers' amount of sharing. The lack of a relation between characteristics of either sibling and preschoolers' sharing is remarkable, but may reflect the predominant significance of situational factors in shaping prosocial behavior (Van IJzendoorn et al., 2010). Although there is some stability in sharing behavior across contexts, situational demands are an important factor in predicting sharing (Carlo, Eisenberg, Troyer, Switzer, & Speer, 1991). In addition, the salience of situational factors can also be seen in the relatively low correlation between the sharing episodes in our study, especially given that within each year the two episodes were only two weeks apart using the exact same procedure. The lack of a relation between externalizing behavior and sharing may be due to the children's non-clinical levels of externalizing problems in our sample. Relations between prosocial behavior and externalizing behavior are often found in clinical samples and at older ages (Hastings et al., 2000; Pursell et al., 2008). We submit that within the nonclinical range externalizing behavior is not related to sharing behavior between siblings.

Overall, our results show that other than child age, only situational factors (rather than individual behavioral or parenting variables) were related to children's sharing behavior. Interestingly, the influential situational factors in our study both relate to parental presence, both before and during the sharing task. This suggests that expectations about parental wishes regarding prosocial behavior are relevant, which in turn means that some aspects of actual parenting behavior are also likely to play a role in the development and expression of sharing behavior. However, our measure of parenting did not capture this underlying process. It may be that more specific measures of parental encouragement regarding sharing would provide more relevant information than the measure of the more broad construct parental sensitivity.

This study has some limitations. The first is the selective nonresponse by parents with lower educational levels. This aspect could influence the generalizability of the results. However, the high educational level of our sample is comparable to educational levels of samples of other studies including both fathers and mothers, often from convenience samples (e.g.,

Blandon & Volling, 2008). It is important for future research to include lower-educated samples. Further, regarding the observational measure of sharing, we used the numbers of treats shared by the oldest siblings. The actual behavior of both siblings during the sharing task may provide valuable information about the sharing process and situational influences on sharing. Future studies should therefore explore the sharing process between siblings in more detail. However, the current study demonstrates that using a relatively simple measure, i.e., the number of shared treats, reveals meaningful associations with sharing between siblings. Finally, in explaining the effect of the situation preceding the sharing task, the type of task the children were involved in was confounded with the person they interacted with. Given that the structured task with the parent was quite different in the first and the second wave, while the effect of task order was found in both waves, we suspect that it is the interaction partner (i.e., the parent), rather than the type of task (i.e, structured), that influenced subsequent child sharing behavior. In order to distinguish their unique effects, future studies should systematically vary the interaction partner and type of task preceding sharing.

Our research is unique in its design, including the observation of parental sensitivity and child sharing behavior in different situations, with both mothers and fathers in a longitudinal design. Our findings show that preschoolers share more with their younger siblings when they interact with one of their parents just before the sharing episode and that they share more in the presence of their father. Parental sensitivity was not related to sharing, but the parent's presence as a situational factor was related to preschoolers' sharing behavior. Our results highlight the importance of situational factors in the expression of sharing behavior in children. In our study the salient situational factors were both related to parental presence, suggesting that children's expectations of parental preferences are important. Such expectations are likely to originate from specific experiences within parent-child interactions regarding sharing. Thus, a socialization factor (parenting) can turn into a situational factor (parental presence) when it comes to children's expressions of prosocial behavior.



Chapter 3

Parental Sensitivity Towards Toddlers and Infant Siblings Predicting Toddler Sharing and Compliance

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ABSTRACT

Children with younger brothers or sisters are exposed to parenting directed towards themselves as well as parenting directed towards their siblings. We examined the hypothesis that mothers' and fathers' sensitive parenting towards their second-borns predicts compliance and sharing behavior in their firstborns, over and above their parenting towards their firstborns. In a sample of 388 families with a toddler and infant, parental sensitivity, child sharing behavior, and child compliance were observed during two different home visits, one with father and one with mother present. The results showed that toddlers shared more with their younger siblings and showed more compliance when their fathers were more sensitive towards them, but only if fathers showed low sensitivity towards the younger siblings. We suggest two explanations: toddlers may show more positive behavior to ensure continuation of their favored position, or they may compensate for the lack of fathers' sensitivity towards the younger siblings. Our study highlights the importance of the broader family context of parenting for child socio-emotional development.

Keywords: siblings, fathers, sensitivity, prosocial development, compliance

INTRODUCTION

Differences in the socio-emotional development of two siblings within a family have been explained by non-shared family environmental factors such as birth order, peer relations, and differential parenting (Knafo, Israel, & Ebstein, 2011; Ragan, Loken, Stifter, & Cavigelli, 2012). When children have younger brothers or sisters, they are not only exposed to parenting directed towards themselves, but also to parenting directed towards their siblings. Parenting directed towards a sibling can influence child behavior through several processes, for example by influencing the general atmosphere at home (Feinberg & Hetherington, 2001), or trough rivalry over the love and attention of a parent (Volling, Kennedy, & Jackey, 2010). To understand toddler behavior in relation to mothers' and fathers' parenting it may be helpful to take into account mothers' and fathers' parenting towards the infant sibling.

Sharing and compliant behaviors emerge around 24 months of age and are two empirically related important indicators of social-behavioral development that have been found to be related to each other (Knafo & Plomin, 2006; Kochanska & Aksan, 2006; Vreeke & Van der Mark, 2003). In infancy and toddlerhood, children need prompts from their parents to be able to follow social rules (situational compliance), but when approaching preschool age, children start to internalize parental rules and begin to show committed compliance (Kochanska, Coy, & Murray, 2001). The development of self-regulation represents an important developmental task relevant to both committed compliance and prosocial behavior (Kochanska & Aksan, 2006). Self-regulation allows for the internalization of rules and social norms, which in turn enables compliance and willingness to share. Thus, both prosocial behavior and compliance during toddlerhood are considered expressions of the development of self-regulation. Positive parenting in the form of sensitive discipline, warmth, and support predicts more prosocial behavior, including sharing, and more compliance in children (e.g., Feldman & Klein, 2003; Kiang, Moreno, & Robinson, 2004; Kochanska & Aksan, 2006) through processes of modeling other-oriented behavior (Hastings, Utendale, & Sullivan, 2007; Van IJzendoorn, 1997; Van IJzendoorn, Bakermans-Kranenburg, Pannebakker, & Out, 2010), and increasing children's willingness to cooperate with the parent (Ainsworth, Blehar, Waters, & Wall, 1978; Kochanska & Aksan, 2006).

Although most studies on the effects of parenting on the development of sharing or compliance include only mothers, there are studies indicating a similar influence of fathers' parenting on children's prosocial behavior (e.g. Sturgess, Dunn, & Davies 2001) and compliance (e.g., Kochanska & Kim, 2012). There is even some evidence that the influence of fathers may be stronger than that of mothers (Blandon & Volling, 2008; Volling & Belsky, 1992). In one study, facilitative parenting of fathers, but not mothers, was related to prosocial interactions between siblings (Volling & Belsky, 1992). In a second study, toddlers' compliance was related to gentle guidance by fathers, while no direct effect of maternal gentle guidance was found (Blandon & Volling, 2008). The influence of fathers on child behavior may be especially important for the older sibling. It has been argued that when second-born children are infants and need more care than their older siblings, fathers' parenting becomes especially important for the firstborn children (Volling, 2012). Since previous findings are inconsistent and fathers may be especially important for the firstborn child in the period after the birth of a second child, when mothers tend to spend more time with the infant (Volling, 2012), further research is needed on the relation between fathers' sensitivity and toddler behaviors in families with younger siblings.

In addition to the direct effects of each parent on child behavior, interactions between fathers' and mothers' sensitivity may influence child behavior (Volling, Blandon, & Gorvine, 2006). Previous studies have shown contradictory results concerning the interaction between fathers' and mothers' parenting behavior. In a study with toddlers and their older siblings, the relation between fathers' gentle guidance and child compliance was moderated by gentle guidance of the mothers (Volling et al., 2006). More gentle guidance by fathers was related to more compliance of their children, but only if mothers were low in their use of gentle guidance. In a replication study, however, the opposite effect was found, with more gentle guidance of fathers being only related to more child compliance when mothers were *high* in their use of gentle guidance (Blandon & Volling, 2008). These findings emphasize the importance of examining within-family processes and parenting behaviors of both fathers and mothers when investigating the development of child behavior.

According to family-system theories, family members do not only influence each other in direct interactions, but interactions between dyads within the family also influence the behaviors of all individual family members (Minuchin, 1985; Volling, Kolak, & Blandon, 2009). Following the premise of family-system theories, child behavior could be influenced not only by sensitivity of both parents towards the child itself or by interactions between mother's and father's sensitivity, but also by parental sensitivity towards a sibling, or any difference between parental sensitivity towards the sibling and towards the child itself (Reiss et al., 1995). Previous studies on parenting and siblings' development have focused primarily on differential parenting, examining how a parent responds to one sibling compared to the other (e.g., Blandon & Volling, 2008). Several studies have shown that differential parenting is related to less prosocial behavior and compliance, and more externalizing behavior in the less favored sibling (Asbury, Dunn, Pike, & Plomin, 2003; Blandon & Volling, 2008; Caspi et al., 2004; Mullineaux, Deater-Deckard, Petrill, & Thompson, 2009).

Only few studies have investigated the effect of parenting towards a child on the behavior of this child's sibling (Feinberg, Neiderhiser, Howe, & Hetherington, 2001; Reiss et al., 1995). One study found that negative parenting towards a sibling was associated with positive behavioral outcomes in adolescents (Reiss et al., 1995). In another study, adolescents had the least externalizing problems when they received high levels of positive parenting themselves, while their siblings received low levels of positive parenting. This is described as the "sibling barricade", a process through which parenting towards a child has an opposite effect on the behavioral outcomes of the sibling, while controlling for the parenting towards the sibling (Feinberg, Neiderhiser, Simmens, Reiss, & Hetherington, 2000; Reiss et al., 1995). An explanation for this effect is that children perceive to be better off than their siblings irrespective of the parenting they receive themselves. This sibling barricade may also play a role with younger children. Especially when older siblings experience a change in parenting behavior following the birth of a younger sibling, they may be inclined to compare parenting towards themselves to parenting towards their younger sibling (Volling, 2012), and may therefore be especially affected by how their younger sibling is parented. However, other studies indicate that rivalry between siblings over positive parenting can also result in positive child outcomes (Fearon et al., 2006;

Fearon, Bakermans-Kranenburg, & Van IJzendoorn, 2010; Knafo, 2009). It appears that both negative and positive behaviors can occur in response to evaluations of how a sibling is being parented, and both can be strategies to gain more parental attention (Belsky, 1997), which is consistent with an evolutionary view on the competition over caregiving resources (Fearon et al., 2010).

In the current study we investigated mothers' and fathers' sensitivity towards toddlers and their younger siblings in relation to the toddlers' sharing behavior and compliance. Our study examines issues raised by family-system theories, which state that interactions between all dyads within the family influence child behavior as well as (the effects of) interactions between other dyads (Minuchin, 1985; Volling, Kolak, & Blandon, 2009). For example, preschoolers' situational compliance has been related to more maternal gentle guidance only when fathers displayed high levels of gentle guidance, whereas no relation was found between maternal guidance and child compliance when fathers displayed low levels of gentle guidance (Blandon & Volling, 2008). In addition, effects of differential parenting on child behavior have been found to differ depending on the quality of the parenting a child actually receives. Fathers' differential gentle guidance was related to low levels of compliance of the less favored child only when fathers' gentle guidance directed towards this child was low, while if the less favored child received still rather high levels of paternal gentle guidance this child displayed high levels of compliance (Blandon & Volling, 2008). This suggests that differential parenting may only lead to negative child behavior in the less favored child in case of low quality parenting. Therefore, we examined two interaction effects: the interaction between paternal and maternal sensitivity, and the interaction between parental sensitivity towards the oldest child and parental sensitivity towards the youngest child, in combination with the main effect of parenting.

Differential parenting is relevant for children's social development given that it has been found to predict compliance, externalizing behaviors, and prosocial behaviors (e.g., Blandon & Volling, 2008; Caspi et al., 2004; Mullineaux et al., 2009). Most studies found that differential parenting leads to less compliance and prosocial behavior, and more externalizing behavior in the less favored sibling, although there is also some evidence that it may lead to more prosocial behavior in the less favored sibling (Knafo, 2009). Differential parenting has also been related to more social problems in both

siblings, the favored as well as less favored (Meunier, Boyle, O'Conner, & Jenkins, 2013). In early childhood, sharing with siblings and compliance are central aspects of social development within the family context (Knafo & Plomin, 2006; Kochanska & Aksan, 2006), so differential sensitivity during toddlerhood may be especially relevant for the development of these behaviors. Previous studies have indeed found that sharing and compliance are affected by differential parenting in preschoolers and during middle childhood (i.e. Knafo, 2009; Volling et al., 2006).

We expected that more parental sensitivity towards their toddlers is positively related to toddlers' sharing behavior and compliance. In addition, we expected, based on previous research concerning differential parenting, that the positive relation between parental sensitivity towards their toddlers and toddlers' sharing behavior and compliance is stronger if parents are less sensitive towards their youngest children, because these toddlers would be less jealous of their younger sibling.

METHOD

Participants

This study is part of the longitudinal study *Boys will be Boys?* examining the influence of gender-differentiated socialization on the socio-emotional development of boys and girls in the first years of life. This paper reports on data from the first wave. Families with two children in the Western region of the Netherlands were selected from municipality records. Families were eligible for participation if the second-born child was around 12 months of age and the firstborn child was between 2.5 and 3.5 years old at the time of recruitment. Exclusion criteria were single parenthood, severe physical or intellectual handicaps of parent or child, and parents being born outside the Netherlands or not speaking the Dutch language. Between April 2010 and May 2011 eligible families were invited by mail to participate; 31% (n = 390) of the 1,249 families agreed to participate. The participating families did not differ from the non-participating families on age, educational level of both parents, and degree of urbanization of the place of residence (all ps > .10). For the current paper, one family with missing data for sensitivity of the mother and one family with missing data of both visits for sharing behavior of the firstborn child were excluded, resulting in a final sample of 388 families. Two families consisted of the biological mother of the children and a

stepfather, while the other 386 families (99.5%) consisted of two biological parents. The distribution of family constellations was as follows: 107 boy-boy (28%), 91 girl-girl (23%), 97 boy-girl (25%), and 93 girl-boy (24%).

At the time of the first visit toddlers were, on average 36.2 months old (*SD* = 3.6) and their younger siblings were, on average, 12.0 months old (*SD* = 0.2). The mean age difference between siblings was 23.7 months (*SD* = 3.6). Mothers were aged between 23 and 46 years (*M* = 33.9, *SD* = 4.0) and fathers were between 26 and 63 years of age (*M* = 36.8, *SD* = 5.1). Most participating parents were married or had a cohabitation agreement or registered partnership (93%), and the remaining 7% lived together without any kind of registered agreement. With regard to educational level, most of the mothers (76%) and fathers (79%) had a high educational level (academic or higher vocational schooling).

Procedure

Each family was visited twice within about two weeks, once for observation of the mother and the two children and once for observation of the father and the two children. The order of father and mother visits was counterbalanced. After the two visits families received a gift of 30 Euros and small presents for the children. Before each home visit both parents were asked to individually complete a set of questionnaires. During the home visits parent-child interactions and sibling interactions were filmed, and children and parents completed computer tasks. All visits were conducted by pairs of trained graduate or undergraduate students. Informed consent was obtained from all participating families. Ethical approval for this research was provided by the Research Ethics Committee of the Institute of Education and Child Studies of Leiden University.

Measures

Sharing Behavior. Toddlers received a small box of raisins (a common children's treat in the Netherlands) and were instructed by the experimenter to share these with their younger siblings. The sharing task was administered during both the father and mother visits. Parents were present during the task and were free to interfere if they considered this necessary. The task was filmed and the number of treats shared with the younger sibling was counted. Treats shared with or by the parent were not counted; when a

toddler took treats back from the younger sibling these were subtracted from the total number of shared treats. Parents within the same family were coded by different coders to guarantee independency among ratings. Interobserver reliability between all pairs of seven independent coders was good with a mean intraclass correlation (single rater, absolute agreement) of .95 (range .86 to 1.00). Sharing behavior was significantly correlated between visits (r = .30, p < .01) and showed no mean-level differences between visits (p =.71). We therefore computed a combined mean score for toddlers' sharing behavior. The number of treats shared ranged from not sharing any treats to giving all the treats to the younger sibling (n = 0-30).

Compliance. Toddlers' compliance was measured in a 4-minute disciplinary *don't* context (Kochanska et al., 2001). The parent was asked to put a set of attractive toys on the floor in front of both children, but to make sure the children did not play with or touch the toys. After 2 minutes, both siblings were allowed to play only with an unattractive stuffed animal for another 2 minutes. Noncompliance was coded with an event-based coding system. An event was coded when the child reached towards or touched the prohibited toys after the parent explained that the child was not allowed to touch them. If a child reached or touched the toys more than once within 10 seconds this was coded as one event of noncompliance. Within the 4 minutes of the task, noncompliance could range from 0 to a maximum of 24 events. The two observations of compliance for each child within the same family (once with the mother present, once with the father present) were coded by different coders to guarantee independence of the ratings. Interobserver reliability was good, with a mean intraclass correlation (single rater, absolute agreement) for all pairs of the nine coders of .97 (range .92 to 1.00). To prevent coder drift regular meetings with coders were organized. In order to generate a measure for compliance the inverse sum scores of noncompliance were computed, with a score of 0 representing complete compliance (i.e., no events of non-compliance) during the don't touch task, and scores below 0 representing progressively lower levels of compliance. Because, toddlers' compliance during the two visits were significantly correlated (r = .36, p < .01) and there were no mean-level differences between visits (p = .31) combined mean scores for compliance were computed. For two families observations of one visit were missing, for these families the data of the other visit was used as the best estimate of child compliance.

