Mothers and fathers : Parenting practices in families with two children

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Mothers' and fathers' sensitivity towards two children: A longitudinal study from infancy to early childhood

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Manuscript submitted for publication

Abstract

For this study on child birth order and parenting, 347 families with two children were visited when the second-born children were 12, 24, and 36 months old, and their older siblings were on average two years older. Mothers showed higher levels of sensitivity than fathers at all assessments. Parental sensitivity increased from infancy to toddlerhood, and decreased into early childhood. Parents' nonintrusiveness increased from infancy to early childhood. Further, parents were more sensitive and less nonintrusive toward their firstborn child than toward their second-born child at the same age. Birth order effects on parenting could not be explained by temperament differences between first- and second-born children, but increases in paternal depression and marital dissatisfaction do appear to play a role.

Keywords: parenting, sensitivity, fathers, mothers, birth order, child age

INTRODUCTION

Most studies on parenting behavior focus on one child in the family, without taking the parents' experiences with other children into account. However, when a second child is born, family dynamics change as parents are no longer responsible for one child but have to divide their attention and affection between two children (Furman & Lanthier, 2002). Further, parents' experiences with their firstborn child have important consequences for the way they approach childrearing with later-born children (Whiteman & Buchanan, 2002). There is evidence that parents interact differently with their firstborn and later-born children within the family (e.g., Hallers-Haalboom et al., 2014; Van IJzendoorn et al., 2000; Volling, Blandon, & Gorvine, 2006), but it remains unclear whether differences in parental treatment of firstborn and second-born children are caused by differences in birth order (implicating differences in parental attention and experience) or developmental status (reflected by child age) of the child. Moreover, although both mothers and fathers are important contributors to their children's development (Lamb & Lewis, 2010), fathers are still underrepresented in studies on parenting. The aim of this study is to examine whether potential differences in mothers' and fathers' parental sensitivity and nonintrusiveness toward siblings within the family are due to birth order effects or child age effects.

Parental sensitivity is an important dimension of early childhood parenting (Mesman & Emmen, 2013). Sensitivity concerns the parent's ability to notice child signals, to interpret these signals correctly, and to respond to these signals in a prompt and adequate manner (Ainsworth, Bell, & Stayton, 1974). Central to this definition is the parent's appropriate adjustment of responses to the specific needs and interests of the child that may change over time. There is a large body of evidence emphasizing the importance of parental sensitivity for positive early child development. Parental sensitivity is related to positive child outcomes across various developmental domains, such as language and cognitive development (e.g., Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004), secure attachment (e.g., Bakermans-Kranenburg, Van IJzendoorn, & Juffer, 2003; Lucassen et al., 2011), and social-emotional functioning (e.g., Leerkes, Blankson, & O'Brien, 2009; Webster, Low, Siller, & Hacket, 2013). Another important aspect of parenting closely related to sensitivity is nonintrusiveness, which refers to the parent's ability to refrain from behavior that is over-directing, over-stimulating, or interfering with the child's activities (e.g., Bornstein et al., 2010; Lovas, 2005). Parental intrusiveness has been associated with non-optimal child outcomes in early and middle childhood, such as more externalizing behaviors and lower academic achievement (e.g., Cabrera, Shannon, & Tamis-LeMonda, 2007; Egeland, Pianta, & O'Brien, 1993; Ispa et al., 2004).

Unfortunately, most studies on parental sensitivity and nonintrusiveness focus on interactions of one parent (mostly the mother) with one child, implicitly assuming that family processes operate in similar ways for other parent-child dyads within the family (Shanahan, McHale, Crouter, & Osgood, 2007; Shanahan, McHale, Osgood, & Crouter, 2007). However, parents have been found to treat firstborn and later-born children within the family differently (e.g., Hallers-Haalboom et al., 2014; Van IJzendoorn et al., 2000; Volling et al., 2006). Several theories address differences in parental treatment of firstborn and later-born children, with most of them pointing toward higher quality parenting toward firstborn children than toward later-born children.

According to the resource dilution hypothesis parents experience a period in which all their resources (i.e. time and attention) are available for their firstborn child. The birth of a new child results in a decrease of these parental resources for all children in the family (Blake, 1981), but the firstborn child is the only one who experienced full parental attention and availability for a period up until the birth of a younger sibling. Thus, in general parents have spent more time with their firstborn children and are more involved with them than with their later-born children and have had more opportunities to come to know the firstborn child's unique characteristics and needs. This might result in higher levels of sensitive and nonintrusive parenting toward firstborn children than toward later-born children. In addition, from an evolutionary viewpoint parents invest the most in offspring with the greatest chance of survival, thereby increasing the probability of reproductive success (different parental investment hypothesis, Trivers, 1972, 1974). Since firstborn children by definition have survived for a longer period of time than later-born children, they have greater reproductive value for their parents. Results show that firstborn children indeed are preferred over later-born children by their parents in terms of parental presence and face-to-face behavior (Keller & Zach, 2002).

However, neither the resource dilution hypothesis nor the different parental investment hypothesis take into account that experiences with the firstborn child can affect the parents' relationship with later-born children (Shanahan, McHale, Crouter, et al., 2007). The learning-from-experience hypothesis proposes that parents use their experiences with their firstborn child when faced with similar situations with their later-born child (Whiteman, McHale, & Crouter, 2003). As a result, parents are more experienced and may feel more competent in the interaction with later-born children, which in turn might lead to an improvement of parent-child interactions with later-born children. Indeed, parents report less conflict with their second-born than their firstborn children and have greater knowledge of their second-born children's daily activities than of their first-born children's activities during early adolescence (Whiteman et al., 2003). Further, second-born children tend to experience fewer conflicts with their parents during the transition into

adolescence than firstborns, whereas firstborn children report an elevation of parent-offspring conflict frequency during this transition (Shanahan, McHale, Osgood, et al., 2007).

