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Parenting and children's externalizing behavior: Bidirectionality during toddlerhood

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ABSTRACT

This study examined the bidirectional relationship between parenting and boys' externalizing behaviors in a four-wave longitudinal study of toddlers. Participants were 104 intact two-parent families with toddler sons. When their sons were 17, 23, 29, and 35 months of age, mothers and fathers reported on a broad range of parenting dimensions (support, lack of structure, positive discipline, psychological control, and physical punishment). In addition, mothers reported about their sons' externalizing behaviors. Results from structural equation modeling did not support a bidirectional model of parenting and externalizing behavior among toddler boys. Although parenting did not predict boys' externalizing behaviors, results showed that at 23, 29, and 35 months of age, boys' externalizing behavior predicted parent-reported support, lack of structure, psychological control and physical punishment. Additional analyses indicated that these child-effects were equally strong across time and across mothers and fathers. Results indicate that it is important to offer both mothers and fathers support when dealing with increases in toddlers boys' externalizing behavior and that parenting programs should not only focus on reducing harsh discipline tactics, but also on encouraging positive parenting behavior.

Introduction

Externalizing behaviors, such as aggression, hyperactivity and oppositionality, are part of the normal behavioral repertoire of young children, but toddlers displaying high levels of these behaviors have repeatedly been shown to be at significant risk for continued behavior problems (Campbell, Shaw, & Gilliom, 2000; Gilliom & Shaw, 2004; Mesman, Bongers, & Koot, 2001). This underlines the importance of examining the development of early behavior problems in order to understand their determinants. A growing body of research has documented a strong relationship between parenting and children's externalizing behavior (Lengua, 2006; Maccoby, 2000; Prinzie et al., 2004), although less is known about the directionality of the relationship.

There is a growing consensus that the association between parenting and children's externalizing behavior is bidirectional (Bell & Harper, 1977; Conger & Simons, 1997; Pettit & Lollis, 1997; Sameroff, 1975). However, empirical evidence documenting bidirectionality between parenting and children's externalizing behavior is inconsistent and has been limited to school-aged children and adolescents. Little is known about the bidirectional associations between parenting and externalizing behavior during toddlerhood, how these associations develop over time, and whether they are similar for mothers and fathers. This is a notable omission, given the fact that recent studies show that externalizing behaviors originate in toddlerhood (Keenan & Wakschlag, 2000; Tremblay, 2004), and that this period might be the set-off point for the development of a bidirectional relationship between child and parent behaviors. As it is likely that parent–child relational patterns become more resistant to change over time, it is important to know more about how these relationships evolve during early childhood in order to develop interventions that have a greater likelihood of success in altering maladaptive parent–child interaction patterns before they become more entrenched and resistant to change.

The current study attempts to address gaps in the research literature by investigating the bidirectional relationship between parenting and boys' externalizing behaviors during toddlerhood, within and across four points in time (when children were 17, 23, 29 and 35 months of age). A broad range of parenting dimensions for both mothers and fathers was investigated in order to examine (1) whether parenting is bidirectionally related to boys' externalizing behaviors, (2) whether the strength of these parent–child associations changes over time, and (3) whether these patterns of associations are different for mothers and fathers. Given research showing that toddler boys displaying externalizing behaviors are at greater risk than girls are for continued behavior problems (Alink et al., 2006; Mesman et al., 2001; Webster-Stratton, 1996), we decided to focus exclusively on parent–son relationships.

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Background theory and research

A long history of research on parent–child relationships has been based on the assumption that parents influence their children to a greater extent than children influence their parents (Pettit & Lollis, 1997); parents were conceptualized as the primary socializing agents of their children, and children were regarded as the passive recipients of this socialization (Perlman & Ross, 1997; Pettit & Lollis, 1997). Acceptance of this unidirectional view of the parent–child relationship changed with Bell's (1968) seminal article presenting an alternative view (Pettit & Lollis, 1997) – the idea that past findings on the relation between parental socialization practices and child outcomes could potentially be explained using a child – rather than a parent-effects model (i.e., the idea that children elicit certain types of parenting from their mothers and fathers).