Parental Sensitivity. Each dyad (one parent, one child) received a bag with toys and was invited to play with the toys for eight minutes. The Sensitivity scale from the fourth edition of the Emotional Availability Scales (EAS; Biringen, 2008) was used to measure parental sensitivity during free play. The scale is divided into seven subscales; (1) affect, (2) clarity of perceptions and appropriate responsiveness, (3) awareness of timing, (4) flexibility, variety, and creativity in modes of play or interaction with parent, (5) acceptance in speech, (6) amount of interaction, and (7) conflict situations. The first two subscales are coded on a 7-point Likert scale and the other subscales are coded on a 3-point Likert scale with a potential score range of 7-29. The sixth author, who is an experienced coder of parent-child interactions, completed the online training provided by Zeneyp Biringen and then trained a team of coders. During the team training some alterations were made to improve intercoder agreement, for more information about these alterations see Hallers-Haalboom et al. (2014). Dyads within the same family were coded by different coders (i.e., four coders per family) to guarantee independency among ratings. Intercoder reliability for the total sensitivity score for all pairs of the seven coders was adequate, with a mean intraclass correlation coefficient (absolute agreement) of .81 (range .73 to .92). During the coding process, the first 100 videotapes were coded twice independently by separate coders and regular meetings were organized to prevent coder drift. Sensitivity, compliance, and sharing behavior were coded by different coders.

Data Analysis

All measures were inspected for possible outliers that were defined as values more than 3.29 *SD* below or above the mean (Tabachnick & Fidell, 2012). Outliers were winsorized to make them no more extreme than the most extreme value that fell within the accepted range conform a normal distribution (Tabachnick & Fidell, 2012). Sharing behavior was positively skewed, and a square root transformation was used for analyses (Tabachnick & Fidell, 2012). All other measures were normally distributed. We chose not to use difference scores (subtracting sensitivity towards the toddler from sensitivity towards the sibling), because of systematic differences in parental sensitivity towards their toddlers and their 1-year-olds (see below).

Most parents were more sensitive towards their toddlers than towards their 1-year-olds (mothers 68%; fathers 70%), which is likely to be due to age-related differences in the children's developmental stages (Hallers-Haalboom et al., 2014). To assess main and interaction effects of parental sensitivity towards both siblings on toddlers' sharing behavior and compliance, hierarchical regression analyses were conducted. In the first step age of the toddler, gender of both children, and parental sensitivity towards both children were entered. In the second step two-way interactions between parental sensitivity towards the toddler and towards the sibling and between paternal and maternal sensitivity were entered. Finally non-significant interactions were deleted from the model. Sibling gender composition was also examined as a potential moderator, but it did not affect the relations reported in this paper, and was deleted from the model. Variables were centered before the computation of interaction terms.

RESULTS

The means, standard deviations and bivariate correlations of the predictors and the outcome measures are presented in Table 1. No significant correlation between toddler compliance and sharing behavior was found. There was a positive correlation between paternal sensitivity and toddlers' sharing behavior indicating that more sensitive fathers had toddlers who shared more. For both sharing behavior and compliance no associations were found with maternal sensitivity towards either child, or with parental sensitivity towards the younger sibling. Sensitivity was positively correlated between parents and between siblings, and mothers were more sensitive towards the younger siblings when their older siblings were older. Mothers' sensitivity towards the younger siblings ranged from 14 to 29 (M = 24.0, SD = 3.1) and fathers' sensitivity ranged from 11 to 29 (M = 22.6, SD = 3.6). Sensitivity towards the toddlers ranged from 16 to 29 for both parents (mothers: M = 24.9, SD = 2.8; fathers: M = 24.1, SD = 2.9). Sensitivity was higher towards the toddlers than towards the youngest siblings for both fathers, $t(387) = 8.00$, $p < .01$, $d = 0.81$, and mothers, $t(387) = 5.35$, $p < .01$, $d = 0.54$. Compared to mothers, fathers were less sensitive towards their toddlers, $t(387) = 4.58$, $p < .01$, $d = 0.41$, and the younger siblings: $t(387) = 6.73$, $p < .01$, $d = 0.61$.

Table 1.
Summary of Means, Standard Deviations and Correlations for Toddlers' Sharing Behavior, Compliance, and Age, and Parental Sensitivity towards Both Siblings

		1	2	3	4	5	6	*M*	*SD*
1.	Toddler's sharing behavior							9.4	3.9
2.	Toddler's compliance	.09						- 6.4	4.2
3.	Toddler's age	.07	.13*					3.0	0.3
4.	Fathers' sensitivity to toddler	.12*	.03	.01				24.1	2.9
5.	Mothers' sensitivity to toddler	-.01	-.03	.03	.19**			24.9	2.8
6.	Fathers' sensitivity to sibling	.07	-.06	-.06	.37**	.16**		22.6	3.6
7.	Mothers' sensitivity to sibling	.06	-.01	.11*	.06	.31**	.25**	24.0	3.1

* $p < .05$, ** $p < .01$

Note: the negative mean of compliance indicates that on average children showed 6.5 events of non-compliance during the don't touch task.

For sharing behavior, the hierarchical regression analysis showed a main effect for paternal sensitivity to the toddler (Table 2). Toddlers shared more with their siblings when their fathers were more sensitive towards them. Moreover, the interaction between paternal sensitivity towards the toddler and paternal sensitivity towards the younger sibling was significant. Simple slopes analyses (Aiken & West, 1991) revealed a significant relation between paternal sensitivity and sharing only for toddlers whose fathers showed relatively low sensitivity towards the younger siblings, while no significant relation was found for toddlers whose fathers showed high sensitivity towards the younger siblings (Figure 1). Other predictors were not significant, including child characteristics, maternal sensitivity towards the toddler, the main effect of sensitivity of both parents towards the younger sibling, and both the interactions between maternal and paternal sensitivity towards the toddler, and maternal sensitivity towards the toddler and maternal sensitivity towards the younger sibling.

For compliance, the multiple regression analysis revealed significant main effects for age and gender (Table 2), with older toddlers and girls showing more compliance. Neither the main effects of parental sensitivity nor the interaction between paternal and maternal sensitivity were significant. Again, the interaction between paternal sensitivity towards the toddler and paternal sensitivity towards the younger sibling contributed significantly to the prediction of compliance. To further examine the significant interaction effect, simple slopes analyses were conducted (Aiken & West, 1991). Similar to the results for sharing, we found a significant relation between paternal sensitivity and compliance only for the toddlers whose fathers showed relatively low sensitivity towards the younger siblings, whereas no significant relation was found for toddlers whose fathers showed high sensitivity towards the younger siblings (Figure 2). This implies that toddlers showed more compliance when their fathers were more sensitive towards them, but only if fathers showed lower levels of sensitivity towards their younger siblings.

Table 2.

Parental Sensitivity towards both Siblings in Relation to Toddler's Sharing and Compliance

	Sharing				Compliance			
	B	*SEB*	*β*	R^2	*B*	*SEB*	*β*	R^2
Step 1				.04				.06
Toddler's age	.14	.11	.07		.17	.06	.14**	
Toddler's gender	.12	.06	.10		1.57	.42	.19**	
Sibling's gender	.08	.06	.07		-.03	.43	-.00	
Fathers' sensitivity to toddler	.03	.01	.12*		.07	.08	.05	
Mothers' sensitivity to toddler	-.01	.01	-.05		-.03	.08	-.03	
Fathers' sensitivity to sibling	.00	.01	.01		-.13	.07	-.11	
Mothers' sensitivity to sibling	.01	.01	.05		-.01	.07	-.01	
Step 2				.04				.07
Fathers' sensitivity T * Fathers' sensitivity S	-.01	.00	-.10*		-.05	.02	-.14**	

* $p < .05$, ** $p < .01$

Note: Beta's derived from the final model. T refers to toddler and S refers to the younger sibling.

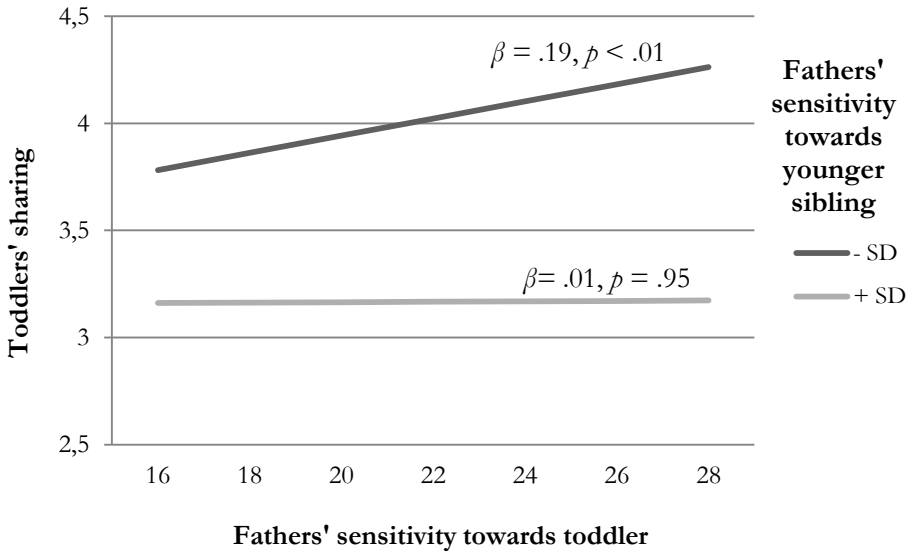


Figure 1.
The association between fathers' sensitivity towards the toddler and toddler sharing behavior by fathers' sensitivity towards the younger sibling.

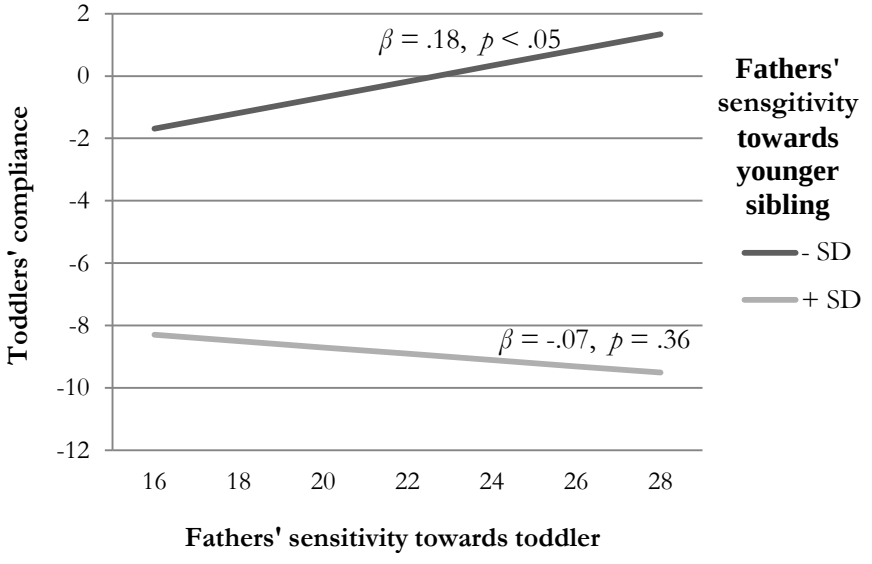


Figure 2.
The association between fathers' sensitivity towards the toddler and toddler compliance by fathers' sensitivity towards the younger sibling.

DISCUSSION

Our results showed that toddlers share more with their younger siblings and exhibit more compliance when their fathers were more sensitive towards them, but only if fathers showed low sensitivity towards the younger sibling. The moderation effect, indicating that toddlers who exhibited most sharing behavior and compliance had fathers who showed high levels of sensitivity towards the toddlers themselves and low levels of sensitivity toward the younger siblings, confirms the assumption of family-systems theories that interactions between dyads within the family influence other dyadic interactions within the family which in turn influence child outcomes (Minuchin, 1985; Volling et al., 2009). In addition, it supports the idea of social comparison between siblings (Feinberg et al., 2000; Volling et al., 2010). Three-month-old infants already differentiate between prosocial and antisocial actions of others and are able to evaluate and compare behaviors of others (Hamlin & Wynn, 2011). By the age of 6 months infants feel jealous when their parents direct their attention towards another child (Hart, 2010). By (unconsciously) noting the level of sensitivity the younger sibling receives in comparison with the level of sensitivity the toddler receives, the toddler might feel favored by the parent. Previous studies have indicated that toddlers' behavior is sensitive to parenting towards younger siblings and that differentiated parenting is related to more positive behavior in the favored sibling (Blandon & Volling, 2008; Fearon et al., 2010; Knafo, 2009).

Social comparison influences social development through sibling rivalry and fear over losing parental attention (Boyle et al., 2004). As a consequence the favored toddler may exhibit more preferred behavior, i.e. more prosocial behavior and more compliance, to ensure continuation of its favored position (Fearon et al., 2006). Another explanation could be that in the case of sharing behavior, toddlers may compensate for the lack of fathers' sensitivity towards the younger sibling by exhibiting more prosocial behavior towards their younger siblings. Eight-month-old infants are sensitive to the level of fairness of actions towards others, and from the age of 19 months toddlers are able to share altruistically and adapt their prosocial acts to how the other behaved or was treated before (Hamlin, Wynn, Bloom, & Mahajan, 2011; Schmidt & Sommerville, 2011). Toddlers shared more with a person who was victimized before than with a person who was helped before the sharing task (Hamlin et al., 2011). The experience of being favored over a

younger sibling could be experienced as unfair by the toddler, which may lead to more prosocial behavior towards the younger sibling. However, since our data is correlational, it could be that toddlers' sharing behavior and compliance increased their fathers' sensitivity towards them (Carlo, Mestre, Samper, Tur, & Armenta, 2010; Combs-Ronto, Olson, Lunkenheimer, & Sameroff. 2009).

The finding that mothers were more sensitive than fathers is in line with findings of previous studies (Lovas, 2005; Volling, McElwain, Notaro, & Herrera, 2002). Mothers are often the primary caregiver and therefore they are more familiar with the signals of the child which may make them more sensitive than fathers, see Hallers-Haalboom et al. (2014). In contrast to paternal sensitivity, maternal sensitivity was not related to toddlers' behavior. This difference between fathers and mothers is consistent with findings from previous studies (Volling & Belsky, 1992; Volling et al., 2006). A study with preschoolers showed a relation between paternal sensitivity and prosocial sibling interactions, whereas no relation for maternal sensitivity was found (Volling & Belsky, 1992). The differences between the effects of paternal and maternal sensitivity on child behavior may be related to the differences in how fathers and mother interact with their children, especially during free play. Fathers initiate more physical and rough-and-tumble play than mothers do (Volling et al., 2002). In rats, such rough-and-tumble play has been related to the development of social and emotional competences (Pellis & Pellis, 2007). It has been proposed that a similar relation between rough-and-tumble play and more social skills and emotional understanding could exists in humans, because during this more physical play it is necessary to monitor emotional expressions of a playmate in order to assure that the game is still enjoyed by the other (Pellegrini & Smith, 1998).

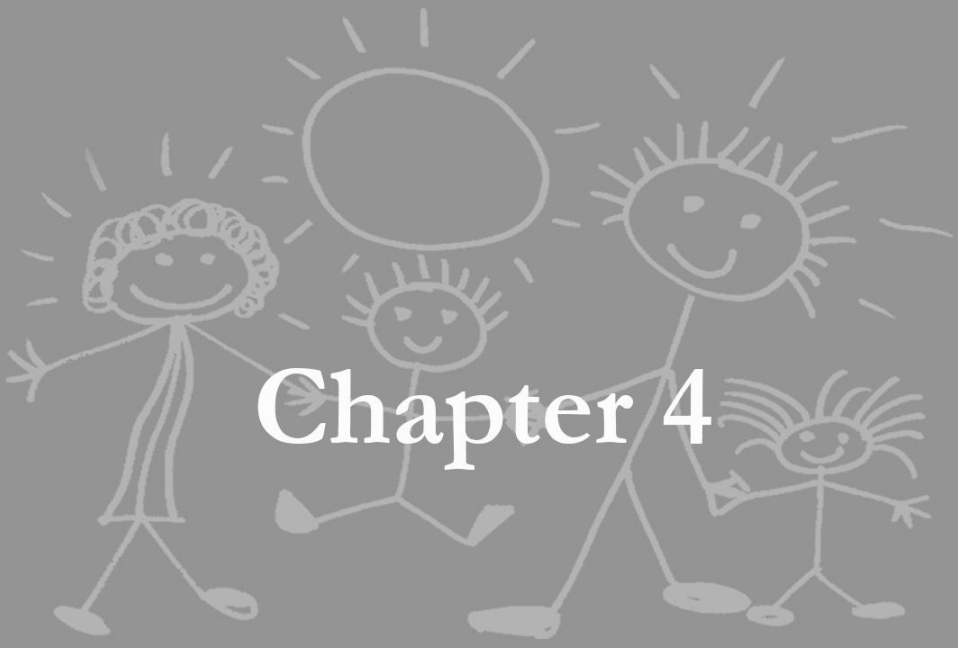
Compliance was not related to sharing, which may be due to the different interaction partners in the two settings. Compliance was observed during parent-child interaction, while sharing was observed during a child-sibling interaction. In addition, this result shows that sharing in the presence of a parent is not necessarily influenced by compliance to parental rules.