Although most theories suggest that parents interact with their children differently based on birth order (Blake, 1981; Trivers, 1972, 1974; Whiteman et al., 2003), there are also studies that point out that parental differential treatment might be due to characteristics other than birth order itself, such as family stress factors and child temperament. Child temperament is related to a wide range of positive and negative parenting behaviors (Putnam, Sanson, & Rothbart, 2002). There is evidence that firstborn and later-born adolescents and have different personality characteristics (e.g., Beck, Burnet, & Vosper, 2006; Healey & Ellis, 2006; Paulhus, Trapnell, & Chen, 1999). Unfortunately, no previous studies examined temperamental differences between first-born and second-born children during early childhood, so it remains unclear whether differences in parental treatment might be due to differences in child temperament. Moreover, family stress factors (such as marital dissatisfaction and depression) may also interfere with parents' capacity to be attuned to and responsive toward their children (Erel & Burman, 1995; Grych, 2002; Krishnakumar & Buehler, 2000; Lovejoy, Graczyk, O'Hare, & Neuman, 2000; Wilson & Durbin, 2010). Since family stress increases with an increasing number of children in the family (e.g., Östberg & Hagekull, 2000; Twenge, Campbell, & Foster, 2003), an increase in marital dissatisfaction and parental depression might result in less optimal parenting behavior toward later-born children.

Surprisingly, only few studies examined differences in parental treatment of firstborn and later-born children during infancy and early childhood. To date, there is evidence that parents use more gentle guidance with their 46-month-old firstborn child than with their later-born toddler (Volling et al., 2006). In addition, a recent study showed that mothers and fathers were more sensitive and nonintrusive toward their firstborn three-year-old children than toward their second-born one-year-old children (Hallers-Haalboom et al., 2014). However, in both studies birth order and child age are confounded because differences in parental treatment were examined at the same time point, when the two siblings differed in age. As a result, it remains unclear whether differences in parental treatment of firstborn and later-born children are due to birth-order effects or child age. Only longitudinal designs allow for comparisons of siblings from the same family at the same age. To our knowledge, no more than two observational studies compared parental treatment of firstborn and second-born children within the family when they had the same age. Dunn, Plomin, and Nettles (1985) observed that mothers behaved very similarly toward their two siblings when each child was 12 months old. This suggests that maternal behavior might primarily reflects characteristics of the mother and is not affected by those of the infants (Dunn et al., 1985). In contrast to

these findings, Van IJzendoorn and colleagues (2000) showed that mothers were less sensitive in their interactions with their later-born child than with their firstborn child when they were both observed at 12-14 months.

So far, the scarce observational studies examining differences in parental behavior toward firstborn and second-born children when they had the same age all focused on mothers' parenting behavior. As a result, it remains unclear to what extent fathers differentiate between firstborn and later-born children within the family. Fathers are often neglected in research on their children's development, whereas there is ample evidence that paternal sensitivity and nonintrusiveness do contribute to positive child development (e.g., Cabrera et al., 2007; Lucassen et al., 2011; Tamis-LeMonda et al., 2004; Webster et al., 2013). However, this does not necessarily mean that mothers and fathers show similar levels of parental sensitivity and nonintrusiveness. Indeed, mothers are generally found to be more sensitive and less intrusive toward their children than fathers (e.g., Barnett, Deng, Mills-Koonce, Willoughby, & Cox, 2008; Hallers-Haalboom et al., 2014; Lovas, 2005; Schoppe-Sullivan et al., 2006). One cross-sectional study with children between 7 and 46 months old found an interaction between parent gender and child age. Fathers with older children were more sensitive and nonintrusive in their interaction than fathers with younger children, whereas mothers provided similar levels of sensitivity and nonintrusiveness regardless of child age (Bergmann, Wendt, von Klitzing, & Klein, 2013). The difference in fathers' sensitivity and nonintrusiveness toward younger and older children might be associated with the finding that the time fathers spend on caregiving activities increases when the child becomes older (Yeung, Sandberg, Davis-Kean, & Hofferth, 2001). However, Bergmann and colleagues (2013) observed parenting behavior toward children of different ages cross-sectionally instead of using a longitudinal design. As a result, firm conclusions about the role of child age can not be drawn.

When disentangling the effects of birth order and child age on parenting behavior, it is essential to examine the developmental course of parenting behavior toward siblings over time to understand the potential effects of child age. In the transition from infancy to early childhood, parents are challenged to adapt their responses according to the rapid developmental changes of their children, such as the acquisition of upright locomotion and language (Iverson, 2010; Malina, 2004). During the first years of life, infants start to speak their first words and are increasingly able to communicate with their environment. As a result, young children gain more skills to communicate their needs and wishes. This increased use of language might help parents to adjust their responses in a way that fits their children's needs. Several studies provide evidence that levels of maternal sensitivity indeed increase from infancy to early childhood (Braungart-Rieker, Hill-Soderlund, & Karras, 2010; Kemppinen, Kumpulainen, Raita-Hasu, Moilanen, & Ebeling, 2006),

suggesting that mothers might find it more easy to adequately respond to older children than to younger children.

Current study

The current study longitudinally examines the effect of child age and birth order on mothers' and fathers' sensitivity and nonintrusiveness. We tested the following hypotheses: (1) levels of parental sensitivity and nonintrusiveness toward their children increase as the child becomes older (e.g., Braungart-Rieker et al., 2010; Kemppinen et al., 2006); (2) mothers show higher levels of sensitive and nonintrusive parenting behavior toward their children than fathers (e.g., Barnett et al., 2008; Hallers-Haalboom et al., 2014); (3) differences in parental sensitivity and nonintrusiveness between mothers and fathers become smaller as the children become older (Bergmann et al., 2013); and (4) levels of parental sensitivity and nonintrusiveness toward firstborn and second-born children differ when observed at the same child age (Blake, 1981; Trivers, 1972; Whiteman et al., 2003). Since several competing hypotheses with respect to birth order differences exist, we examined whether firstborn or second-born children receive more optimal parenting. Last, if differences in parental sensitivity and nonintrusiveness toward firstborn and second-born children are present, we (5) test whether these differences can be explained by differences in child temperament or changes in parental relationship dissatisfaction and depression. The current study extends previous work by disentangling the effect of birth order, parental well-being, child temperament, and child age on parenting behavior during infancy and early childhood.