Research emphasizes the contribution of *both* the child and the parent via bidirectional processes (Bell, 1977; Bell & Harper, 1977; Conger & Simons, 1997; Pettit & Lollis, 1997; Sameroff, 1975). For example, both the transactional effects model (Sameroff, 1975) and the control system model (Bell, 1977; Bell & Chapman, 1986) posit recurrent bidirectional influences between the parent and the child. According to these models, child behavior evokes certain parental reactions which, in turn, influence future child behavior. In this way, child and parental behaviors enter into a system of bidirectional influences (Lytton, 1990). Similarly, Patterson's coercion model (1995) describes the development of coercive parent–child interaction cycles during early childhood. Specifically, the development of these reciprocal cycles entails a series of predictable steps including (1) child's aggressive behavior (i.e., refusal to comply with parental demands), (2) parent's demand for compliance, (i.e., intrusion), (3) child's escalation of behavior, and (4) parent's capitulation to child's demands. The development of autonomy is a normal developmental task during toddlerhood that might serve as a precursor to the development of coercive parent–child cycles, as toddlers are likely to display their autonomy by saying "No" to an undesired request by the parent (Campbell, Shaw, & Gilliom, 2000). For example, when parents ask their child to stop a particular behavior, the child may react by yelling, whining, or throwing a temper tantrum. If parents are intimidated by their child's response, they withdraw their request. The short-term outcome is that the child gets his or her own way. The long-term outcome is that the child is more likely to select the same coercive behavior as a means of escaping an aversive situation and parents are less likely to follow through with their requests in order to avoid further escalation of their child's behavior.

Empirical support for the existence of bidirectional relationships between parenting and children's externalizing behaviors predominantly comes from longitudinal studies conducted with elementary school-aged children and adolescents. For example, Gadeyne, Ghesquiere and Onghena's (2004) study of elementary school-aged children found a statistically significant bidirectional relation between parenting and children's attention problems. Specifically, children's attention problems led to higher levels of parental control which, in turn, led to higher levels of children's attention problems. A study conducted with boys between the ages of 7 and 15 years provided evidence for a bidirectional relation between high levels of conduct problems and maternal behaviors such as physical punishment, monitoring, timid parenting, involvement and communication (Pardini, Fite, & Burke, 2007). In another study, Vuchinich, Banks, and Patterson (1992) found that preadolescent boys' antisocial behavior reduced the use of parental positive discipline (e.g., reasoning, limit setting, being consistent over time) while, at the same time, parental positive discipline had a tempering effect on their sons' antisocial behaviors. In a study conducted with adolescents, a bidirectional relationship between externalizing behavior and parent–adolescent attachment was found (Buist, Deković, Meeus, & Van Aken, 2004). Specifically, high quality of attachment between parents and their adolescent children predicted lower levels of adolescents' externalizing behaviors which, in turn, had a negative effect on parent–adolescent attachment. Finally, a study looking at the bidirectional effects of parenting and children's externalizing behavior among school-aged children (Kandel & Wu, 1995) provided mixed results. Maternal feelings of warmth predicted lower levels of children's aggressive and disobedient behavior and vice versa. However, maternal punitive discipline and supervision and child behavior were not reciprocally related. High levels of maternal punitive discipline led to higher levels of children's aggression and disobedience but increased levels of child aggression and disobedience did not lead to higher levels of punitive discipline by mothers. In the case of supervision, this unidirectional relation was reversed; high levels of children's problem behavior led to lower levels of maternal supervision but decreased levels of maternal supervision did not lead to increased levels of child behavior problems (Kandel & Wu, 1995).

In contrast, Reitz, Deković, Meijer, and Engels (2006) found no support for a bidirectional relationship between adolescent externalizing behavior and parenting behaviors (i.e., responsiveness, quality of parent–child relationship, and parental knowledge). Although externalizing behavior in 13 year-olds had a negative effect on parenting one year later, parenting had no long-term effect on children's externalizing behavior. Likewise, Fite, Colder, Lochman, and Wells (2006) found that from 4th to 8th grade, boys' externalizing behavior led to poor parental monitoring and inconsistent discipline, but these parental behaviors did not affect children's externalizing behavior. Similarly, in their study on the association between delinquency and parenting during middle adolescence, Kerr and Stattin (2003) found strong evidence that parents' behaviors (i.e., monitoring, support, and negative reactions to child communication) were reactions to the youths' problem behavior rather than the causes of it.