This study has some limitations. The sample consisted predominantly of highly educated parents, which may influence the generalizability of the results. Although, the high educational level of our sample is comparable to educational levels of samples of other studies including both parents, often

from convenience samples (Blandon & Volling, 2008; Verhoeven, Junger, Van Aken, Deković, & Van Aken, 2010), it is important for future research to include lower-educated parents. Another limitation lies in the observational measure of sensitivity. Sensitivity was observed during a free-play situation with pre-selected toys. Although free-play is frequently used for observation of parental sensitivity (e.g. Kiang et al., 2004), it could be that this is not a naturalistic situation for all parents. This could also explain why fathers were found to be less sensitive than mothers, since this kind of play may be closer to daily-life experiences for mother-child interactions than for father-child interactions (Volling et al., 2002). Furthermore, the use of a play situation limits the number of observations of parental sensitivity to a child's distress, while parental responses to a child's distress are seen as a central concept of sensitive parenting (Bowlby, 1982; Mesman, Oster, & Camras, 2012; Out, Pieper, Bakermans-Kranenburg, Zeskind, & Van IJzendoorn, 2010). Indeed, some studies only found a relation between parental sensitivity towards child distress and child outcomes, while no relation was found between parental sensitivity to child nondistress and behavioral outcomes (Leerkes, Blankson, & O'Brien, 2009). This could explain why no direct effect of sensitivity on sharing or compliance was found. Therefore, future studies could focus more on the relation between parental sensitivity to distress and child behavior. Finally, we only used the number of shared treats as a measure for sharing, and we did not observe any other aspect of the child's sharing behavior or the behavior of the younger sibling or the parent during the sharing task. Although the number of shared treats measure seems to be useful in revealing relations between parenting and sharing behavior, observing the actual behavior of each family member present during a sharing episode could provide more information on processes between siblings and parental interference.

In conclusion, compliance and sharing behavior in toddlers are related to the parenting they receive in combination with the parenting directed towards their younger siblings, which they observe. Fathers' sensitivity was positively related to toddlers' sharing behavior and compliance when fathers were not so sensitive towards the younger siblings. This could be explained by toddlers showing positive behavior to ensure continuation of their favored position or, in the case of sharing, they may compensate for the lack of fathers' sensitivity towards the younger siblings. Our study contributes to the

growing body of research indicating that not only one-to-one parenting shapes child socio-emotional development, but also observed parenting towards siblings. This is one of the first studies that examined interactions between parenting towards two children, instead of using the difference in parenting towards two children, as a predictor of child behavior. This enabled us to document the interplay between dyadic interactions within the family, revealing that parenting towards a child and its sibling are related to child behavior. In addition, while most studies have focused on preschoolers or school-aged children, we focused on toddlers to investigate the influence of parenting towards two children during a developmental period in which compliance and prosocial behavior first emerge. Our results are in line with family-systems theories (Minuchin, 1985; Volling et al., 2009) and confirm that the interplay between different dyadic interactions within a family are related to child outcomes. Doing so, our findings highlight the significance of the broader family context for child development.



Chapter 4

Sibling Discipline and Support

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ABSTRACT

This study examined toddlers' discipline and support towards their infant siblings in a parental limit-setting situation, as well as associations with inhibitory control, empathy, and child gender. In a sample of 373 families sibling discipline and support were observed during parental limit setting at two home visits, one with mother and one with father and the two children. Toddlers' inhibitory control was measured with a computerized Go/NoGo task and toddlers' empathy with reports of both parents. Most of the toddlers disciplined and almost half of them supported their younger siblings. Sibling discipline and support were positively correlated. Empathy was positively related to sibling discipline for boys, whereas for girls empathy was positively related to sibling support. Sibling discipline and support were not related to inhibitory control or gender of the younger sibling. Our study is the first to investigate sibling discipline and support, and provides evidence for gender differences in the behavioral manifestation of empathy in interactions between siblings in the context of parental limit setting.

Keywords: Sibling discipline, sibling support, empathy, inhibitory control, gender

INTRODUCTION

For firstborn children the birth of a sibling is a major transition that many of them experience when they are 2 to 3 years old. When it happens, firstborns not only experience a decrease in parental attention, but they also have to learn to interact with a younger sibling. How toddlers interact with their younger sibling may depend on the specific situation (Garner, Jones, & Palmer, 1994; Morrongiello, Schmidt, & Schell, 2010). For example, interactions between siblings during play can be reciprocal (Howe, Rinaldi, Jennings, & Petrakos, 2002), whereas in challenging situations the older sibling may take the lead and help the younger one (Howe, Recchia, Della Porta, & Funamoto, 2012; Morrongiello et al., 2010). The aim of our study was to examine toddlers' discipline and support towards their younger sibling in a limit-setting situation, as well as associations with inhibitory control, empathy, and child gender.

Parental limit setting and discipline constitute a challenge for young children as they have to inhibit impulses and self-regulate to comply (Kochanska, Coy, & Murray, 2001). Whereas infants generally lack the cognitive and self-regulation skills to understand and to comply with parental rules, toddlers are beginning to develop the necessary skills to respond appropriately to parental limit setting (Kochanska et al., 2001). In addition, toddlers start to understand the consequences of moral transgressions and show protest when faced with such transgressions by others (Vaish, Missana, & Tomasello, 2011). Because of their more advanced developmental level in these areas, toddlers may try to discipline their younger sibling and prevent or correct noncompliant behavior. Further, because toddlers are also beginning to understand the emotions of others and develop prosocial behaviors (Kochanska & Aksan, 2006), they may show supportive behaviors in a discipline situation by helping the younger sibling to complete the task successfully or provide comfort in case of distress.

Several normative developments during toddlerhood make the study of sibling discipline during this period particularly interesting. During the toddler years, children start to internalize moral and conventional rules, and shift from requiring supervision to be compliant to self-regulated or committed compliance (Kochanska & Aksan, 2006). This process is referred to as conscience development, which is composed of three mechanisms: moral emotion, moral conduct, and moral cognitions. Moral emotion (i.e.,

feeling guilty after a transgression) and moral conduct (i.e., being compliant in the absence of external control) emerge around the age of 2 years (Kochanska, 1993; Kochanska & Aksan, 2006). Moral cognition, which refers to a child's ability to understand rules and the consequences of violation of these rules, emerges somewhat later, around the age of 3 years (Kochanska & Aksan, 2006; Vaish et al., 2011). A study with 2- and 3-year-old children showed that 3-year-olds protested when a hand puppet destroyed a picture or sculpture belonging to another puppet, whereas 2-year-olds did not (Vaish, et al., 2011). This finding may also be relevant to situations in which a younger sibling misbehaves and does not comply with parental rules, and suggests that toddlers might protest and try to correct their siblings' behavior by explaining parental rules or interfering, verbally or physically, with the noncompliant behavior (Howe et al., 2012). Both explaining parental rules and interfering with a sibling's noncompliant behavior can be referred to as sibling discipline.

Sibling discipline may be influenced by several child characteristics: the older sibling's inhibitory control and empathy, and gender of both siblings may play a role. Inhibitory control starts to develop during toddlerhood and increases with age (Kochanska, Murray, Jacques, Koenig, & Vandegeest, 1996; Williams, Ponesse, Schachar, Logan, & Tannock, 1999). Several studies indicate that during early childhood girls outperform boys in inhibitory control and self-regulation, which in turn makes them more compliant than boys (Kochanska et al., 1996; Kochanska et al., 2001). The ability to regulate and control behavioral impulses as represented by inhibitory control is important for rule understanding and compliance (Kochanska et al., 2001), and individual differences in toddlers' inhibitory control have been found to be related to other-oriented behaviors and the motivation to imitate parental behaviors (Forman, Aksan, & Kochanska, 2004; Kochanska & Aksan, 2006; Rhoades, Greenberg, & Domitrovich, 2009). Being able to inhibit behavioral responses enables children to direct their attention and behavior towards others (Rhoades et al., 2009), which in turn may allow them to focus more on the behaviors of their younger siblings and to act upon them if they feel that rules are being violated. Moreover, toddlers with better self-regulation skills have been found to be more willing to imitate behaviors modeled by their mothers (Forman et al., 2004). During parental limit setting, imitating parental behavior could take the form of disciplining a sibling. Thus, higher levels of

inhibitory control would be expected to be associated with more sibling discipline.

A second characteristic that is also likely to be relevant to sibling discipline is toddlers' ability to understand others' emotions. Empathy has been related to better teaching skills in older siblings towards their younger brothers and sisters, because it enables older siblings to adapt their behavior to the younger ones (Howe et al., 2012). Parents may enhance the development of empathy by referring to the responsibility of older siblings towards their younger brother or sister by asking them to watch over or take care of the younger sibling (Morrongiello et al., 2010), or by explaining the younger sibling's emotions and lack of skills (Cassidy, Fineberg, Brown, & Perkins, 2005). Older siblings' understanding of their younger siblings' lack of skills to comply with parental rules and their understanding of how to interfere with this noncompliance, may enable them to discipline and support their younger siblings. Moreover, empathy has been related to understanding the importance of being compliant with rules and the consequences of violating these rules (Groenendyk & Volling, 2007; Kochanska & Aksan, 2006). Since rule understanding is a requirement for sibling discipline, this suggests that higher levels of empathy would relate to more sibling discipline.

A third child characteristic that could be related to sibling discipline is child gender. Previous studies found gender differences in sibling caregiving and teaching behaviors (Dunn, Deater-Deckard, & Pickering, 1999; Klein & Zarur, 2002). From early childhood boys and girls display differences in their behavioral development. For example boys show more aggression than girls (i.e., Alink et al., 2006) whereas girls have better self-regulation skills and are more compliant than boys (i.e., Kochanska et al., 2001), suggesting that girls would show more sibling discipline than boys. In addition, gender differences in children are best understood when the gender of the children they are interacting with is also taken into account (Maccoby, 1998), indicating that the gender combination of the siblings could influence sibling discipline. Sibling gender combination has indeed been linked to individual differences in sibling interactions. A study on teaching strategies in preschool children towards their younger siblings indicated that teaching occurred most often in brother-brother interactions (Klein & Zarur, 2002). Other studies found that school-aged girls more often than boys displayed teaching behaviors towards their younger siblings (Brody, Stoneman, MacKinnon, & MacKinnon, 1985;

Cicirelli, 1976), and that teaching by older siblings was more often directed towards younger sisters than towards younger brothers. Other studies on sibling teaching, however, found no differences between sisters and brothers (Azmitia & Hesser, 1993; Howe & Recchia, 2009).

When faced with their younger siblings' distress in response to parental limit-setting, toddlers may not only show disciplinary but also supportive and comforting behaviors towards their young siblings. Such sibling support has been previously observed in other situations, i.e. during naturalistic home observations and an adapted strange situation procedure designed to evoke separation distress in the younger siblings (Garner et al., 1994; Howe & Ross, 1990). Similar to sibling discipline, sibling support may be related to inhibitory control, empathy, and gender.

First, inhibitory control enables toddlers to regulate their own emotions when observing a younger sibling in distress. This emotional regulation will prevent that toddlers become overwhelmed by their own emotions and in turn allows them to interpret the emotions of their sibling and act upon these emotions (Kochanska et al., 2001; Rhoades et al., 2009). Second, empathy enables toddlers to understand why younger siblings are distressed during parental limit setting and how they could comfort their siblings, for example by redirecting their siblings' attention away from the task or soothing them (Hughes, White, Sharpen, & Dunn, 2000; Roth-Hanania, Davidov, & Zahn-Waxler, 2011; Zahn-Waxler, Robinson, & Emde, 1992). Third, studies on gender differences in sibling support show inconsistent results. Some studies found no differences between sisters and brothers in sibling caregiving (Dunn & Kendrick, 1981; Garner et al., 1994), while other studies have shown that older sisters show more interaction and more nurturing behavior with their younger sibling than older brothers, especially when the younger sibling is a sister (Blakemore, 1990; Kier & Lewis, 1998; Dunn et al., 1999). These differences in nurturing between boys and girls may arise from gender-differentiated parenting, with parents stimulating nurturing behavior more often in girls than in boys (Hastings, McShane, Parker, & Ladha, 2007). In addition, children from around the age of 3 years develop a preference for their same-sex parent, which could lead toddlers to imitate the behavior of their same-sex parent (Bussey & Bandura, 1999). Since mothers show higher levels of sensitive parenting than fathers (Hallers-Haalboom et al., 2014; Lovas, 2005) and are often the primary caregiver of young children

(Fagan & Barnett, 2003; Yeung, Sandberg, Davis-Kean, & Hofferth, 2001), girls may be more likely to imitate parental nurturing behaviors than boys are.

Although most children experience the birth of a younger sibling during their toddler years (Volling, 2012), studies concerning hierarchical sibling interactions, like teaching and caregiving, often focus on middle childhood (e.g. Howe et al., 2012; Morrongiello et al., 2010). Further, discipline situations are particularly salient in young children's daily lives, but sibling interactions in such settings seem to have escaped researchers' attention. In this study we examined toddlers' discipline and support towards their 1-year-old siblings in a parental limit-setting context, and associations with child inhibitory control, empathy, and gender. Because no previous studies have addressed sibling discipline and support in the context of parental limit setting, we based our hypotheses on the literature concerning other hierarchical sibling interactions, in particular teaching and caregiving. We expected that discipline and support would be positively related, and that both would be associated with toddlers' inhibitory control and empathy. Since previous studies on gender differences in sibling interactions show inconsistent results, we did not have a directed hypothesis on the effect of gender differences in sibling discipline and support.

METHOD

Sample

The sample was recruited in the context of the longitudinal study *Boys will be Boys?* examining the influence of gender-differentiated socialization on the socio-emotional development of boys and girls in the first years of life. This paper reports on data from the first wave. Families with two children in the Western region of the Netherlands were selected from municipality records. Families were eligible for participation if at the time of recruitment the second-born child was around 12 months of age and the first born child was between 2.5 and 3.5 years old. Exclusion criteria were single parenthood, severe physical or intellectual handicaps of parent or child, and parents being born outside the Netherlands or not speaking the Dutch language. Eligible families were invited by mail to participate between April 2010 and May 2011; 31% (n = 390) of the 1,249 families agreed to participate. The participating families did not differ from the non-participating families on age, educational level of both parents, and degree of urbanization of the place of residence

(all *p*s > .11). Furthermore, for the analyses of this paper, families were excluded if neither parent had completed the questionnaire about toddlers' empathy (n = 17), resulting in a final sample of 373 families. If a questionnaire was completed by one of the parents, these scores were used as the best estimate of the missing parent's scores. The distribution of sibling gender constellations was as follows: 102 boy-boy (27%), 86 girl-girl (23%), 94 boy-girl (25%), and 91 girl-boy (25%).

At the time of the first visit toddlers were, on average, 3.0 years old (SD = 0.3) and their younger siblings were exactly 12 months old (SD = 0.0). Mothers were aged between 25 and 46 years (M = 33.9, SD = 3.9) and fathers were between 26 and 63 years of age (M = 36.8, SD = 5.0). Most participating parents were married or had a registered agreement (93%), and the remaining 7% lived together without any kind of registered agreement. With regard to educational level, most of the mothers (81%) and fathers (77%) had a high educational level (academic or higher vocational schooling).

Procedure

Each family was visited twice within a period of approximately two weeks, once for observation of the mother and the two children and once for observation of the father and the two children. The order of father and mother visits was counterbalanced. After the two visits families received a gift of 30 Euros and small presents for the children. Before each home visit both parents were asked to individually complete a set of questionnaires. During the home visits parent-child interactions and sibling interactions were filmed, and toddlers and parents completed computer tasks. All visits were conducted by pairs of trained graduate or undergraduate students. Informed consent was obtained from all participating families. Ethical approval for the study was provided by the Research Ethics Committee of the Institute of Education and Child Studies of Leiden University.

Measures

Sibling Discipline and Support. Sibling discipline and support were measured in a 4-minute disciplinary *don't* context (Kochanska et al., 2001). The parent was asked to put a set of attractive toys on the floor in front of both children, and to make sure the children did not play with or touch the toys. After 2 minutes, both siblings were allowed to play for another 2

minutes only with an unattractive stuffed animal. Sibling discipline and support were coded every time toddlers initiated a task-related response towards their younger siblings, unless the responses occurred within a 2-second interval. Two types of responses were coded as sibling discipline: verbal discipline (e.g., 'no', 'you're not allowed to touch them yet') and physical interference (e.g., holding the child or moving the toys out of reach). Furthermore, comforting or distracting behaviors (i.e. cuddling or starting a game with the younger sibling) were coded as sibling support. Sibling discipline and sibling support were not coded when the parent instructed the toddler to respond to the infant's behavior. The two disciplinary episodes within the same family, one with mother and one with father present, were coded by different coders to guarantee independence among ratings. The mean intraclass correlations (single rater, absolute agreement, $n = 30$) for all pairs of the six coders was .83 (range .78 to .90) for verbal discipline, .81 (range .71 to .94) for physical discipline, and .83 (range .76 to .87) for sibling support. Sibling discipline and sibling support were correlated between the two visits, verbal: $r(370) = .25$, $p < .01$; physical: $r(370) = .14$, $p < .01$; support: $r(370) = .09$, $p < .10$, and showed no mean-level differences between visits (ps >.22). We therefore computed a combined mean score for the three scales. Moreover, verbal and physical sibling discipline were highly correlated, $r(373) = .73$, $p < .01$, and showed no mean-level differences ($p = .79$), so we combined them in a mean score. This led to two subscales: sibling discipline (verbal discipline and physical intervention) and sibling support (distraction and comforting behaviors).

We also coded parental discipline (i.e., active verbal or physical interference) in response to noncompliance of the younger sibling (i.e., reaching for or touching the forbidden toys). Neither of these variables were related to sibling discipline or sibling support. We therefore did not include parental discipline and noncompliance of the younger sibling as covariates in our analyses.