METHOD

Sample

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

Families with two children were selected from municipality records in the Western region of the Netherlands. Families were included if the second-born child was around 12 months of age and the firstborn child was approximately 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 in a study on the unique role of mothers and fathers on socio-emotional development with two home visits each year over a period of three years. All families received a letter, a brochure with the details of

the study, and an answering card to respond to the invitation. Of the 1,249 eligible families 31% were willing to participate (n = 390). The participating families did not differ from the non-participating families in age of mothers (p = .83) or fathers (p = .13), educational level of mothers (p = .27) or fathers (p = .10), or the degree of urbanization of residence (p = .77). At the end of the third wave, eighteen families did not participate because of problems in the family (n = 3), moving abroad (n = 5), considering the home visits too demanding (n = 7), or because they could not be reached by phone or mail (n = 3).

For the current study, families were excluded if (1) observations of parental sensitivity or nonintrusiveness for one or more waves were missing (n = 9) or (2) if the age difference between the firstborn child at the first wave and the second-born child at the third wave was more than 6 months (n = 16), resulting in a final sample of 347 families. The current sample consisted of families with the following sibling gender constellations: 95 boy-boy (27%), 83 girl-girl (24%), 85 boy-girl (25%), and 84 girl-boy (24%). At the time of the first home visit at wave 1 the age of the firstborn children ranged from 2.5 to 3.6 years (M = 3.0, SD = 0.3) and the second-born children were 12 months old (SD = 0.2). The families were visited again when the second-born children were 24 (SD = 0.3) and 36 months (SD = 0.5) old. At wave 1, mothers were aged between 25.1 and 45.6 years (M = 34.0, SD = 3.9) and fathers were between 25.8 and 53.3 years of age (M = 36.7, SD = 4.9). With regard to educational level, most mothers finished academic or higher vocational schooling (79%), and the same was true for fathers (77%). Mothers worked on average 25.9 hours per week (SD = 8.6, range 0-60) and fathers worked 37.1 hours per week (SD = 7.0, range 0-70), which is comparable to the average working hours of mothers and fathers in the general Dutch population (SCP, 2012). At wave 1, most parents were married (80%), 13% of the couples had a cohabitation agreement or registered partnership, and 7% lived together without any kind of registered agreement. During the study, parents of 8 families got divorced, and in 15% of the families a third child was born (n = 53). Analyses with and without these families yielded similar results, so these families were retained in the current data set.

Procedure

At every wave each family was visited twice; once with the mother and the children and once with the father and the children, separated by a period of about two weeks. The order in which mothers and fathers were visited and interacted with the firstborn and second-born child was counterbalanced between families and waves. Before the first 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 the first two waves the firstborn child and both parents completed computer tests, from the third wave the second-born child also completed computer tasks. In case of a third child in the family, this child was not

present during the observations. All home visits were conducted by pairs of trained (under)graduate students. Families received a payment of 30 Euros and small presents for the children. Informed consent was obtained from all participating families. Ethical approval for this study was provided by the Commission Research Ethics Code of the Leiden Institute of Education and Child Studies.

Measures

Parental sensitivity and nonintrusiveness. The fourth edition of the Emotional Availability Scales (EAS; Biringen, 2008) was used to measure parental sensitivity and nonintrusiveness toward their children during free play. Each dyad received a bag with toys and was invited to play for eight minutes. Sensitivity refers to the parent's ability to be warm and appropriately responsive to the child. Important aspects are the expression and appropriateness of positive affect, and clarity in perception of child signals and the ability and willingness to response appropriately to such signals. Nonintrusiveness refers to the parent's ability to give the child space to explore and to refrain from intrusions on the child's activities. Important aspects are whether the parent follows the child's lead and finds non-interruptive ports of entry into the interactions. Each dimension is divided into seven subscales; the first two subscales are coded on 7-point Likert scales and the other subscales are coded using 3-point Likert scales (potential score range 7-29). For every subscale a global rating was given for the entire free play session. Subscale 7 of the Nonintrusiveness dimension (The adult is made to 'feel' or 'seem' intrusive) was excluded because it refers to child behavior rather than parental behavior (leading to a potential score range of 7-26).

The second 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 subscales led to persistent interpretation problems and some alterations were made to improve intercoder agreement (for more information see Hallers-Haalboom et al., 2014). Three groups of total thirteen coders rated the videotapes on the EAS dimensions. All groups completed a reliability set (n = 60), with at least 42% overlap between the two sets. Intercoder reliability was adequate, with intraclass correlation coefficients (single measure, absolute agreement) for sensitivity ranging from .71 to .92 and for nonintrusiveness from .72 to .92. For every wave, all dyads within the same family were coded by different coders to guarantee independency among ratings. No coder rated a parent twice. During the coding process, the first 100 videotapes of every coder were coded independently by separate coders and regular meetings were organized to prevent coder drift.

Child temperament. The Child Behavior Questionnaire (CBQ; Rothbart, Ahadi, Hershey, & Fisher, 2001) was used to measure temperament of the firstborn and second-born children when they were both three years old. For the current

study the subscales Activity Level (13 items), Inhibitory Control (13 items), Fear (11 items), and Soothability (13 items) were used. Both mothers and fathers indicated whether they had observed their child in any of the described situations over the last six months on a 7-point Likert scale (1 = *never*, 7 = *always*). The internal consistencies (Cronbach's alpha) of the temperament scale were .87 (mothers) and .80 (fathers) for the firstborn children and .85 (mothers) and .89 (fathers) for the second-born children. The scores of mothers and fathers were significantly correlated (firstborn child: $r(334) = .51$, $p < .01$; second-born child: $r(278) = .29$, $p < .01$) and did not differ significantly (firstborn child: $p = .61$; second-born child: $p = .08$). To obtain a composite measure for child temperament, the scores of mothers and fathers were averaged.