Inhibitory Control. To measure toddlers' inhibitory control an adapted version of the Cat-Mouse task (Simpson & Riggs, 2006), a computerized Go/NoGo task for 3-year-old children, was administered during either the first or the second visit (counterbalanced). To make this task applicable for 2.5-year-olds the inter-trial interval was increased from 1.5s to 3s during the practice session, providing the children with more time to

understand the task. The experimenter explained that the child had to catch all the mice that appeared on the screen (Go stimuli) by pressing a red button. The child was told not to catch the cats that appeared on the screen (NoGo stimuli). The task consisted of a practice session, in which five mice and five cats were presented (in alternating order), and a test session, in which 30 mice and 10 cats were displayed in random order. Only during the practice session was the child given feedback. After the practice session the experimenter repeated the instructions for the child. Commission errors (responses to NoGo stimuli) were used as a measure for a lack of inhibitory control (Groot, De Sonneville, Stins, & Boomsma, 2004). To generate a measure for inhibitory control we computed the inverse sum score of the commission errors.

Child Empathy. Empathy in the toddler was measured with the subscale Empathic, Prosocial Response to Another's Distress from the My Child Questionnaire (MCQ; Kochanska, 2002). Both fathers and mothers indicated whether they considered any of the 13 empathic responses (e.g., 'Promptly notices others' feelings') on a 5-point scale to be typical of their oldest child. Because fathers' and mothers' scores were significantly correlated, $r(346) = .38$, $p < .01$, but mean levels differed significantly ($p < .01$), we computed combined standardized mean scores. The internal consistencies for the combined (standardized) scale was .76 (Cronbach's Alpha).

Data-Analysis

All measures were inspected for possible outliers that were defined as values more than 3.29 *SD* below or above the mean (Tabachnick & Fidell, 2012). Outliers were winsorized to make them no more extreme than the most extreme value that fell within the accepted range conform a normal distribution (Tabachnick & Fidell, 2012). Sibling discipline and sibling support were positively skewed, and an inverse transformation was used for analyses (Tabachnick & Fidell, 2012). All other measures were normally distributed. To assess the relation between sibling discipline and child characteristics we conducted hierarchical regression analyses. In the first step characteristics of both siblings were entered. In the second step two-way interactions between child gender and empathy, and inhibitory control were entered. Variables were centered before the computation of interaction terms.

RESULTS

Toddlers disciplined and/or supported their younger siblings in 282 families (76%): sibling discipline was observed in 237 families (64%) and sibling support in 165 families (44%). Sibling discipline and sibling support were positively interrelated, and both were positively related to empathy and inhibitory control (Table 1). In addition, toddlers displayed more support when they were older. Relations with gender were not significant, although a trend ($p < .10$) was found towards a pattern of higher levels of both sibling discipline and sibling support for toddler girls.

Table 1.
Summary of Means, Standard Deviations and Correlations for All Variables

	1	2	3	4	*M*	*SD*
1. Sibling discipline					3.25	4.82
2. Sibling support	.24**				0.89	1.55
3. Age	.06	.21**			3.00	0.30
4. Empathy	.10*	.10*	.11*		0.01	0.87
5. Inhibitory control	.12*	.10*	.17*	.03	-3.39	2.98

* $p < .05$, ** $p < .01$

In order to investigate multivariate relations between child characteristics and sibling discipline and support, we conducted two hierarchical regression analyses. The hierarchical regression analysis predicting sibling discipline showed that more discipline was predicted by higher levels of sibling support and empathy. However, the relation between empathy and sibling discipline was moderated by child gender. To explore the interaction effect, separate regressions were conducted for boys and girls (Figure 1, panel A). Boys who were more empathic exhibited more discipline towards their younger sibling, while for toddler girls no relation between empathy and discipline was found. The main effects of gender of both siblings, toddler age, and inhibitory control were not significant, and neither were the interactions between inhibitory control, externalizing behavior, and gender (Table 2).

Table 2.

Child Characteristics in Relation to Sibling Discipline and Sibling Support

	Sibling discipline		Sibling support	
	β	R^2	*β*	R^2
Step 1		.08		.11
Age	-.01		.19**	
Gender	.06		.08	
Sibling support/sibling discipline[1]	.23**		.22**	
Empathy	.40*		-.27	
Inhibitory control	.15		.11	
Siblings' gender	.07		-.01	
Step 2		.09		.12
Empathy* Gender	-.35*		.34*	
Inhibitory control* Gender	-.07		-.08	

* $p < .05$, ** $p < .01$

Note: Betas are derived from the final model.

[1]Sibling support in the model predicting sibling discipline, and sibling discipline in the model predicting sibling support.

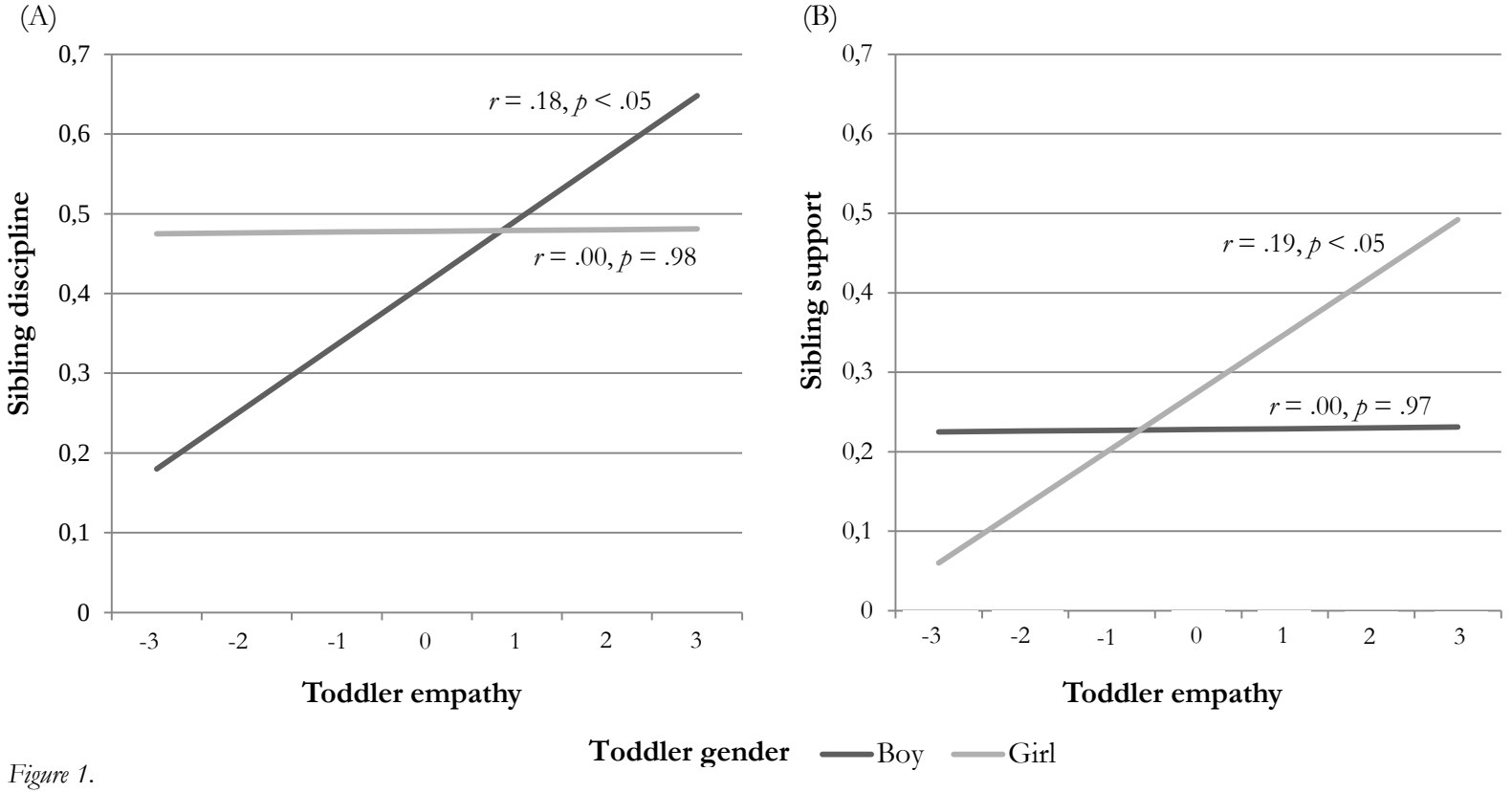


Figure 1.

The associations between sibling discipline (a) and sibling support (b) and toddler empathy by toddler gender

The hierarchical regression analysis predicting sibling support revealed two predictors: sibling discipline and age (Table 2). Similar to the prediction of sibling discipline, the relation between sibling support and empathy was moderated by gender. To illustrate the interaction effect, separate regressions were conducted for boys and girls (Figure 1, panel B). These analyses showed that, contrary to the results for sibling discipline, toddler girls who were more empathic exhibited more support towards their younger sibling, while for toddler boys no relation between empathy and sibling support was found. Other predictors, including toddler inhibitory control, and gender were not significant and neither were the interactions between inhibitory control, externalizing behavior, and gender.

DISCUSSION

Our results showed that within a parenting discipline situation, the majority of toddlers disciplined their younger siblings and almost half of them tried to comfort or distract their younger siblings. Toddlers who disciplined their younger sibling were also more likely to display sibling support, and higher levels of empathy were related to both more discipline and more support towards their younger siblings. However, both relations with empathy were moderated by gender. For boys empathy was positively related to sibling discipline, whereas for girls empathy was positively related to sibling support. Toddlers' sibling discipline and support were not related to their inhibitory control or the gender of their younger sibling.

Toddlers displayed both discipline and support towards their younger siblings during parental limit setting, which is in line with key developmental changes during toddlerhood. Toddlers start to internalize rules, understand the consequences of rule transgression, and from the age of 3 children have been found to interfere when others violate rules (Kochanska & Aksan, 2006; Vaish, et al., 2011). In addition, they are beginning to understand the emotions of others and act prosocially towards others (Kochanska & Aksan, 2006). Toddlers who disciplined their sibling were more likely to also display sibling support. This converges with previous studies that found associations between rule understanding and prosocial behavior (Kochanska & Aksan, 2006; Vreeke & Van der Mark, 2003). The ability to respond to another person's behavior is a prerequisite

for both discipline and support, perhaps explaining the association between the two behaviors (Kochanska & Aksan, 2006).

The moderating effect of child gender in the relation between empathy and sibling discipline and sibling support indicates that empathy is related to gender-specific social behavior. Girls with higher levels of empathy act more prosocially by comforting their younger siblings or by helping them with the task by means of distraction. More empathic boys on the other hand try to prevent or intervene in noncompliant behavior of their younger siblings, which can also be seen as prosocial behavior if these behaviors are aimed at helping the younger siblings to complete the task. These differences in behavior between boys and girls may arise from gender-differentiated parenting, with parents stimulating nurturing behavior more often in girls than in boys, while stimulating assertive and guiding behaviors more often in boys (Hastings et al., 2007). According to social role theory traditional gender roles and characteristics associated with these roles lead to differential treatment of men and women and possibly to gender-differentiated parenting, which in turn leads to gender differences in children's behavior (Eagly, 2009; Eagly, Wood, & Diekman, 2000). Traditional gender roles may foster gender differences in prosocial behavior and gender-differentiated socialization of prosocial behaviors. Although we did not find mean level differences between boys and girls in sibling discipline and support, gender-differentiated socialization may lead to gender-specific manifestations of social behavior in children with high levels of empathy, because these children are potentially more sensitive to gender-differentiated parenting.

In line with our expectations, toddlers with higher levels of inhibitory control displayed more sibling discipline and more sibling support. However, after controlling for other child characteristics like age, sibling support or sibling discipline, and empathy, these relations were no longer significant. We expected that to discipline or support a younger sibling, toddlers should be able to inhibit primary responses and comply with parental rules (Kochanska & Aksan, 2006). However, toddler age had more predictive power, probably because both inhibitory control and sibling discipline and support increase significantly during the second year – indeed, age and inhibitory control were positively related (Kochanska et

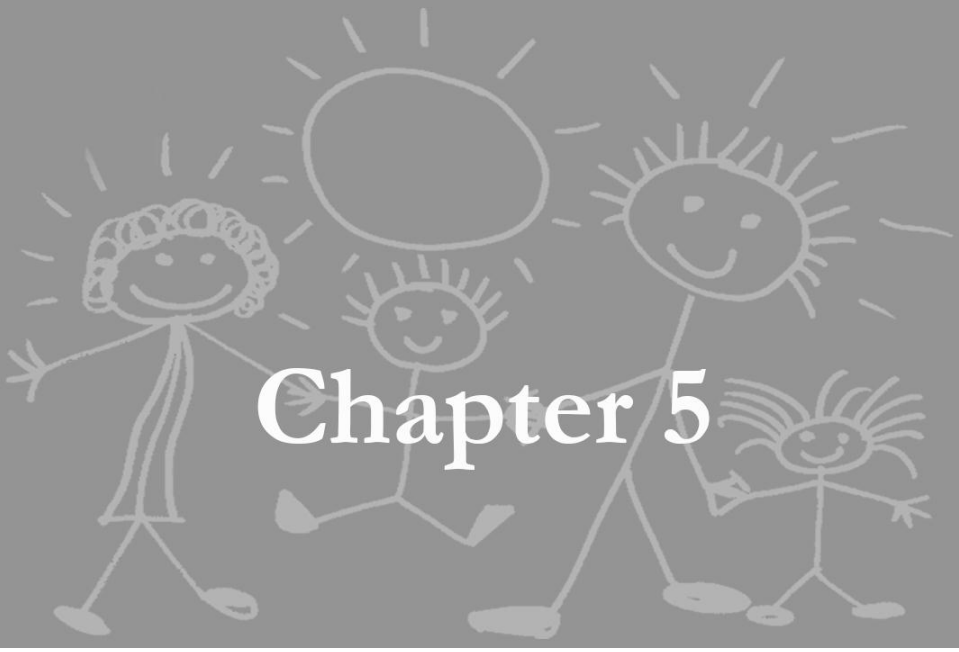
al., 2001). Previous studies found that children interfered when a rule was violated by another person from the age of three years (Vaish, et al., 2011) – supporting the idea that the age of onset of the development of both inhibitory control and sibling discipline and support are similar. This suggests that additional developmental processes apart from inhibitory control are important for sibling discipline and support. Individual differences in whether toddlers respond to third-party transgression have also been related to affective perspective taking, which is the ability to sympathize with individuals even when they do not show emotional cues, and the ability to understand intentions behind moral transgressions (Vaish, Carpenter, & Tomasello, 2009; 2010). Further research could investigate how these cognitive processes may explain individual differences in sibling discipline and support. In addition to age, high levels of empathy predicted whether toddlers display sibling discipline. High levels of empathy enable toddlers to understand others' perspective and to direct their behavior towards others (Cassidy et al., 2005; Howe & Recchia, 2009).

Sibling discipline and sibling support were not related to the gender of the younger sibling. This is convergent with previous observations concerning children's teaching and comforting of their younger siblings during structured tasks (Garner et al., 1994; Howe & Recchia, 2009). However, results of previous studies that observed teaching and nurturing behaviors between siblings are mixed and there are several studies that did observe gender differences (e.g., Cicirelli, 1976; Kier & Lewis, 1998; Klein & Zarur, 2002).

This study has some limitations. First, we did not take the responses of the parents or the younger siblings to the older siblings' behavior into account. These responses might influence the behavior of the older sibling, and should be included in further research on sibling discipline and support. However, the current study demonstrates that individual differences in sibling discipline and support can, at least partly, be explained by toddler characteristics even without controlling for parent and sibling behavior in the discipline setting. A second limitation is the predominance of high-educated parents in our sample, which may influence the generalizability of our results. Since early development of

social behaviors may differ by social status and parental educational background (e.g., Linver, Brooks-Gunn, & Kohen, 2002) the relation between child characteristics and sibling discipline and support needs to be studied further in more diverse samples.

This is the first study on sibling interactions in a family discipline context. Given that parental limit setting is very common in young children's daily lives and provides an important context for the development of self-regulation, our findings may further our understanding of family processes that foster this aspect of children's development. Sibling discipline and support were observed in most of the toddlers in our study, which indicates that toddlers play an active role in the socialization of their younger siblings in parental limit-setting situations. This study further provides evidence for gender differences in the behavioral manifestation of empathy in interactions between siblings, which lead to different experiences for the younger sibling. Children with an empathic older sister appear to experience more support, while children with an empathic older brother experience more discipline. Thus, our results point towards gendered patterns of sibling interactions during situations that require self-regulation and compliance.



Chapter 5

Birth-Order Effects on Social Development in Early Childhood: A Within-Family Study

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ABSTRACT

Birth order may be an important factor influencing the development of siblings, but has been studied mostly in relation to cognitive development and not social development. We used a longitudinal within-family design to compare social behaviors of firstborn and second-born children in the same family at the same age. In a sample of 215 families, fathers with both children and mothers with both children were visited at home twice: once when the firstborn children were on average three years old and once two years later when the second-born children were three years old. Sibling sharing and compliance were observed, empathy and externalizing behavior were measured using parental reports, and inhibitory control was measured with a computerized Go/NoGo task. Second-born children shared more, were more compliant, and were reported to show more empathy and more externalizing behaviors compared to their firstborn siblings at the same age. This may be due to having more experienced parents, the observation of interactions between parents and the firstborn child, and interactions with an older sibling that may provide a training ground for both positive and negative behaviors. Regarding inhibitory control, only second-born girls with older brothers developed higher levels of inhibitory control than their older sibling.

Keywords: birth order, social development, siblings, within-family design

INTRODUCTION

Siblings growing up in the same family may develop very differently. An important factor associated with differences between siblings' experiences within the family is birth order (Steelman, Powell, Werum, & Carter, 2002). Most studies concerning birth-order effects focus on cognitive development (e.g., Steelman et al., 2002; Zajonc & Sulloway, 2007), and only a few studies examined these effects on child social development. Experiences with sibling interactions and birth-order effects related to these interactions influence however both adaptive social behaviors like sharing (Cassidy, Fineberg, Brown, & Perkins, 2005) and empathy (Jenkins & Astington, 1996) and maladaptive social behaviors like externalizing behavior (Recchia, & Howe, 2009). The few studies on birth-order effects in the socio-emotional domain show mixed results, with some finding that second-born children display more prosocial behavior and less antisocial behavior compared to firstborns (Stauffacher & DeHart, 2006; Van Lange, Otten, De Bruin, & Joireman, 1997), while others find no differences between firstborn and second-born children (Donenberg & Baker, 1993; Riggio & Sotoodeh, 1989). Although birth order is a typical within-family variable, most studies do not use within-family designs to assess its effects on child development, and this may account for the inconsistent results. Further, given evidence for different interactions between same-sex siblings versus mixed-sex siblings (Pepler, Abramovitch, & Corter, 1981; Schachter & Stone, 1985), sibling gender configuration may influence birth-order effects, but is rarely addressed. The aim of this study is to examine the effects of birth order and sibling gender configuration on social development.

Differences in the development of firstborn and second-born children have been addressed in a number of theories focusing on aspects of sibling interactions and development. The literature generally points to a potential advantage in cognitive development of second-born children over firstborn children, because firstborn siblings can teach new skills to their younger sibling. According to Vygotsky's theory (1978) on the acquisition of new skills in the zone of proximal development, more experienced partners can guide others and help them to complete tasks which are too difficult for them to complete on their own. Firstborn children may thus guide their younger siblings. Indeed, children provide more explanations and positive feedback, and exert more control over their younger siblings than they do in

interactions with other children, and firstborn children can be successful in guiding their younger siblings to complete difficult tasks (Azmitia & Hesser, 1993).

Somewhat more complex is confluence theory (Zajonc & Markus, 1975; Zajonc & Sulloway, 2007), which suggests that advantages of birth order may depend on child age. Confluence theory proposes that when children reach school age, firstborns' intellectual abilities will benefit from teaching new skills to younger siblings, which will result in higher cognitive levels of firstborns compared to second-born children (Sulloway, 2007; Zajonc & Sulloway, 2007). During early childhood however, the family environment is intellectually richer for second-born children than for firstborn children, because all family members are more skilled than the second-born child, while the level of the firstborns' intellectual environment declines with the birth of a less skilled younger sibling.

In contrast, other theories expect second-born children to have a disadvantage compared to firstborn children when it comes to cognitive skills. The resource dilution model (Blake, 1981) states that since parental resources such as attention and time spent with parents are limited, each individual child will receive less of these resources when the number of children in the family increases. Since firstborns have a period of being the only child and receiving all parental resources, they may have an advantage over second-born children. Other models concerning differential parental investment are evolutionary theories that presume that parents invest more in children who increase their inclusive fitness (Trivers, 1974). Given that firstborn children have survived for a longer period of time than their younger siblings, they have a greater chance to reach reproductive maturity (Sulloway, 1996). Several studies found that parental investment differs between children, favoring firstborns in amount of stimulation (Thoman, Leiderman, & Olson, 1972), quality time (Price, 2008), and face-to-face contact (Keller & Zach, 2002), leading to advanced cognitive development and school achievement during middle childhood and adolescence in firstborns compared to later-born children.

Regardless of predictions about whether the younger or older siblings will have an advantage in cognitive skills, a cognitive advantage may or may not generalize to advantages in other areas of functioning. It can be argued that more advanced cognitive skills may stimulate the development of theory of mind, the understanding of social situations and social information

processing skills, which are important for the development of adaptive social behavior (Blair & Razza, 2007; Lemerise & Arsenio, 2000). Some theories and empirical studies indeed address differences in social functioning between firstborn and later-born children. A theory that proposes advantages of second-born children in social development is social cognitive learning theory (Bussey & Bandura, 1999). According to this theory, children learn social skills by observing behaviors of others within social contexts, also referred to as vicarious learning. In line with this theory, second-born children may learn new skills and behaviors at a younger age than firstborns by imitating their older siblings and by observing interactions between their parent and the older sibling (Barr & Hayne, 2003). For example, at the ages of 4 and 8 years, second-born children display less aggression than firstborn children at the same age and are more socially accepted by peers (Kitzmann, Cohen, & Lockwood, 2002; Stauffacher & DeHart, 2006). Moreover, there is some evidence that second-born children are exposed to different experiences compared to firstborn children because of the presence of an older sibling. They are exposed to more family talk about feelings, desires, and thoughts of others because these are discussed with the older sibling (Symonds, 2004), which facilitates the development of perspective taking (Ruffman, Perner, Naito, Parkin, & Clements, 1998; Ruffman, Perner, & Parkin, 1999) and in turn may stimulate the younger child's prosocial development.

In addition, experiential learning theory (Kolb, 1984) submits that experiences play a central role in adult learning process. In line with this theory, parents may provide more effective parenting towards the second-born child, due to their experiences with the firstborn child and possible more accurate expectations concerning child development. For example, parents display more warmth towards and have fewer conflicts with second-born adolescents compared to firstborn adolescents, as a consequence of having more realistic ideas about behavioral changes during adolescence (Shanahan, McHale, Crouter, & Osgood, 2007; Whiteman, McHale, & Crouter, 2003). Second-born children could thus also have a developmental advantage over firstborns through indirect sibling influences. However, studies on parents' learning experiences with younger children are lacking and it remains unclear whether parenting becomes more effective with a second-born child (Whiteman et al, 2003). Contrary to the experiential learning theory several studies found that parents are more sensitive and provide more high-quality

care to their firstborn children (Furman & Lanthier, 2002; Van IJzendoorn et al., 2000).

Finally, the family-niche model, developed by Sulloway (1996, 2001), explains birth-order effects on personality and behavioral development by processes of sibling rivalry over parental resources. Firstborn children, according to this model, identify strongly with their parents and are motivated to fulfill parental expectations. Second-born children, on the other hand, need to create their own unique niche within the family by (un)consciously differentiating their behavior from their firstborn siblings (also known as de-identification) to receive at least as much parental attention as firstborn children. Through this de-identification second-born children are supposedly less likely to identify with parental values and standards, and more open to new experiences than firstborns, leading to more "rebellious" behaviors in later-born children. Second-born children can be expected to be less compliant and to show more externalizing behavior, and because they would be more open to new experiences, they may also be better in adapting their behaviors to new situations than firstborn children.

Studies with adolescents have found evidence supporting the family-niche model with a pattern of results showing both potentially advantageous outcomes for firstborns as well as for second-born children. Firstborn adolescents have been found to be more dominant, achieving, and conscientious, and second-born adolescents were more open to new experiences and more rebellious (Beck, Burnet, & Vosper, 2006; Healey & Ellis, 2007; Paulhus, Trapnell, & Chen, 1999). These differences in behavior may lead to different career opportunities, as for example among political leaders firstborns are overrepresented (Andeweg & Berg, 2003; Hudson, 1990). Most studies concerning the family-niche model focus on adolescents therefore it is unclear whether the processes described by this model foster differential development between siblings in early childhood.

Theories on birth-order effects predict differences between firstborn and second-born children. However, several studies found no birth-order effects on personality (Crozier & Birdsey, 2003; Freese, Powell, & Steelman, 1999; Michalski & Shackelford, 2002), social skills (Riggio & Sotoodeh, 1989), or on early childhood aggression (Donenberg & Baker, 1993; Updegraff, Thayer, Whiteman, Denning, & McHale, 2005) and perspective taking (Jenkins & Astington, 1996; McAlister & Peterson, 2007). Thus, the evidence

concerning the presence and direction of birth-order effects on social development is inconclusive. The same is true for effects of sibling gender configuration on child development, with some studies finding more imitation between same-sex compared to mixed-sex siblings (Pepler et al., 1981), and others finding more differentiation between same-sex compared to mixed-sex siblings (Grotevant, 1978; Schachter & Stone, 1985). Again, yet other studies have not found any effect of sibling gender configuration (Azmitia & Hesser, 1993; Garner, Jones, & Palmer, 1994; Howe & Recchia, 2009). Most studies on birth-order effects do not address the possible influence of sibling gender configuration on differences between firstborn and second-born children, and vice versa. In addition, the majority of studies on birth-order effects use cross-sectional data and compare firstborn and second-born children between families, but it is essential to investigate birth-order effects in a within-family design to distinguish them from differences between families (Rodgers, 2001; Rodgers, Cleveland, Van den Oord, & Rowe, 2000).

The current study uses a longitudinal within-family design to investigate the effect of birth order on social development, and to examine the role of sibling gender configuration on birth order effects. We measured both adaptive social behaviors, i.e. sharing, empathy, inhibitory control, and compliance, and maladaptive social behaviors, i.e. externalizing behavior in both siblings at the same ages. We expected that as a result of having more experiences with sibling interactions with an *older* sibling and with observing parent-sibling interactions than firstborn children at the age of three years, second-born children, compared to firstborn children at the same age, would share more, display higher levels of empathy, inhibitory control, and compliance and lower levels of externalizing behavior. We investigated the influence of sibling gender configuration with a more explorative aim.

METHOD

Sample

The sample was recruited in the context of the longitudinal study *Boys will be Boys?* examining the influence of gender-differentiated socialization on the socio-emotional development of boys and girls in the first years of life. Families with two children in the Western region of the Netherlands were selected from municipality records. Families were eligible for participation if

at the time of recruitment the second-born child was around 12 months of age and the first born child was between 2.5 and 3.5 years old. Exclusion criteria were single parenthood, severe physical or intellectual handicaps of parent or child, and parents being born outside the Netherlands or not speaking the Dutch language. Eligible families were invited by mail to participate between April 2010 and May 2011; 31% (n = 390) of the 1,249 families agreed to participate. The participating families did not differ from the non-participating families on degree of urbanization of the place of residence, and age and educational level of both parents (all ps > .11). This paper reports on data from the first and the third wave. In the third wave 18 families did not participate as a result of moving abroad (n = 5), family problems (n = 3), or because families considered further participation as too demanding (n = 10). Furthermore, for the analyses of this paper, families were excluded (1) if one of the parents had not completed the questionnaires on child behavior (n = 103), (2) if observations of sharing or noncompliance of one visit were missing (n = 29), (3) if a child refused to complete the computer task (n = 10), or (4) if the age difference between siblings on time of measurement was more than 6 months (n = 17), resulting in a final sample of 215 families. The distribution of sibling gender configuration was as follows: 61 boy-boy (28%), 51 girl-girl (24%), 55 boy-girl (26%), and 48 girl-boy (22%).

At the time of Wave 1 firstborn children were, on average, 3.0 years old (SD = 0.3) and their younger siblings were, on average, 1.0 years (SD = 0.0). In the third wave, the second-born children were, on average, 3.1 years (SD = 0.0) and the firstborns had a mean age of 5.1 years (SD = 0.3). At Wave 1 mothers were aged between 26 and 46 years (M = 33.9, SD = 3.9) and fathers were between 26 and 53 years of age (M = 36.9, SD = 5.1). Most participating parents were married or had a registered agreement (94%), and the remaining 6% lived together without any kind of registered agreement. With regard to educational level, most of the mothers (80%) and fathers (74%) had a high educational level (academic or higher vocational schooling). At the time of Wave 3 a third child had been born in 39 (18%) of the families and parents of four families were divorced (2%). Analyses with and without these families yielded similar results, so these families were retained in the current data set.

Procedure

Each family was visited twice at every wave, within a period of approximately two weeks, once for observation of the mother and the two children and once for observation of the father and the two children. The order of father and mother visits was counterbalanced. After the two visits families received a gift of 30 Euros and small presents for the children. Before each home visit both parents were asked to individually complete a set of questionnaires. During the home visits parent-child interactions and sibling interactions were filmed. At Wave 1 only the firstborns and both parents completed computer tasks, while from Wave 3 both children completed computer tasks. All visits were conducted by pairs of trained graduate or undergraduate students. All participating families gave their informed consent. Ethical approval for the study was provided by the Research Ethics Committee of the Institute of Education and Child Studies of Leiden University.

Measures

Sharing. Children received a small box of raisins (a common children's treat in the Netherlands) and were instructed by the experimenter to share these with their siblings. At Wave 1 firstborns shared with their second-born sibling and at Wave 3 second-born children shared with their firstborn siblings. The sharing task was administered during both the father and mother visits. Parents were present during the task and were free to interfere if they considered this necessary. The task was filmed and the number of treats shared with the sibling was counted. Treats that the siblings took without permission of the child, and treats shared with or by the parent were not counted; when a child took treats back from the sibling these were subtracted from the total number of shared treats. Parents within the same family were coded by different coders to guarantee independence among ratings. Interobserver reliabilities between all pairs of 11 independent coders were adequate with intraclass correlations (single rater, absolute agreement) all above .70. The number of treats shared ranged from not sharing any treats to giving all the treats to the sibling (score range 0-30).

Empathy. Empathy was measured with the subscale Empathic, Prosocial Response to Another's Distress from the My Child Questionnaire (MCQ; Kochanska, 2002). Both fathers and mothers indicated whether they considered any of the 13 empathic responses (e.g., 'Promptly notices others'

feelings') on a 5-point scale to be typical of their firstborn child at Wave 1 and their second-born child at Wave 3. Three items with item-total correlations lower than .30 were deleted. The resulting internal consistencies (Cronbach's alpha) were .75 (fathers) and .77 (mothers) for the fist-born children, and .77 (fathers) and .78 (mothers) for the second-born children.

Inhibitory Control. To measure inhibitory control an adapted version of the Cat-Mouse task (Simpson & Riggs, 2006), a computerized Go/NoGo task for 3-year-old children, was administered during either the first or the second visit (counterbalanced). To make this task applicable for 2.5-year-olds the inter-trial interval was increased from 1.5s to 3s during the practice session, providing the children with more time to understand the task. The experimenter explained that the child had to catch all the mice that appeared on the screen (Go-stimuli) by pressing a red button. The child was told not to catch the cats that appeared on the screen (NoGo-stimuli). The task consisted of a practice session, in which five mice and five cats were presented (in alternating order), and a test session, in which 30 mice and 10 cats were displayed in random order. Only during the practice session was the child given feedback. After the practice session the experimenter repeated the instructions for the child. Commission errors (responses to NoGo-stimuli) were used as a measure for a lack of inhibitory control (Groot, De Sonneville, Stins, & Boomsma, 2004). To generate a measure for inhibitory control the sum score of the commission errors was subtracted from the total number of NoGo-stimuli (10 – number of commission errors).

Compliance. Compliance was measured in a 4-minute disciplinary *don't* context (Kochanska, Coy, & Murray, 2001). The parent was asked to put a set of attractive toys on the floor in front of both children, and to make sure the children did not play with or touch the toys. After 2 minutes, both siblings were allowed to play for another 2 minutes only with an unattractive stuffed animal. Noncompliance was coded with an event-based coding system. An event was coded when the child reached towards or touched the prohibited toys after the parent explained that the child was not allowed to touch them. If a child reached or touched the toys more than once within 10 seconds this was coded as one event of noncompliance. Noncompliance scores could range between 0 and a maximum of 24 events (i.e. 240 seconds/ 10 seconds). The two observations of compliance for each child within the same family (once with the mother present, once with the father present)

were coded by different coders to guarantee independence of the ratings. Interobserver reliability was good with all intraclass correlations (single rater, absolute agreement) for all pairs of the 31 coders above .80. To prevent coder drift regular meetings with coders were organized. To generate a measure for compliance the total number of events of each child was subtracted from the maximum number of events (24 – noncompliant events).

Child Externalizing Behaviors. The Child Behavior Checklist for preschoolers (CBCL/1½-5; Achenbach & Rescorla, 2000) was used to assess externalizing behaviors of the firstborn at Wave 1 and the second-born at Wave 3. Both fathers and mothers indicated whether they observed any of the 36 behavior problems in the last two months on a three-point scale. The internal consistencies (Cronbach's alpha) were .92 (fathers) and .91 (mothers) for the fist-born children and .92 (both fathers and mothers) for the second-born children.

Data-Analysis

Data inspection was conducted according to the procedures described by Tabachnick and Fidell (2012). All measures were inspected for possible outliers that were defined as values more than 3.29 *SD* below or above the mean. Outliers were winsorized to make them no more extreme than the most extreme value that fell within the accepted range conform a normal distribution. Compliance was positively skewed, and a square root transformation was used for analyses. All other measures were normally distributed.

To assess the effect of birth order on child behavior without the confounding factor of child age, we compared the behaviors of the two children at the same ages, i.e., the behaviors of the firstborn children as measured at Wave 1 (when they were on average 3 years old) and the behaviors of the second-born siblings as measured at Wave 3 (when they were on average 3 years old as well). Analyses of birth-order effects on sharing, empathy, compliance, and externalizing behavior were conducted using a GLM Repeated Measures MANOVA. Main effects and the interaction between the within-subjects factors birth order (oldest, youngest) and parent gender (father, mother) were examined. There was no within-subjects parent gender factor for inhibitory control because this variable was measured only once for each child (during the father visit), and a GLM

Repeated Measures ANOVA was conducted for the effect of birth order on inhibitory control. Furthermore, two-way interactions between the within-subject factor birth order and the between-subjects variable sibling gender configuration were examined. Since the age difference between siblings at the time of assessment ranged from -0.5 to 0.5 years (age firstborn at Wave 1 *minus* age second-born at Wave 3) this variable was added to the analyses as a covariate.