Relationship dissatisfaction. The Maudsley Marital Questionnaire (MMQ; Arrindell, Boelens, & Lambert, 1983) was used to measure the level of relationship dissatisfaction at wave 1 and wave 3. For the current study, the subscale Marital Maladjustment (10 items) was used and was rated by both mothers and fathers on a 9-point scale (0 = *completely satisfied*, 8 = *completely dissatisfied*). The internal consistencies (Cronbach's alpha) of the relationship dissatisfaction scale were .88 (mothers) and .83 (fathers) at wave 1 and .90 (mothers) and .88 (fathers) at wave 3.

Parental depressive symptoms. The subscale Anxious/Depressed of the Adult Self Report (ASR: Achenbach & Rescorla, 2003) was used to measure parental depressive symptoms at wave 1 and wave 3. Bot mothers and fathers indicated whether they had experienced any of the depressive symptoms during the past six months on a 3-point Likert scale (0 = *not true,* 1 = *somewhat or sometimes true,* 2 = *very true or often true*). The internal consistencies (Cronbach's alpha) of the depression scale were .88 (mothers) and .84 (fathers) at wave 1 and .89 (mothers) and .85 (fathers) at wave 3.

Data analysis

Missing values on the temperament scale (firstborn child: $n = 10$, second-born child: $n = 23$), relationship dissatisfaction scale (wave 1: mother $n = 9$, father $n = 9$; wave 3: mother $n = 50$, father $n = 69$), and depression scale (wave 1: mother $n = 11$, father $n = 12$; wave 3: mother $n = 55$, father $n = 72$) were predicted from available scores on wave 2 using linear regression. All variables were inspected for outliers, defined as values more than 3.29 *SD* above or below the mean (Tabachnick & Fidell, 2012). Outliers were found for the EA dimensions in all three waves ($n = 25$) and child temperament ($n = 3$). The outlying scores were winsorized by giving them a marginally higher value than the most extreme not outlying value (Tabachnick & Fidell, 2012). Analyses performed with the non-winsorized and winsorized data did not show different results. Therefore the results of the non-winsorized data are presented. The variables relationship dissatisfaction and parental depressive symptoms were positively skewed and a log transformation was used to normalize

the distribution (Tabachnick & Figell, 2012). All other variables were normally distributed.

To examine the effect of child age on parental sensitivity and nonintrusiveness, growth curve analysis was used with EQS 6.2 for Windows (Bentler, 2001). To account for nonlinear change patterns, quadratic slopes were fitted on top of linear slopes. Since the data did not show significant multivariate kurtosis, regular ML estimation was used. In addition, when there was no variance for the slopes these were set to zero. The χ^2 likelihood ratio statistic, comparative fit index (CFI), and root mean square error of approximation (RMSEA) were taken as indicators for the evaluation of the overall goodness of fit of the model. The χ^2-value provides a test of the overall fit of the model to the data, but is sensitive to sample size (Bentler & Bonett, 1980). Therefore, the fit was judged to be acceptable with a CFI value greater than .95 and an RMSEA of less than .08 (Byrne, 2006). In case of significant heterogeneity in individual growth trajectories (i.e., intercept and/or slope), gender of the parent was added to the model as a time-invariant predictor of change.

In our study, parents are nested within families. This causes dependency among observations, also referred to as the 'design effect', which can create data-analytic problems (e.g., inflated probability of Type I error). As our design is relatively simple, with predictors and outcomes all measured at the level of individual children and parents, the 'design effect' can be dealt with by computing a correction factor for the standard errors estimated in the growth curve models (Hox, 2010; Kish, 1987). The square root of design effect (DEFT) is estimated as $\text{DEFT} = \sqrt{1 + (n_{clus} - 1)\,\rho}$, where n_{clus} is the cluster size (in our case 2) and ρ is the intraclass correlation coefficient of the nested data (e.g., Downer et al., 2011; Hox, 2010). We calculated the DEFT for the standard error of each variable in the growth curve analysis: sensitivity toward firstborn child: $\text{DEFT} = \sqrt{1 + (2 - 1)\,.07} = 1.03$, sensitivity toward second-born: $\text{DEFT} = \sqrt{1 + (2 - 1)\,.09} = 1.04$, nonintrusiveness toward firstborn child: $\text{DEFT} = \sqrt{1 + (2 - 1)\,.08} = 1.04$, and nonintrusiveness toward second-born child: $\text{DEFT} = \sqrt{1 + (2 - 1)\,.13} = 1.06$. We applied these correction factors by multiplying the standard errors of the parameters in the models with the corresponding DEFT values.

Analyses of parents' sensitivity and nonintrusiveness toward their firstborn and second-born children when both children were three years old (firstborn child during the first wave and second-born child during the third wave) were conducted using GLM Repeated Measures analyses. Main effects and the interaction between the within-subjects factor parent gender (mother, father) and child birth order (firstborn, second-born) were examined. In addition, two-way interactions between the two within-subjects factors and the between-subjects variable (sibling gender constellation) were examined. Because the age difference between firstborn children

(measured at the first wave) and second-born children (measured at the third wave) ranged from -6 to 6 months, this variable was included as a covariate in the analyses. To examine whether the differences in parental sensitivity and nonintrusiveness toward firstborn and second-born children could be due to differences between the siblings in child temperament, relationship dissatisfaction, or parental depressive symptoms, paired *t*-tests were conducted.

RESULTS

Preliminary analysis

Descriptive statistics and correlations between mothers' and fathers' sensitivity and nonintrusiveness are presented in Table 1. Parental sensitivity was positively correlated across waves; mothers and fathers who were more sensitive toward their child at one wave were also more sensitive at the following waves. Furthermore, mothers and fathers who were more sensitive toward their firstborn child were also more sensitive toward their second-born child. Maternal and paternal sensitivity were positively associated at all three waves, except toward the firstborn child at wave 2. The same pattern was found for nonintrusiveness.

Growth curve models

Fit indices and parameter estimates for the final growth curve models (including parent gender as predictor for variance in the intercept) are presented in Table 2.

Parental sensitivity. In the model predicting parental sensitivity toward the firstborn child, the quadratic slope did not contribute significantly to the model (unstandardized β = -0.18, cluster corrected p = .13) and was thus removed to obtain a more parsimonious model. Variance for the linear slope was set to zero and parent gender was not included as predictor for the slope in the final model. The final model including linear slope and parent gender as predictor for variance in intercept showed good fit to the data (χ^2 (df = 6) = 7.54, p = .27, CFI = .99, RMSEA = .02). The linear slope was negative and significant, indicating that parental sensitivity toward the firstborn child decreased over time (Figure 1). The variance in intercept was significantly explained by parent gender, with mothers showing higher starting levels than fathers (+ 0.87). The absence of significant variance in slope indicate that mothers and fathers showed similar growth patterns.

Results for the growth curve model predicting parental sensitivity toward the second-born child indicated no significant variance for the linear as well as the quadratic slope. Therefore, slope variances were set to zero and parent gender was not included in the final model as predictor for the slopes. The final model, with parent gender predicting only the variance in intercept, showed acceptable fit to the data (χ^2 (df = 5) = 12.49, p = .03, CFI = .97, RMSEA = .06). For this model, the linear and quadratic slopes were both significant, indicating quadratic growth. The

Table 1.

Descriptives and correlations for sensitivity and nonintrusiveness of mothers and fathers toward their firstborn and second-born child over three waves (N = 363)

	1	2	3	4	5	6	7	8	9	10	11	12	*M*	*SD*
1. W1 mother-firstborn	**.57****	.32**	.15**	.12*	.20**	.25**	.10	.19**	.19**	.27**	.08	.11*	20.36	3.43
2. W1 mother-second-born	.25**	**.36****	.13*	.21**	.17**	.28**	.12*	.19**	.25**	.25**	.05	.17**	19.66	3.31
3. W1 father-firstborn	.22**	.03	**.50****	.38**	.10	.07	.32**	.32**	.06	.15**	.36**	.31**	19.72	3.42
4. W1 father-second-born	.16**	.22**	.40**	**.32****	.14*	.07	.24**	.28**	.18**	.25**	.26**	.23**	18.91	3.44
5. W2 mother-firstborn	.25**	.18**	.11	.14*	**.40****	.26**	.08	.17**	.33**	.32**	.08	.03	21.12	3.11
6. W2 mother-second-born	.19**	.27**	.08	.21**	.25**	**.54****	.04	.13*	.23**	.23**	.00	.00	20.99	3.19
7. W2 father-firstborn	.15**	.16**	.32**	.31**	-.03	.03	**.43****	.35**	.05	.09	.32**	.33**	20.45	3.36
8. W2 father-second-born	.17**	.11	.38**	.39**	.02	.15**	.24**	**.43****	.11*	.12*	.28**	.37**	20.05	3.47
9. W3 mother-firstborn	.20**	.20**	.04	.10	.19**	.26**	.00	.09	**.36****	.38**	.16**	.08	21.34	3.03
10. W3 mother-second-born	.28**	.21**	.19**	.15**	.24**	.26**	.06	.13*	.31**	**.51****	.11*	.16**	20.98	3.16
11. W3 father-firstborn	.15**	.13*	.38**	.36**	.09	.16**	.24**	.32**	.19**	.13*	**.45****	.31**	20.74	3.32
12. W3 father-second-born	.10	.01	.31**	.27**	.02	.03	.19**	.35**	.08	.13*	.29**	**.49****	20.23	3.14
M	25.01	24.02	24.04	22.60	24.59	25.04	23.82	23.82	23.97	24.64	23.10	23.82		
SD	2.63	2.99	3.05	3.60	2.75	2.75	2.96	2.98	2.67	2.63	2.88	2.80		

Note. W1 = wave 1, W2 = wave 2, W3 = wave 3. Correlations below the diagonal refer to associations among parental sensitivity, correlations above the diagonal refer to associations among parental nonintrusiveness, and correlations on the diagonal refer to associations between parental sensitivity and nonintrusiveness.
* $p < .05$ ** $p < .01$

Table 2.

Fit indices and parameter estimates for the final growth curve models with gender predicting variance in intercept

	Fit indices					Parameter estimates			
Dependent variable	χ^2	df	*p*	CFI	RMSEA	Intercept	Parent gender [ab]	Linear slope [a]	Quadratic slope [a]
Sensitivity toward firstborn	7.54	6	.27	.99	.02	25.02**	-0.87**	-0.50**	-
Sensitivity toward second-born	12.49	5	.03	.97	.06	23.86**	-1.11**	1.78**	-0.66**
Nonintrusiveness toward firstborn	3.79	5	.58	1.00	.00	20.45**	-0.64**	0.49**	-
Nonintrusiveness toward second-born	2.57	5	.77	1.00	.00	19.68**	-0.80**	1.82**	-0.58**

[a] Unstandardized *β*.

[b] Parent gender is included in the model as predictor for variance in intercept.