RESULTS

Bivariate correlations between the behaviors of both siblings as measured when they were 3 years old are presented in Table 1. All child variables measured during the father visit and the mother visit, and reported by father and mother, were positively related, indicating significant stability in child behavior between visits (with father or mother present, within a two-week period) and significant agreement between parent reports. Correlations between behavior ratings of the firstborn and the second-born were significant for empathy, compliance, and externalizing behavior. This indicates congruence between siblings' behavior according to both parent report and observation. For the firstborn children, more parent-reported externalizing behavior was related to less compliance towards this specific parent. Compliance in the presence of mother was related to higher levels of inhibitory control and sharing in the presence of father was related to less mother-reported externalizing behavior. For the second-born children, sharing in the presence of a parent was associated with more compliance towards this specific parent. Compliance in the presence of father was related to lower levels of mother-reported empathy and more sharing in the presence of father was related to less father-reported empathy. Finally, for the second-born children higher levels of inhibitory control were related to less mother-reported externalizing behavior. Correlations between the other child behaviors were not significant.

The GLM Repeated Measures MANOVA for sharing, empathy, compliance, and externalizing behaviors, with age difference between siblings at the time of assessment as covariate, showed a main effect of birth order, $V = 0.52$, $F(4, 205) = 54.44$, $p < .001$, $\eta_p^2 = .52$. Table 2 displays the results of the univariate analyses for the four child variables. Compared to their firstborn siblings at the same age, second-born children were observed to share more with their siblings and to show more compliance, and they

Table 1.

Correlations for Firstborn and Second-born Children's Behaviors at Age Three Years

Firstborn child	Second-born child								
	1	2	3	4	5	6	7	8	9
1. Sharing during father visit	**-.08**	.24**	-.14*	-.03	.09	.17*	.01	-.08	-.04
2. Sharing during mother visit	.25**	**.00**	.02	.08	-.00	.10	.14*	-.02	.08
3. Empathy (father report)	-.02	.00	**.36****	.24**	.07	.05	.03	-.02	-.00
4. Empathy (mother report)	.10	.10	.34**	**.47****	-.07	-.20**	-.11	-.08	-.04
5. Inhibitory control	.04	-.01	.02	.05	**.03**	-.00	-.00	-.06	-.16*
6. Compliance during father visit	.04	.01	.03	-.02	.13	**.36****	.33**	.03	-.11
7. Compliance during mother visit	.07	.10	-.02	-.02	.14*	.34**	**.31****	.03	-.05
8. Externalizing behavior (father report)	-.06	.01	.01	-.07	-.07	-.14*	-.09	**.42****	.46**
9. Externalizing behavior (mother report)	-.14*	-.07	-.00	-.05	-.00	.09	-.18**	.61**	**.41****

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

Note: correlations below the diagonal refer to associations between variables of the fist-born child, correlations above the diagonal refer to associations between variables of the second-born child, and correlations on the diagonal reflect associations between siblings.

were reported to show higher levels of empathy, and more externalizing behavior. No effect for parent gender was found, indicating that there were no differences in externalizing behavior or empathy between father and mother reports, or sharing and compliance between father and mother visits. Furthermore, the interaction effects between parent gender and child birth order were not significant. The GLM Repeated Measures ANOVA showed no main effect of birth order for inhibitory control (Table 2).

Table 2.

Means and Standard Deviations for Firstborn and Second-born Children's Behaviors at Age Three Years

	Firstborn *M (SD)*	Second-born *M (SD)*	*Pillai's F*	η_p^2
Observed sharing			163.85**	.44
In presence of father	9.37 (4.92)	14.57 (5.37)		
In presence of mother	9.36 (4.66)	14.37 (5.57)		
Empathy			14.56**	.07
Father-reported	24.21 (6.58)	25.77 (6.41)		
Mother-reported	25.12 (6.88)	26.70 (6.65)		
Inhibitory control			2.24	.01
	6.66 (3.00)	7.06 (2.70)		
Observed compliance			21.11**	.09
With father	17.85 (5.34)	19.18 (4.98)		
With mother	17.28 (4.92)	18.68 (5.50)		
Externalizing behavior			18.61**	.08
Father-reported	18.41 (9.54)	21.04 (10.29)		
Mother-reported	17.64 (9.29)	20.47 (10.23)		

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

Note. To facilitate interpretation, the non-transformed scores are presented.
Pillai's *F* represent the main effect between firstborn and second-born children.

Sibling gender configuration was examined as a between-subjects factor. The interaction between birth order and sibling gender configuration showed a significant effect only for inhibitory control, $F(3, 210) = 2.79$, $p < .05$, $\eta_p^2 = .04$. Follow-up paired *t*-tests revealed that in families with a firstborn boy and a second-born girl, the second-born girls displayed higher levers of inhibitory control than the firstborn boys at the same age, whereas other sibling gender combinations showed no differences in inhibitory control between firstborn and second-born children (Figure 1).

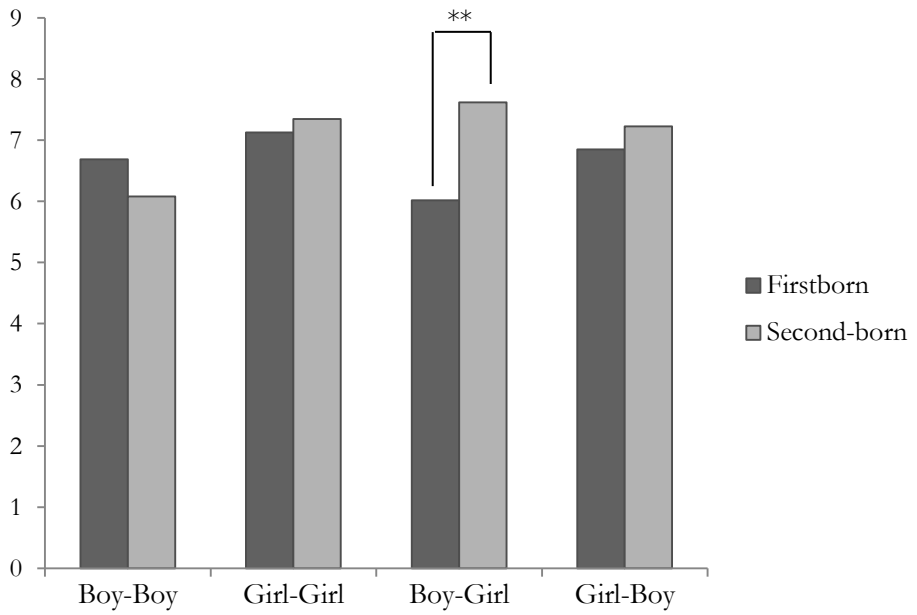


Figure 1.
Interaction of birth order and sibling gender configuration on inhibitory control.
** $p < .01$

DISCUSSION

Compared to firstborn children, second-born children showed more adaptive social behaviors, i.e. they shared more with their siblings, displayed more compliance, and were reported by their parents to show higher levels of empathy at the same age as their older sibling a few years before. However, parents also reported more maladaptive behaviors, in that they reported more externalizing behavior in their second-born than in their firstborn children. Furthermore, second-born girls displayed higher levels of inhibitory control compared to their firstborn brothers, while the other sibling gender configurations showed no difference between firstborn and second-born children.

Second-born children showed more adaptive social behaviors (sharing behavior, empathy, and compliance) at the age of three than their firstborn siblings did at the same age. This is in line with social cognitive learning theory (Bussey & Bandura, 1999) and extends Vygotsky's sociocultural theory (1978) on cognitive development. Second-born children may learn new behaviors by imitating their older siblings' behavior, by following their older siblings' guidance during difficult tasks, and by observing parent-sibling interactions (Azmitia & Hesser, 1993; Barr & Hayne, 2003). In addition, given that second-born children have had older siblings from birth, while firstborn children have experienced a period in which they were the only child in the family, second-born children have more experience with sharing and situations that require recognizing others' emotions than firstborns. Although results from previous studies have been mixed, some studies have found a positive effect of the number of older siblings on prosocial behavior and perspective taking (Jenkins & Astington, 1996; Ruffman et al., 1999; Van Lange et al, 1997). Furthermore, the presence of an older sibling has been found to positively influence the amount of parental talk about others' thoughts, feelings, and believes, which in turn may stimulate the development of empathy in second-born children (Symonds, 2004).

With respect to compliance, second-born children may profit from the presence of an older sibling who can serve as a role model how to behave during parental limit-setting (Barr & Hayne, 2003). Given that compliance improves with age (Kochanska et al., 2001), second-born children are confronted with a more compliant sibling, which may help them to be compliant themselves through imitation processes. In addition, second-born

children may learn about the potential negative consequences of noncompliance by observing parental discipline directed towards their older sibling, which in turn may enhance their compliance through processes of vicarious learning. Furthermore, older siblings have also been found to discipline their younger siblings in the context of parental limit-setting (Author, 2014), promoting second-born children's compliance with parental requests.

Seemingly contradictory to the finding that second-born children show more adaptive social behaviors than firstborn children, our results indicate that second-born children also display more externalizing behavior. Social cognitive theory may also explain these results. Because second-born children have more experience with sibling interactions than firstborn children at the same age do, they also have more experience with conflicts and rivalry. Previous research has indicated that firstborn children use more aggression during sibling conflicts than second-born children, which is likely to be due to the fact that firstborns are stronger and more dominant than their younger siblings (Howe, Rinaldi, Jennings, & Petrakos, 2002). Nonetheless, these conflicts and experiences with externalizing behavior of an older sibling may teach second-born children that the use of aggression can be effective, for example in conflicts with peers (Hay et al., 2011) or to gain parental attention (Volling, McElwain, & Miller, 2002).

Another explanation for the seemingly discrepant finding of more compliance and more externalizing problems in second-born children compared to firstborns may lie in the difference in assessment methods. Compliance was measured through standardized observations during a don't touch task, whereas externalizing behavior was measured through parent reports that do not specify a particular situation or context. Thus, second-born children may display more compliance towards their parents in a discipline situation, but show more externalizing behaviors towards others such as peers or siblings in different social contexts. In addition it could be that parents consider second-born children as more difficult because they compare them with their older siblings, who as a result of being more mature display fewer externalizing behaviors (Alink et al., 2006). This comparison could lead to inflated perceptions of second-born children's externalizing behaviors.

No main effect of birth order was found for inhibitory control. Since regulation of behavior shifts during toddlerhood from external to self-control and before the age of two children need guidance of a more experienced other to regulate their behavior and to acquire self-control (Kochanska et al., 2001), parental guidance may be more important for the development of inhibitory control than experiences with sibling interactions. In addition, genetic factors have been found to explain an important part of the variance in inhibitory control, especially during childhood (Bezdjian, Baker, & Tuvblad, 2011), and may be more influential in the development of inhibitory control than in the development of social behaviors (Burt, 2009). This could result in smaller differences between siblings in inhibitory control compared to the other social behaviors. We found however an interaction effect between birth order and sibling gender configuration. Second-born sisters outperformed their firstborn brothers on inhibitory control, whereas no such difference was found for other sibling gender configurations. The combination of the tendency of parents to stimulate inhibition of disruptive behavior more in girls than in boys (Bjorklund & Kipp, 1996), and being more experienced in providing external regulation to foster inhibitory control once they have their second child (Whiteman et al., 2003) may be responsible for the pattern of second-born girls outperforming their firstborn brothers on inhibitory control.

Notably, sibling gender configuration only moderated birth-order effects on children's inhibitory control and not for the other social behaviors. Previous studies have related differences between sibling dyads in social behaviors, such as aggression and prosocial behavior, to sibling gender configuration (Ligthart, Bartels, Hoekstra, Hudziak, & Boomsma, 2005; Stauffacher & DeHart, 2006; Van Lange et al., 1997). However, these studies only focused on the main effect of sibling gender configuration, whereas our study examined the interaction between birth-order effects and sibling gender configuration. In addition, the difference in the influence of genetic factors on inhibitory control and other social behaviors could explain why birth-order effects were only influenced by gender for inhibitory control (Burt, 2009).

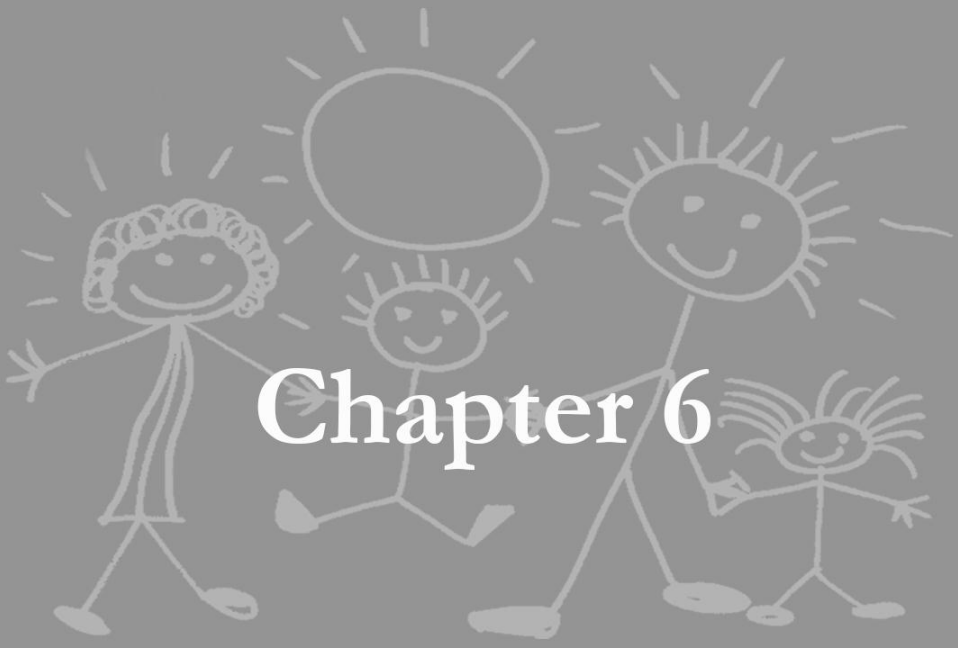
The results of this study support the social cognitive theory (Bussey & Bandura, 1999), which suggests that second-born children may acquire more adaptive and maladaptive social skills through vicarious learning. In addition,

Vygotsky's sociocultural theory (1978) proposed that sibling teaching may lead second-born children to acquire more skills than their firstborn siblings at the same age, and our results may provide evidence to extend this to social development. Because we found that second-born children had more adaptive social skills than their firstborn siblings at the age of three, this could even be in line with the confluence model which states that during early childhood second-born children will outperform firstborn children (Zajonc & Markus, 1975; Zajonc & Sulloway, 2007). The result concerning externalizing behavior could be seen as evidence in favor of the family niche model with second-born children displaying more rebellious behavior than firstborns, but the results on compliance seem to contradict this idea. The results on externalizing behavior may be interpreted as evidence in favor of theories proposing that firstborns would have a developmental advantage over second-born children in terms of social behaviors (as suggested by the resource dilution model and evolutionary theories).

This study extends previous work on birth-order effects with its strong longitudinal within-family design and its focus on social behavioral development. However, some limitations need to be mentioned. First, the presence of the other sibling during the observational tasks used to measure sharing behavior and compliance may have amplified birth-order effects. Firstborn children had to share with a preverbal and less powerful sibling, while second-born children shared with stronger and more dominant siblings who were very well able to communicate their wishes. In the compliance task, firstborn children were confronted with a younger sibling who had more difficulty with being compliant, while second-born children were confronted with an older sibling who was better able to comply with the parent. However, these situations are representative for how siblings influence each other in daily life, and thus have high ecological validity. It seems reasonable to expect that these experiences within the family also shape the social behaviors that a child displays in other settings. Future studies could address this by comparing social behaviors of firstborn and second-born children displayed within and outside the family context. A second limitation is the use of parent report to measure child externalizing behavior. These measures may provide information on how parents perceive child problem behavior instead of providing an objective measure of actual child behavior. Finally, our

sample consisted primarily of highly educated parents, which may limit the generalizability of the results.

This is one of the very few longitudinal studies on birth-order effects on child development using a within-family design, enabling a comparison between firstborn and second-born children from the same family at the same age. At the age of three years, unique experiences of firstborn versus second-born children already appear to have influenced their social development, with second-born children, especially girls with older brothers, having developmental advantages over their firstborn siblings. Observations of parent-sibling interactions, having more experienced parents, and interactions with an older sibling may be important factors underlying this advantage. Future research may investigate these factors more explicitly by observing sibling interactions during early childhood and triadic interactions including a parent and two children. Although the processes through which birth order influences social development require further research, this study emphasizes the importance of birth order as a within-family factor that explains individual differences in children's social development.



Chapter 6

General discussion

In this dissertation firstborns' interactions with their younger sibling and parenting towards siblings are examined in relation to socio-emotional development. Chapter 2 showed that firstborns' sharing with their second-born siblings was primarily influenced by situational factors, such as the presence of a specific parent and interacting with a parent instead of an unfamiliar adult before sharing In Chapter 3 it was found that parenting towards all children in a family influences socio-emotional development of a specific child. Chapter 4 provides evidence for gender differences in sibling discipline and support in interactions between siblings in the context of parental limit-setting. Finally, in Chapter 5 was found that second-born children have more social skills at the age of three than their firstborn siblings, but compared to these firstborn siblings also showed more externalizing behaviors. Below, these findings are summarized and discussed in more detail. The review of the findings will emphasize the role of child characteristics and parenting towards two children within a family on sibling interactions and firstborns' socio-emotional development.