* cluster corrected $p < .05$ ** cluster corrected $p < .01$

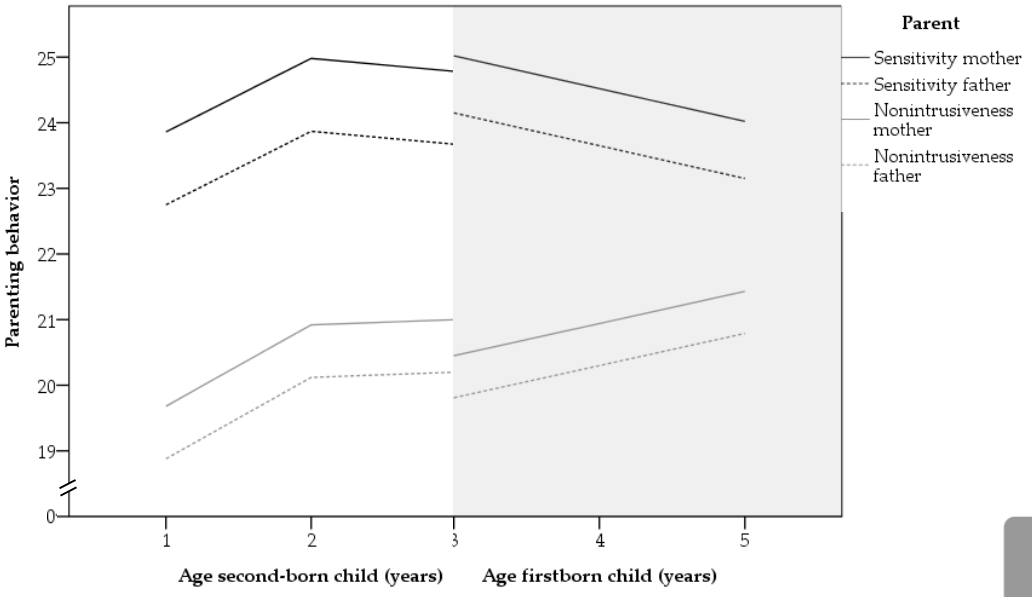

Figure 1. *Growth patterns for sensitivity and nonintrusiveness of mothers and fathers toward their firstborn and second-born children over time (estimated values).*

growth pattern showed that parental sensitivity toward the second-born increased from the first to the second wave but remained relatively stable from the second to the third wave (Figure 1). The variance in intercept was significantly explained by parent gender, with mothers on average showing higher starting levels than fathers (+ 1.11). Mothers and fathers showed similar growth patterns, reflected by the absence of slope variance.

Multiple group analyses for boys and girls separately did not provide evidence to reject the null hypothesis of invariance. In the model of parental sensitivity toward the firstborn child where all parameters were restricted to be equal between boys and girls, the LM test did not give reason to release parameters (*ps* > .11). Further, in the fully constrained model of parental sensitivity toward the second-born child the LM test revealed two parameters (intercept and linear slope) that did not operate equivalently across the two groups for parental sensitivity toward the second-born child (*ps* < .03), but the model in which the intercept and linear slope were freely estimated did not show substantial improvement in model fit compared to the fully constrained model (ΔCFI < .01), indicating that the growth curve models for parental sensitivity were not different for boys and girls.

Parental nonintrusiveness. In the model predicting parental nonintrusiveness toward the firstborn child, the quadratic slope did not contribute significantly to the model (unstandardized β = -0.24, cluster corrected p = .07) and

was removed to make the model more parsimonious. In addition, the model including parent gender as predictor for variance in intercept and linear slope indicated that parent gender was no significant predictor of variance in slope (unstandardized β = 0.02, cluster corrected p = .89). Therefore, parent gender as predictor of variance in linear slope was removed from the model. The final model including linear slope and parent gender as predictor for variance in intercept showed good fit to the data (χ^2 (df = 5) = 3.79, p = .58, CFI = 1.00, RMSEA = .00). The linear slope was significant and showed an increase in parental nonintrusiveness over time (Figure 1). Parent gender significantly explained variance in intercept, indicating that mothers on average show higher starting levels than fathers (+ 0.64). The absence of significant variance in slope for mothers and fathers indicate similar growth patterns.

With respect to the growth curve model for parental nonintrusiveness toward the second-born children, results indicated that there was no variance for the linear and quadratic slope and were set to zero. The final model, with parent gender only as predictor for variance in intercept, showed good fit to the data (χ^2 (df = 5) = 2.57, p = .77, CFI = 1.00, RMSEA = .00). The linear and quadratic slopes were significant, indicating quadratic growth. The growth patterns showed that parental nonintrusiveness toward the second-born child increased from the first to the second wave but remained relatively stable from the second to the third wave (Figure 1). The variance in intercept was significantly explained by parent gender, with mothers showing higher starting levels than fathers (+ 0.80). Mothers and fathers showed similar growth patterns, reflected by the absence of significant slope variance.

In the model of nonintrusiveness toward the firstborn child where all parameters were restricted to be equal between boys and girls, the LM test did not give reason to release parameters (ps > .08). However, in the fully constrained model of parental nonintrusiveness toward the second-born child the LM test revealed one parameter (intercept) that did not operate equivalently across the two groups for parental nonintrusiveness toward the second-born child (p < .01). The model in which the intercept was freely estimated differed not significantly from the fully constrained model (ΔCFI < .01) and indicated that parents did not show different levels of parental nonintrusiveness toward boys and girls.

Parental sensitivity and nonintrusiveness towards siblings at the same age

To examine differences in parental treatment of firstborn and second-born children, parental sensitivity and nonintrusiveness with their two children was compared when both children were three years old (firstborn child during the first wave and second-born during the third wave). With respect to differences between mothers and fathers, significant main effects were found for sensitivity, *Pillai's F* (1, 342) = 36.17, p < .01, η_p^2 = .10, and nonintrusiveness, *Pillai's F* (1, 342) = 14.47, p < .01, η_p^2 =

.04. Mothers were more sensitive and nonintrusive toward their children than fathers. In addition, significant main effects were found for birth order on sensitivity, *Pillai's F* (1, 342) = 5.39, p = .02, η_p^2 = .02, and nonintrusiveness, *Pillai's F* (1, 342) = 12.53, p < .01, η_p^2 = .04. When both children were three years old, parents showed higher levels of sensitive behavior toward their firstborn child than toward their second-born child but they showed higher levels of nonintrusiveness toward their second-born child than toward their firstborn child (Figure 2). No significant interaction between parent gender and child birth order was found (*ps* > .53). Furthermore, none of the two-way interactions between the within-subjects factors (parent gender or child birth order) and the between-subjects variable (sibling gender constellation) were significant (*ps* > .17).