Theoretical implications

A theoretical framework that is often referred to in family studies (Blandon & Volling, 2008; Feinberg & Hetherington, 2001; Meunier, Boyle, O'Connor, & Jenkins, 2013) is family system theory (Minuchin, 1985). This theory proposes that not only individuals but also dyads within a family influence each other. However, family system theory primarily focuses on main effects, for instance how negative parent-child interactions could lead to negative sibling interactions through a spillover effect, whereas relations between family processes and sibling interactions are also known to be moderated by child characteristics and effects of other interactions within the family (Brody, 1998; Feinberg & Hetherington, 2001). Moreover, because of this focus on main effects of dyadic interactions on an individuals' behavior, family system theory may explain effects of processes that differ between families rather than how these processes depend on specific within-family factors. These within-family factors may explain how dyadic interactions may influence siblings within the same family differently (Feinberg & Hetherington, 2001). Therefore, models should include child characteristics and examine the interaction between dyadic processes in addition to main effects of dyadic processes on child socio-emotional development.

The studies presented in this dissertation addressed these issues by adopting a broader approach to the investigation of firstborns' interactions with the second-born child. In addition to examining the direct effect of parenting towards a child on siblings' behavior, characteristics of both siblings and interactions between parenting towards both siblings were included. Figure 1 presents a model of the relations that can be inferred from the results of the studies described in this dissertation. In this model bidirectional effects of child characteristics and of parenting on firstborns' behaviors towards the second-born child are depicted.

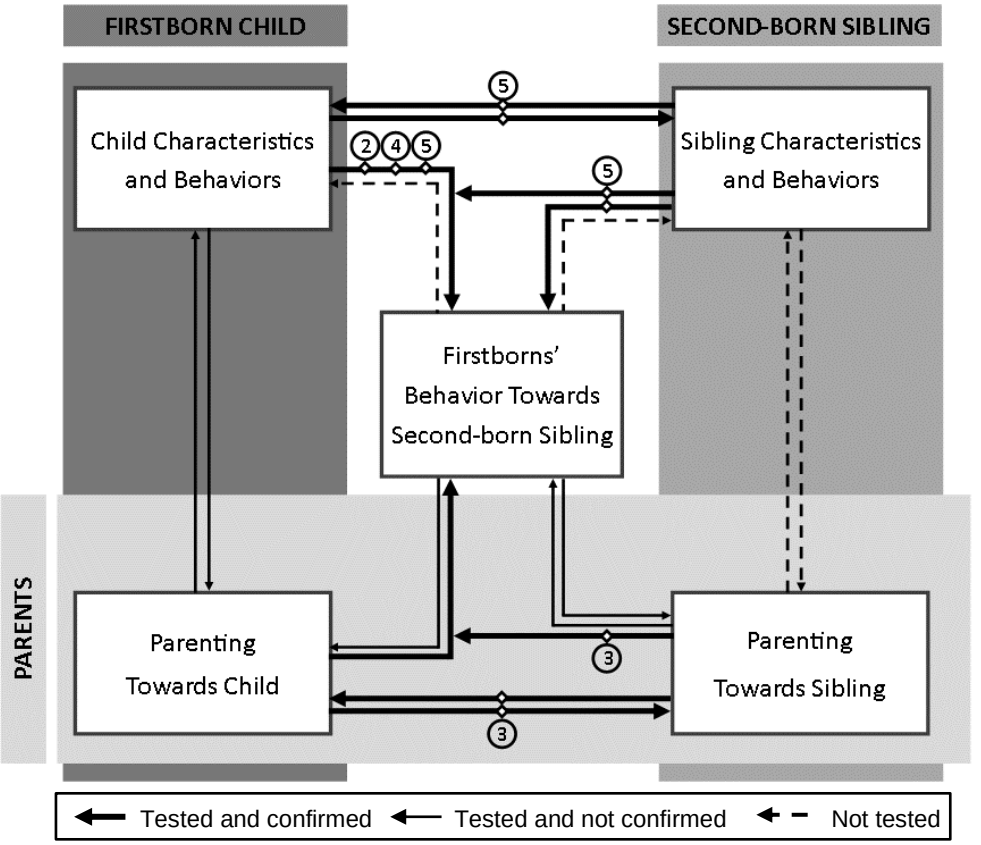


Figure 1. Model of tested and untested family processes in families with two children

Note. The numbers refer to the chapters focusing on the specific aspect.

Child characteristics and firstborns' behaviors towards the younger sibling. In Chapter 2 and Chapter 4 child characteristics of both siblings and firstborns' interactions with the second-born child were examined in families with two children, representing the upper part of Figure 1. Characteristics of both siblings were investigated in relation to children's sharing behavior with their younger siblings, and the children's behavior towards their younger siblings during parental limit setting. More specifically, firstborns' interference in or prevention of noncompliant behaviors of their younger sibling and firstborns' comforting behavior towards a distressed younger sibling were examined. Firstborns' prosocial behavior increased with age - older firstborns shared more treats with their younger sibling (Chapter 2) and displayed more sibling support during parental limit setting (Chapter 4) than younger firstborns. These increases in prosocial behavior from the age of two to four years of age are consistent with the developmental pattern of prosocial behavior described in the literature. Although prosocial behavior develops until adolescence, the frequency of displaying prosocial behavior increases especially during the toddler and preschool years (Fabes & Eisenberg, 1998; Hastings, Utendale, & Sullivan, 2007).

Moreover, gender of the firstborn children moderated the relation between empathy and sibling discipline and support (Chapter 4), indicating that empathy is related to gender specific social behaviors towards a younger sibling. More empathic boys displayed more sibling discipline during parental limit setting, while more empathic girls displayed more sibling support. Main effects of firstborns' gender both in relation to their sharing, discipline and comforting behaviors towards their younger sibling were not significant.

Characteristics of second-born children were unrelated to the behaviors their older siblings showed towards them. The number of treats firstborn children shared with their second-born siblings was not related to gender or externalizing behavior of the second-born children (Chapter 2). In addition, gender of the second-born children was neither related to firstborns' sibling discipline nor sibling support (Chapter 4). This supports the view that child gender, especially gender of the younger sibling, is less important in sibling interactions than it may be in interactions with peers (McHale, Kim, Whiteman, & Crouter, 2004).

Overall it seems that characteristics of the firstborn are more influential in their behaviors towards the second-born child, than

characteristics of the second-born child. Because of their more advanced developmental level compared to their younger siblings, firstborns will more often take the lead during sibling interactions and have more control over their younger sibling than vice versa (Howe & Recchia, 2005; Howe, Rinaldi, Jennings, & Petrakos, 2002; Recchia & Howe, 2009). So firstborn children may respond to their younger siblings irrespective of the younger siblings' gender, while second-born children with empathic older brothers will have different experiences in sibling interactions than children with empathic older sisters. These different experiences in sibling interactions may result in different socio-emotional development in second-born children (Howe & Recchia, 2005). Children with more empathic older brothers may, as a result of being disciplined more often, learn to be compliant faster during parental limit setting, while children with more empathic older sisters may feel more supported, experience a warmer sibling relation, and as a result may develop better social skills (Howe et al., 2002). Based on these results experiences of second-born children within sibling interactions may depend on characteristics of their firstborn sibling. The supposedly bidirectional relation between older and younger siblings' characteristics and behaviors, as presented in Figure 1, may be more unidirectional, at least during early childhood. How these interactions may influence second-born children's development requires further research.

Birth order and sibling gender configuration. The results described in Chapter 5 provide evidence for the importance of birth-order effects on both adaptive and maladaptive social development. Second-born children displayed more sharing, higher levels of empathy, more compliance, and more externalizing behavior than their firstborn siblings at the same age. This indicates that different experiences of firstborn and second-born children influence their development. In line with social-learning theory (Bandura, 1977), second-born children seem to profit from their interactions with older siblings and their observations of parent-sibling interactions, or from having more experienced parents. The presence of an older sibling provides second-born children with the opportunity to practice with social interactions and reciprocal relations, which might enhance their prosocial development (Howe, Petrakos, Rinaldi, & LeFebvre, 2005). In addition, firstborns may actively teach new skills to the second-born child (Howe & Recchia, 2005), and frequently discipline or support second-born children

during a challenging situation (Chapter 4), which may enhance compliance in second-born children. Furthermore, firstborn children provide a model for their younger siblings (Bandura, 1977). Through observational learning, second-born children may learn behaviors by imitating their firstborn sibling or by observing parent-sibling interactions (Barr & Hayne, 2003). Especially compliance may be influenced by these processes, because in parental limit-setting situations with the two siblings present, most firstborn children will provide a more compliant role model for the second-born children (Chapter 5).

Siblings also learn maladaptive behaviors from each other through observational learning. Previous studies have indicated that observational learning is an important mechanism through which externalizing behaviors, for example aggression, are learned (Patterson, Dishion, & Bank, 1984). Hence, the results indicating that second-born children display more externalizing behaviors could also be explained through processes of observational learning.

Sibling gender configuration only moderated the birth-order effect on inhibitory control (Chapter 5). At the age of three years, second-born girls had higher levels of inhibitory control than their firstborn brothers, while no birth-order effect for other sibling gender configurations was found. Given the result described in Chapter 4 that siblings of more empathic firstborn brothers may experience more sibling discipline, the development of self-regulation may be stimulated more, which could encourage the development of inhibitory control. The combination of this tendency of firstborn boys and gender-differentiated parenting with parents stimulating inhibition more in girls than in boys (Bjorklund & Kipp, 1996), could explain why only second-born sisters outperform their firstborn brothers.

As described above, the behavior of firstborn children towards their younger siblings was related only to the gender of the firstborn children themselves and not to the gender of their younger siblings or to gender sibling configuration. The results described in this dissertation show that during early childhood sibling gender configuration had a minimal effect on social development, while birth order had a large effect which was stable across different aspects of social development. This highlights the importance of taking birth order into account when investigating child social development. Sibling gender configuration seems to be less important than

birth order for socio-emotional development during early childhood. An explanation could be that interactions between siblings become more gender specific at a later age, for example during adolescence, when processes of imitation and de-identification become more dependent on the combination between sibling gender configuration and quality of the sibling relation (Whiteman, McHale, & Crouter, 2007).

The results concerning birth order suggest that both parenting and interactions between siblings may be influenced by child characteristics such as birth order and gender, and that these in turn may influence differences in the development of firstborn and second-born children. These processes are presented in Figure 1 and underline the importance of extending family system models with the relation between child characteristics of both siblings and family processes in order to explain within-family differences in the development of siblings.

Parenting and sibling interactions. In addition to firstborn and second-born children's characteristics, parenting towards both siblings was related to firstborns' interactions with their younger sibling (Figure 1). In Chapter 2, situation-specific factors related to the presence of a parent predicted firstborns' sharing behavior. Firstborn children shared more with their younger siblings when they interacted with one of their parents directly before the sharing episode. In addition, at the age of four years, they shared more in the presence of their fathers than in the presence of their mothers. Sharing behavior in these young children seems to be more positively affected by recent experiences with parent-child interactions than by experiences with interactions with an unfamiliar adult, and by the presence of a specific parent. This indicates that sibling interactions at least partly depend on other factors outside the sibling dyad. The effect of the experience with a parent-child interaction on sharing is congruent with results of recent research suggesting that situational factors, such as having a positive mood or being observed by a peer or even being presented with pictures of eyes, are more important than parenting or individual differences in predicting prosocial behavior (Leimgruber, Shaw, Santos, & Olson, 2012; Powell, Roberts, & Nettle, 2012; Van IJzendoorn, Bakermans-Kranenburg, Pannebakker, & Out, 2010). Moreover, experiences during the parent-child interaction may lead to more sharing behavior during the sharing episode through a spillover effect of positive interactions (Criss & Shaw, 2005; Erel, Margolin, & John, 1998), in

line with family system theories (Minuchin, 1985; Volling et al., 2009). Interactions with an unfamiliar adult are predicted to have less influence on subsequent sibling interactions.

In Chapter 3 firstborn children shared more and were more compliant when fathers were more sensitive towards them, but only if fathers were less sensitive towards their younger brother or sister. The effect of sensitivity of both parents directed towards the firstborn was not related to the firstborns' sharing behavior (Chapter 2), and maternal sensitivity directed towards the firstborn was not related to firstborns' compliance (Chapter 3). Extending family system theories (Minuchin, 1985; Volling, Kolak, & Blandon, 2009), Chapter 3 showed that child social development is influenced by parenting directed towards them in combination with the parenting towards a sibling.

Given that children from the age of six months already compare behaviors directed towards themselves and towards others, and from that age feel jealous when they are being disadvantaged (Hart, 2010), social comparison between siblings may be an important process in the development of social behaviors. Contrary to previous studies that found negative developmental outcomes for all children as a consequence of differential parenting, the results of Chapter 3 show a positive effect of social comparison, with children who experience to be favored over their younger siblings displaying more positive behavior than children who experience similar or lower levels of sensitivity compared to their younger sibling. Since sharing was observed in interaction with the second-born sibling instead of with parents or peers, compassion with the less favored sibling may explain the positive relation between sharing and being favored. Moreover, compliance of the firstborn children was also observed during a situation in which both siblings were present. The presence of the younger siblings may have emphasized the effect of social comparison and sibling rivalry on the behavior of the firstborn children (Boyle et al., 2004), which made them possibly more inclined to comply with parental rules to assure continuation of their favored position compared to their younger siblings (Fearon et al., 2006).

Finally the studies described in this dissertation emphasize the importance of including fathers in family research. The interaction effect of sensitivity towards the two siblings on firstborns' behavior was only significant for fathers' sensitivity and not mothers' sensitivity (Chapter 3). In

addition, at the age of four years, firstborns shared more in the presence of their fathers than in the presence of their mothers (Chapter 2). These result may indicate that socialization by fathers towards both children is important in explaining variance in the social development of siblings. Children have been found to exhibit greater self-regulated compliance towards their fathers than towards their mothers (Feldman & Klein, 2003). In addition, although fathers and mothers are similar in their directedness during discipline situations, fathers are often seen by their children as more restrictive than mothers, and by the age of four years they are more compliant towards their fathers (Power, McGrath, Hughes, & Manire, 1994). It could be that fathers are more important for the development of their firstborn than of their second-born children in the first years after the birth of the second child (Volling, 2012). During these years second-born infants need more care than their older siblings, and as a result mothers tend to spend more time with the second-born infant, while fathers may spend more time with the firstborn child (Volling, 2012). Since fathers and firstborns spend more time together, fathers have more opportunities to influence the behavior of the firstborn compared to the behavior of the second-born child.

In addition to child characteristics, parenting is related to sibling interactions and child social development through parent-child interactions preceding the sibling interaction and social comparison mechanisms. This is presented in the lower part of Figure 1. The model describes the combination of child and parent effects on firstborns' behaviors towards the second-born child. In addition to these effects, parenting is related to child characteristics and behaviors, for example child gender or temperament (Brody, 1998; Hastings, McShane, Parker, & Ladha, 2007), therefore these relations were added to the model presented in Figure 1. Future research should investigate these processes as an important addition to the parenting directed towards the children in the family.

Limitations

Some limitations of the studies described in this dissertation have to be mentioned. First, the sample consisted primarily of highly educated parents, due to a selective non-response of parents with lower educational levels. In addition, our sample consisted predominantly of Caucasian families due to our selection criteria aimed at obtaining a homogenous sample, and although

the educational level of our sample is comparable with those of convenience samples of other studies including both fathers and mothers (e.g. Blandon & Volling, 2008; Verhoeven, Junger, Van Aken, Dekovic, & Van Aken, 2010), these issues limit the generalizability of the results. Since ethnicity, social status and parental educational background may influence the early development of social behavior within families (e.g., Linver, Brooks-Gunn, & Kohen, 2002), the relation between parent-child interactions, child characteristics, and sibling interactions needs to be studied further in more diverse samples.

A second limitation is that the studies described in Chapter 3 and 4 use cross-sectional data and thus longitudinal bi-directional associations between parenting, older siblings' behavior and younger siblings' behavior could not be addressed. Although the results of these studies highlighted relevant associations between sibling behaviors, child characteristics and parenting behavior, it is important that future research investigates the development over time of interactions between parents and children and between siblings. Longitudinal designs could explain how siblings influence each other and how child behavior could influence parenting towards a sibling. Based on the comparison of socio-emotional behavior of firstborn and second-born children in Chapter 5, the conclusion can be drawn that second-born children have an advantage in their social development compared to their older siblings, but which processes are responsible for this difference remains unclear. Further research could use longitudinal cross-lagged models to investigate siblings' mutual influences on their socio-emotional development and bidirectional associations between sibling interactions and parenting.