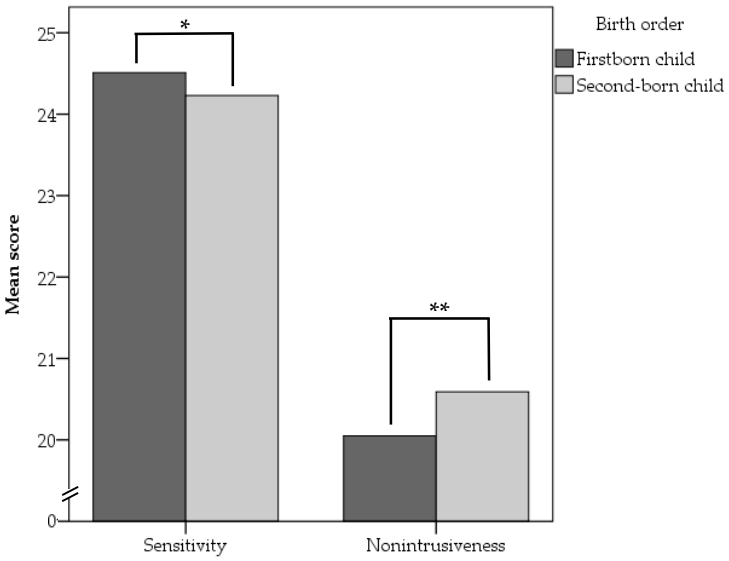

Figure 2. *Main effect of birth order on parental sensitivity and nonintrusiveness, controlling for child age.*

There were no temperamental differences between firstborn and second-born children when they were both three years old, t (336) = 0.60, p = .55, so differences in temperament could not account for differences in parental treatment. Both mothers and fathers reported a decrease in relationship satisfaction from wave 1 to wave 3 (mothers: t (331) = -6.29, p < .01; fathers: t (317) = -2.41, p = .02), but this decrease in relationship satisfaction was not related to differences in parental sensitivity or nonintrusiveness toward firstborn or second-born children (*ps* > .10). Mothers and fathers also reported more depressive symptoms at wave 3 compared to wave 1 (mothers: t (325) = -4.14, p < .01; fathers: t (314) = -5.04, p < .01). For

mothers, the increase in depressive symptoms was not related to differential parental sensitivity or nonintrusiveness toward their firstborn or second-born children (*ps* > .14). However, the increase in paternal depression was related to a larger difference in paternal sensitivity toward the two children, favoring the firstborn child, r (315) = -.14, p = .01. Analyses with the non-imputed data showed similar results, except the relation between the decrease in fathers' relationship satisfaction and higher levels of paternal sensitivity toward the second-born child compared to the firstborn child changed from a non-significant r (318) = .10, p = .09, to a significant r (272) = .15, p = .02.

Discussion

In our longitudinal study from infancy to early childhood, parental sensitivity and nonintrusiveness were found to change with child age and with later-born children. Parental sensitivity increased from infancy to toddlerhood, but showed a decrease when children reached early childhood. Parents' nonintrusiveness increased from infancy to early childhood. The change of parenting behavior with child age was similar for mothers and fathers. Further, our results indicate that parents treat their children differently based on birth order. More specifically, parents showed higher levels of sensitivity toward their firstborn child than toward their second-born child when comparing parenting of the siblings at the same age. In addition, parents were also more intrusive toward their firstborn child than toward their second-born child at the same age. At all three waves mothers showed higher levels of sensitive and nonintrusive behavior than fathers.

In line with our expectations, parental sensitivity and nonintrusiveness increased from infancy to toddlerhood. The developmental changes that are associated with infancy and toddlerhood may provide an explanation for these findings. For example, children develop more skills to communicate their needs and whishes in a verbal manner (e.g., Iverson, 2010). An important aspect of behaving sensitively is the parent's ability to adjust their responses to the specific needs and interests of their child (Mesman & Emmen, 2013). The child's increased language capacities may help parents to modify their parenting behavior in a way that fits their child's needs. However, in contrast to previous work (Braungart-Rieker et al., 2010; Kemppinen et al., 2006) our results suggest that the increase in parental sensitivity and nonintrusiveness levels off over time. Parental sensitivity and nonintrusiveness increased from 12 to 24 months of the child's age, but remained relatively stable between 24 and 36 months. Since children show especially great improvements in their language development during the first two years of life (e.g., Iverson, 2010), this may explain why parental sensitivity and nonintrusiveness increased the most between the first and second year of the child's life.

In contrast to the finding that parental sensitivity increases from infancy to toddlerhood, parents' sensitivity decreased between ages three and five years of the firstborn child. This decrease may be explained by the onset of school attendance at age 4 years (normative in the Netherlands), which may mark a phase transition that leads to a reorganization of the parent-child relationship (Granic, Hollenstein, Dishion, & Patterson, 2003). Phase transitions are characterized by an increase in the variability of dyadic patterns, which in turn may temporarily interfere with parental sensitivity. Surprisingly, parental nonintrusiveness seems to be unaffected by this important phase transition. Instead, our results suggest that parents show higher levels of nonintrusiveness as the child becomes older. It is important to note that high scores on nonintrusiveness do not unequivocally represent positive parenting. Higher scores on parental nonintrusiveness may also reflect parental behavior that is characterized by a lack of involvement, participation, and interference in the child's activities. From this viewpoint, such behaviors can reflect lower levels of parental sensitivity as they are associated with lower responsiveness to the child's signals.

Our results show that mothers were more sensitive and nonintrusive toward their children during infancy and early childhood than fathers. These findings are in line with previous studies (e.g., Barnett et al., 2008; Hallers-Haalboom et al., 2014; Lovas, 2005; Schoppe-Sullivan et al., 2006) and extend the literature by showing that the differences between mothers and fathers are persistent over time during the first years of the child's life. In general, these differences in parenting behavior may be due to the division of childcare responsibilities in the family. Numerous studies have shown that even though father involvement in the home increased over the last decades (Maume, 2011), mothers are often the primary caregiver of the children. For example, mothers are found to spend two to three times as much time with their children than fathers do (Huerta et al., 2013; Sociaal Cultureel Planbureau [SCP], 2011). As a result, mothers might have more knowledge of their children's needs and interests, which makes it easier for them to adjust their responses accordingly. However, since fathers are more involved in childcare when children become older (Furman & Lanthier, 2002; Yeung et al., 2001), we expected the differences between mothers and fathers to become smaller. One study found that the child's age (ranging from 7 to 48 months) was not associated with mothers' levels of sensitivity and nonintrusiveness, but that fathers with older children were more sensitive and nonintrusive than fathers with younger children (Bergmann et al., 2013). The current study does not provide support for this hypothesis and suggest that fathers do not yet catch up in their sensitivity and nonintrusiveness levels during early childhood. However, although fathers on average only spend half of mothers' time on caregiving activities with infants, their participation in personal care activities increases over time toward a more equal share with school-aged children (Yeung et al., 2001). It is possible that differences between mothers and fathers become smaller

when the children reach middle childhood and the division of childcare becomes more equal.

To disentangle the effect of birth order and child age on parenting behavior during infancy and early childhood, we examined differences in parental sensitivity and nonintrusiveness toward firstborn and second-born children when they had the same age. Our finding that mothers and fathers showed higher levels of sensitive behavior toward their firstborn child at age three years than toward their second-born child at the same age provides evidence for the resource dilution hypothesis (Blake, 1981). According to the resource dilution hypothesis (Blake, 1981), parents have had more time for one-on-one attention with their firstborn child, as they experienced a period in which they did not have to divide their attention between two children. This advantage with firstborn children may create more opportunities for parents to become familiar with the signals of their child, which in turn could explain the higher levels of parental sensitivity toward the firstborn child. Although the differential parental investment hypothesis (Trivers, 1972, 1974) also proposes that firstborn children might be preferred in terms of positive parenting, this hypothesis does not explain differences in parental investment when both children have the same age. Because both children survived for a similar period of time when they are three years old, differential involvement with the children when they have the same age can not be explained by differences in reproductive value for parents.

Further, we found that mothers and fathers showed higher levels of nonintrusive behavior toward their second-born child than toward their firstborn child when they had the same age. Although this finding seems contradicting, higher levels of parental nonintrusiveness do not necessarily reflect positive parenting behavior. Instead, high scores on parental nonintrusiveness may also reflect a generally lower level of involvement with the second-born than with the firstborn child, as both lower sensitivity and higher nonintrusiveness may be signs of less involved parenting. From this viewpoint, higher levels of parental nonintrusiveness with their second-born children is consistent with the assumption that firstborn children receive higher quality parenting than second-born children.

Differences in parental sensitivity and nonintrusiveness toward firstborn and second-born children could not be explained by temperamental differences between the children or decreased relationship satisfaction. However, paternal depression partly explained differences in fathers' sensitivity toward their firstborn and second-born child. Increased paternal depressive symptoms were related to lower levels of paternal sensitivity toward the second-born child compared to the firstborn child. This suggests a spillover of fathers' depressive symptoms to the interaction with their children. Analyses on the non-imputed data also showed that increased relationship dissatisfaction of fathers was associated with higher levels of paternal sensitivity toward the second-born child than toward the firstborn child,

which supports other studies suggesting that parents may compensate for lower-quality marital interactions by intensifying positive interactions with their child (Grych, 2002; Nelson, O'Brien, Blankson, Calkins, & Keane, 2009). Thus, family stress factors such as paternal depression and parental relationship quality might partly account for the differential treatment of siblings.

Our study extends previous work on parenting behavior by disentangling birth-order effects from child-age effects, but several limitations of the current study should be mentioned. First, our sample consisted of predominantly highly educated Caucasian parents. Since parenting practices might be different in families with lower socio-economic status or different ethnic backgrounds, our findings can not be generalized to populations with more varying backgrounds. Second, in our study we did not control for maternal and paternal involvement in child caregiving. Because the time mothers and fathers spend with their children may be an important mechanism underlying our results, this would be an important factor to take into account for future research. Third, the effect of child age on parenting behavior may be different for firstborn and second-born children. Since experiences with the firstborn child may affect the way parents interact with their second-born child (Whiteman et al., 2003), we can not simply assume that the development of parental sensitivity and nonintrusiveness toward the second-born child will show the same pattern as found for the firstborn child. Several studies with adolescents have shown that developmental trajectories may indeed be different for firstborn and second-born children (Shanahan, McHale, Crouter, et al., 2007; Shanahan, McHale, Osgood, et al., 2007). More research is needed to examine whether the effect of child age on parental sensitivity and nonintrusiveness toward second-born children is similar or different compared to firstborn children.

To our knowledge, this is one of the first studies that examined birth order effects on fathers' parenting behavior during infancy and early childhood. When comparing firstborn children and second-born children at the same age, our results showed that differences in parental treatment of siblings within the same family can be explained by birth order. More involvement with the firstborn child may explain the higher levels of parental sensitivity toward the firstborn child and lower intrusiveness toward the second-born child. These findings underscore the importance of disentangling child birth order from child age on parenting quality by examining parenting behavior longitudinally. Although parenting behavior is affected by the child's age, the current study suggests that parents also treat their firstborn and second-born children differently irrespective of child age. Differential parental treatment may have important implications for the development of both siblings within the family and emphasize the need of including birth order as an important within-family factor in future research.