Implications for Practice and Research

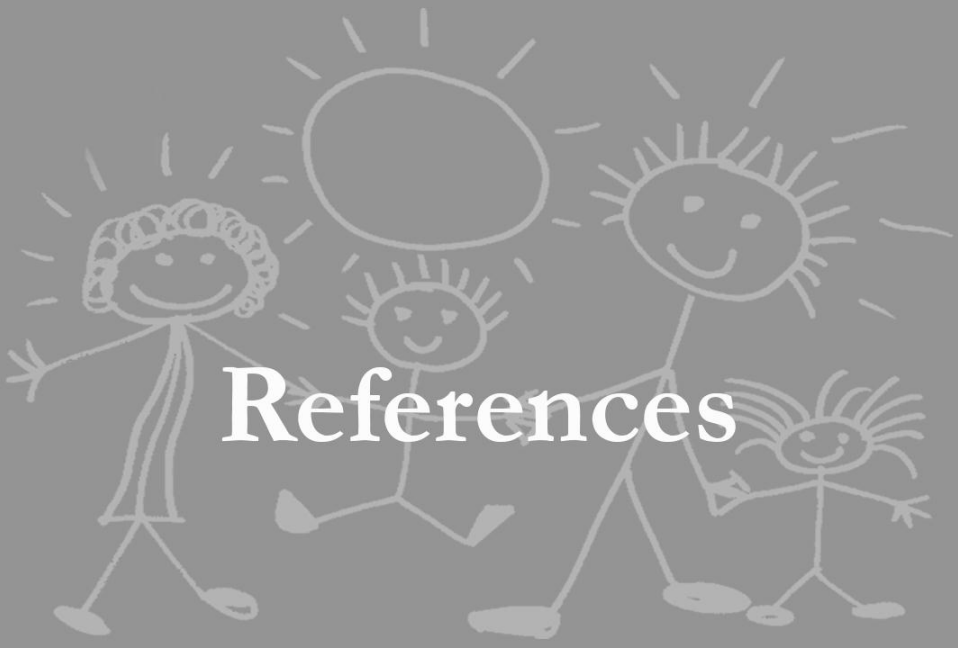
The results described in this dissertation emphasize the importance of investigating interactions between siblings and interactions between parents and both children. Currently most research concerning family influences on child social development focuses on one child in a family and on dyadic parent-child interactions. Recently, some studies investigated triadic interactions between two parents and a child and indicated that father's and mother's behaviors towards a child differed if they are observed in a dyadic or a triadic interaction (e.g., McHale, Fivaz-Depeursinge, Dickstein, Robertson,

& Daley, 2008; Sacrano de Mendonça, Cossette, Strayer, & Gravel, 2011). Studies observing parenting in a situation with one parent and two children are scarce (Farnfield, 2009), whereas this may substantially differ from parenting observed in a dyadic situation, and interacting with two children is a common situation in daily family life for families with two or more children.

In a related vein, given the importance of sibling interactions and parenting towards a sibling for social development, interventions on problem behaviors should more often include siblings (Bank & Kahn, 1975; Minuchin, 1985). Interventions aimed at changing parent-child interactions are likely to also influence interactions between the parent and the sibling and interactions between siblings (Minuchin, 1985). There are some situations in which siblings, rather than parents, are involved in therapy, namely when problems concern the sibling dyad directly or when structural changes within the family occur (e.g. due to parental divorce) (Bank & Kahn, 1975; Gnaulati, 2002). Sibling therapy aims to improve the sibling relation, which could in turn decrease child behavioral problems. However, therapies including both parents and siblings may be more effective in changing maladaptive social development by influencing interaction patterns between all family members directly.

Conclusion

The results of the studies described in this dissertation provide evidence supporting family system models and extend this theory by relating the interplay between family processes and individual characteristics to child behavior in sibling interactions (Figure 1). Sibling interactions may in turn influence socio-emotional development of both siblings. The interplay between parental and child influences can vary between siblings within the same family and may explain some of the differences in socio-emotional development between siblings. Our study is the first to investigate sibling discipline and support in a parental limit-setting situation and adds to the few studies that examined the importance of birth-order on socio-emotional development during early childhood. The results of the current set of studies highlight the importance of including all children, and parenting towards all children within a family, when examining socio-emotional development of children with siblings.



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Appendices

NEDERLANDSE SAMENVATTING (SUMMARY IN DUTCH)

De meeste kinderen groeien op in een gezin met ten minste één broer of zus (Centraal Bureau voor de Statistiek [CBS], 2003; Volling, 2012). Het opgroeien met broers en zussen beïnvloedt de ontwikkeling van kinderen. De relatie tussen broers en zussen ontwikkelt zich in de vroege kindertijd en blijft meestal de rest van het leven bestaan. Broers en zussen hebben veel gemeenschappelijke ervaringen, zowel binnen als buiten het gezin. Daarnaast brengen de meeste broers en zussen in hun kindertijd veel tijd samen door, waardoor ze mogelijk elkaars sociaal-emotionele ontwikkeling beïnvloeden (Cassidy, Fineberg, Brown, & Perkins, 2005; Van Lange, Otten, De Bruin, & Joireman, 1997). Broers en zussen kunnen elkaar zowel direct als indirect beïnvloeden. Direct door bijvoorbeeld imitatie van elkaars gedrag en indirect doordat de aanwezigheid van een broer of zus in het gezin de opvoeding door ouders kan beïnvloeden (Brody, 2004; McHale, Updegraff, & Whiteman, 2012). Daarnaast kunnen kinderen de interactie van ouders met andere kinderen in het gezin observeren en deze vergelijken met de opvoeding die ze zelf ervaren. Wanneer kinderen zich achtergesteld voelen door ouders ten opzichte van een broer of zus kan dit leiden tot onderlinge rivaliteit, verminderde kwaliteit van relaties tussen broers en zussen en problemen in de sociaal-emotionele ontwikkeling (Volling, Kennedy, & Jackey, 2010). Rivaliteit tussen broers en zussen kan echter ook leiden tot meer positief gedrag, als een manier om positieve aandacht van ouders te krijgen (Fearon et al., 2006; Fearon, Bakermans-Kranenburg, & Van IJzendoorn, 2010; Knafo, 2009).

De mate waarin en de manier waarop broers en zussen effect hebben op elkaars sociaal-emotionele ontwikkeling kan afhankelijk zijn van de plaats in de kinderrij en het geslacht van de kinderen. Zo blijkt uit eerder onderzoek dat vooral jongere kinderen profiteren van het imiteren van gedrag van hun oudere broers en zussen (Barr & Hayne, 2003), terwijl oudere kinderen profiteren van het oefenen in het afstemmen van hun gedrag op jongere broers en zussen (Howe, Recchia, Della Porta, & Funamoto, 2012). Daarnaast kan in gezinnen met alleen jongens of alleen meisjes, in vergelijking met gezinnen met zowel jongens als meisjes, imitatie een grotere rol spelen, maar kan ook juist de neiging bestaan om zich te onderscheiden van het andere kind (Whiteman & Buchanan, 2002).

Om de ontwikkeling van ieder kind binnen een gezin met meerdere kinderen te begrijpen is het essentieel te onderzoeken hoe interacties tussen broers en/of zussen gerelateerd zijn aan eigenschappen van alle kinderen en hoe de opvoeding van alle kinderen in het gezin hiermee samenhangt. In dit proefschrift worden de volgende onderzoeksvragen behandeld:

1. In hoeverre zijn ouder, kind en situationele factoren gerelateerd aan de mate waarin kinderen delen met hun jongere broers en zussen?
2. In hoeverre hangt de opvoeding van beide kinderen door vaders en moeders samen met de mate waarin het oudste kind deelt en gehoorzaam is?
3. In hoeverre zijn eigenschappen van het oudste kind gerelateerd aan het ondersteunen van of het grenzen stellen aan het gedrag van hun jongere broers en zussen in een situatie waarin ouders regels opleggen aan beide kinderen?
4. Hoe hangt de plaats in de kinderrij samen met de sociaal-emotionele ontwikkeling van twee kinderen in een gezin en speelt het geslacht van de kinderen hierbij een rol?

Voorspellers van de mate waarin kinderen delen met hun broertjes en zusjes

Een onderdeel van de sociaal-emotionele ontwikkeling is het leren delen met anderen (Knafo & Plomin, 2006). Tijdens de peutertijd ontwikkelen kinderen prosociale vaardigheden en worden ze steeds beter in staat om te delen met andere kinderen (Fabes & Eisenberg, 1998; Hastings, Utendale, & Sullivan, 2007). In onze studie bleken eerstgeboren kinderen inderdaad meer rozijnen te delen met hun jongere broertjes en zusjes naarmate ze ouder werden. Daarnaast deelden kinderen meer wanneer ze voorafgaand aan het delen een gestructureerde taak samen met een van hun ouders hadden gedaan (het opruimen van speelgoed of het samen bekijken van een platenboek), dan wanneer ze met een voor hen onbekende volwassene hadden gespeeld met speelgoed van hun keuze. In overeenstemming met uitkomsten van eerder onderzoek blijkt hieruit dat de mate waarin kinderen delen voor een belangrijk deel gerelateerd is aan situatie specifieke factoren (Van Rompay et al., 2009; Van IJzendoorn, Bakermans-Kranenburg, Pannebakker, & Out, 2010), in plaats van door meer structurele factoren zoals opvoeding door ouders en eigenschappen van het kind zelf of van de jongere broer of zus met

wie gedeeld werd. Hoewel hier geen directe relaties werden gevonden tussen opvoeding van de ouders en het delen door het oudste kind, bleek in onze latere studie de interactie tussen de opvoeding van beide kinderen wel gerelateerd te zijn aan het delen van het oudste kind (zie paragraaf 'Sensitiviteit van ouders ten aanzien van beide kinderen').

Kinderen van vier jaar deelden meer in de aanwezigheid van hun vader dan in de aanwezigheid van hun moeder. De aanwezigheid van een ouder, ook wanneer deze niet direct ingrijpt in het gedrag van het kind, herinnert kinderen waarschijnlijk aan de verwachtingen van de ouder (Powell, Roberts, & Nettle, 2012). Mogelijk deelden kinderen op vierjarige leeftijd meer in de aanwezigheid van hun vader, omdat vaders door kinderen op deze leeftijd vaak als strenger beschouwd worden dan moeders (Power, McGrath, Hughes, & Manire, 1994). Dit zou er toe kunnen leiden dat kinderen op vierjarige leeftijd, zelfs wanneer er geen verschil is tussen de disciplineerstrategieën die hun twee ouders doorgaans hanteren, gehoorzamer zijn bij hun vader dan bij hun moeder (Power et al., 1994). Misschien deelden vierjarigen in ons onderzoek ook meer in aanwezigheid van hun vader om te voorkomen dat ze door hun vader gestraft zouden worden.

Sensitiviteit van ouders ten aanzien van beide kinderen

Eveneens is de relatie tussen het gedrag van het oudste kind en sensitiviteit van vaders en moeders ten aanzien van beide kinderen in het gezin onderzocht. Sensitiviteit van ouders verwijst naar de mate waarin ouders de signalen van hun kind begrijpen en hier adequaat en prompt op reageren (Ainsworth, Blehar, Waters, & Wall, 1978). Verschillende onderzoeken hebben aangetoond dat sensitiviteit een positieve invloed heeft op de sociaal-emotionele ontwikkeling van kinderen (bv. Feldman & Klein, 2003; Kochanska & Aksan, 2006; Rothbaum & Weisz, 1994). Opnieuw was sensitiviteit van ouders ten aanzien van de kinderen niet direct gerelateerd aan de mate waarin kinderen delen met hun jongere broer of zus. Voor gehoorzaamheid werd alleen een direct effect gevonden van sensitiviteit van vader ten aanzien van het oudste kind. Daarnaast werd enkel voor vaders een interactie effect van sensitiviteit ten aanzien van hun beide kinderen op zowel de mate waarin het oudste kind deelt als de gehoorzaamheid van het oudste kind gevonden. Oudste kinderen deelden meer met hun jongere broer of zus en waren gehoorzamer wanneer hun vader sensitief was ten aanzien van het

oudste kind en relatief minder sensitief was ten aanzien van het jongere kind. Het vergelijken van de opvoeding door ouders tussen broers en zussen en mogelijke rivaliteit over positieve aandacht van ouders lijkt dus een rol te spelen in de sociaal-emotionele ontwikkeling van kinderen (Feinberg, Neiderhiser, Simmens, Reiss, & Hetherington, 2000; Vollinget al., 2010). Er zijn verschillende verklaringen te geven voor de samenhang tussen deze rivaliteit en meer positief gedrag bij de oudste kinderen. Een eerste verklaring kan zijn dat deze kinderen vanuit de angst om hun bevoorrechte positie te verliezen meer sociaal wenselijk gedrag laten zien (Boyle et al., 2004). Daarnaast zou het kunnen dat de oudste kinderen vanuit het besef dat de aandacht van vader niet gelijk verdeeld is (Hamlin, Wynn, Bloom, & Mahajan, 2011) meer met hun broertje of zusje gaan delen om voor het minder sensitieve gedrag van hun vader te compenseren.

Disciplineren en ondersteuning door broers en zussen

Dit is de eerste studie waarin ook het grenzen stellen door oudste kinderen aan hun jongere broer of zus onder de loep werd genomen. In een situatie waarbij ouders grenzen stelden aan het gedrag van beide kinderen, probeerden de meeste kinderen te voorkomen dat hun jongere broer of zus aan het speelgoed zou komen of hun ongehoorzaamheid te corrigeren. Daarnaast probeerden de oudere kinderen hun jongere broer of zus te ondersteunen bij het gehoorzamen door ze af te leiden of door ze te troosten wanneer ze overstuur raakten tijdens de taak. Het disciplineergedrag noch het ondersteunende gedrag van het oudste kind was afhankelijk van het geslacht van het jongere kind. Wel waren kenmerken van het oudste kind zelf gerelateerd aan zijn of haar corrigerende en ondersteunende gedrag. Er werd een interactie effect tussen empathie en het geslacht van het oudste kind gevonden. Bij jongens hing empathie positief samen met het disciplineren van een jongere broer of zus, terwijl bij meisjes geen verband werd gevonden tussen empathie en hun disciplineergedrag. Meisjes die meer empathie lieten zien ondersteunden hun jongere broer of zus juist vaker, terwijl voor jongens geen verband werd gevonden tussen empathie en ondersteuning van broertjes of zusjes. Dit zou erop kunnen wijzen dat, tijdens een situatie waarbij ouders grenzen stellen aan het gedrag van beide kinderen, empathie bij jongens en meisjes zich op een andere manier uit in relatie tot gedrag gericht op een jongere broer of zus.

Plaats in de kinderrij en de sociale ontwikkeling van kinderen

De relatie tussen de plaats in de kinderrij en de sociale ontwikkeling werd onderzocht door eerstgeborenen en hun als tweede geboren broers en zussen op dezelfde leeftijd te vergelijken. De kinderen die als tweede geboren waren deelden op driejarige leeftijd meer met hun broer of zus, waren gehoorzamer aan hun ouders en lieten volgens hun ouders zowel meer empathie als meer externaliserend gedrag zien dan hun eerstgeboren broertjes en zusjes op diezelfde leeftijd. Alleen voor impulsiviteit werd een interactie met de gender combinatie van de kinderen gevonden. Meisjes die als tweede kind geboren werden, waren op driejarige leeftijd minder impulsief dan hun eerstgeboren broers op dezelfde leeftijd. Het verschil tussen eerstgeborenen en als tweede geboren kinderen zou verklaard kunnen worden doordat ouders meer ervaring hebben wanneer ze hun tweede kind opvoeden, waardoor ze de sociale ontwikkeling van deze kinderen mogelijk meer stimuleren (Whiteman, McHale, & Crouter, 2003). Daarnaast hebben kinderen die als tweede geboren werden op driejarige leeftijd ervaring met interacties met een oudere broer of zus en ze hebben interacties tussen hun broer of zus en hun ouders kunnen observeren, waardoor ze meer mogelijkheden hebben gehad om sociaal gedrag te imiteren en vaardigheden van hun oudere broers en zussen over te nemen (Azmitia & Hesser, 1993; Barr & Hayne, 2003).

Conclusie

De resultaten die beschreven staan in dit proefschrift laten zien dat de sociaal-emotionele ontwikkeling van kinderen gerelateerd is aan verschillende gezinsfactoren. Zowel de opvoeding van andere kinderen in het gezin als interacties tussen broers en zussen beïnvloeden de sociaal-emotionele ontwikkeling van een kind. Interacties tussen broers en zussen zijn gerelateerd aan verschillende gezins- en kind-factoren zoals plaats in de kinderrij en geslacht van beide kinderen. Deze resultaten wijzen erop dat zowel binnen het onderzoek als binnen de hulpverlening meer aandacht zou moeten worden geschonken aan de invloed van broers en zussen op de sociaal-emotionele ontwikkeling van kinderen.

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CURRICULUM VITAE

Sheila Renate van Berkel werd geboren op 31 augustus 1986 in 's-Gravenhage. In 2004 behaalde zij haar Gymnasiumdiploma aan het Aloysius College te 's-Gravenhage. In hetzelfde jaar begon zij met de bachelor opleiding Pedagogische Wetenschappen aan de Universiteit Leiden. Na het behalen van het bachelordiploma in 2007 rondde zij in 2009 aan diezelfde universiteit de research master *Developmental Psychopathology in Education and Child Studies* af bij de afdeling Orthopedagogiek. In het laatste jaar van haar masteropleiding liep zij een klinische stage bij het Ambulatorium van de Universiteit Leiden, waar zij haar basisaantekening diagnostiek haalde. Na haar afstuderen heeft Sheila gewerkt als promovenda bij de afdeling Algemene en Gezinspedagogiek van de Universiteit Leiden, waar zij onderzoek deed naar de effecten van opgroeien in een gezin met broertjes en zusjes op de sociaal-emotionele ontwikkeling. De resultaten van haar onderzoek zijn beschreven in dit proefschrift. Naast haar aanstelling als promovenda werkte ze één dag per week als docent bij deze afdeling. Daarnaast is zij getraind in het uitvoeren van de Video-feedback Intervention to promote Positive Parenting and Sensitive Discipline (VIPP-SD). Aan het eind van haar promotietraject was Sheila drie maanden als *visiting scholar* verbonden aan het Center for Human Growth & Development (CHGD) aan de University of Michigan. Momenteel werkt Sheila als postdoc onderzoeker binnen het onderzoekscluster 'Kindermishandeling' bij de afdeling Algemene en Gezinspedagogiek van de Universiteit Leiden.

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