Short-term versus long-term associations

One issue that needs to be considered when examining bidirectionality in parent–child behavior is the timeframe in which parenting and child behavior are expected to influence each other. The previously mentioned studies that documented a bidirectional relationship between parenting and children's externalizing behaviors investigated cross-lagged (long-term) reciprocal effects, suggesting that parenting (or child behavior) will have an effect on child behavior (or parenting) at a later time point (in these aforementioned studies, 1 or 2 years later). However, it is reasonable to expect that bidirectional effects between parenting and children's externalizing behavior, as described by Patterson (1995), are the results of mechanisms that take place within a short period of time, and that bidirectional influences are more visible within a single point of time (cross-sectional/short-term effects) rather than across multiple points of time. For example, in a study on the bidirectional relations between parenting and school-age children' externalizing behaviors, Fite et al. (2006) found short-term (within the same measurement wave) but not long-term (across measurement waves) bidirectional associations between parenting and children's externalizing problems. Similarly, Vuchinich, Banks, and Patterson (1992) established short-term but not long-term bidirectional effects between parenting and preadolescent antisocial behavior.

Changes in bidirectional associations

Another important issue when examining patterns of parent–child behaviors concerns developmental changes in bidirectionality (Dunn, 1997; Fite et al., 2006). As both parents and children develop across time, it can be expected that the bidirectional relationship between child behavior and parenting practices will change as well (Dallaire & Weinraub, 2005; Gilliom & Shaw, 2004). In a meta-analysis that examined the concurrent links between parenting and younger and older children's externalizing behavior (Rothbaum & Weisz, 1994),

stronger associations between parenting and child externalizing behavior were found among older children (elementary school age children and adolescents) than among younger children (10.5 months to 5 years). Rothbaum and Weisz suggested that this finding may reflect a cumulative bidirectional model of parent–child relationships in which parent and child behaviors continually influence one another and become increasingly interwoven over time.

In a study that directly examined the changes in bidirectional associations between parenting and child behavior by following parent–child dyads over a longer period of time, Pardini et al. (2007) found that some parenting behaviors (i.e., parental involvement, poor parent–child communication, timid parenting) were equally strong predictors of child behavior across childhood and adolescence, while others (i.e., parental monitoring, positive reinforcement, physical punishment) showed different patterns of significance depending upon the child's developmental stage. Specifically, they found that the bidirectional association between poor parental monitoring and children's conduct problems strengthened from childhood to early adolescence but then became unidirectional (with the level of conduct disorder influencing parental monitoring, but not vice versa) when the children reached early adolescence. In addition, the association between parental positive reinforcement and children's conduct problems increased from middle childhood to early adolescence, but then decreased in middle adolescence. The effect of physical punishment on children's conduct disorder was strongest in childhood, but unrelated to changes in conduct problems by the early teenage years (Pardini et al., 2007). Similarly, across a period of 5 years (4th grade–8th grade), Fite et al. (2006) found that boys' externalizing behavior led to higher levels of inconsistent discipline, but the strength of this effect did not change over time. In addition, boys' externalizing behavior elicited higher levels of parental monitoring during 6th and 7th grade, but not during 5th and 8th grade (Fite et al., 2006).

To summarise, there is a growing interest in studying bidirectional associations between parenting and children's externalizing behavior, but the majority of research in this area has been conducted with school-aged children and adolescents. As externalizing behaviors are already evident in early childhood (Campbell et al., 2000; Gilliom & Shaw, 2004; Mesman et al., 2001), it is important to extend our knowledge of the potential role of parenting in these behaviors during this period, when externalizing behaviors are presumably more malleable. Both longitudinal (cross-lagged) *and* short-term (cross-sectional) associations between parenting and children's externalizing behavior should be examined, as it is plausible that bidirectional influences are more visible within than across multiple points in time (Fite et al., 2006; Vuchinich et al., 1992). Because children are developing rapidly during early childhood, the strength of associations between parenting and children's externalizing behavior is likely to change over time. To gain a better understanding of unfolding bidirectional parent–child associations, it is therefore important to take potential changes over time into account.

Parenting dimensions and children's externalizing behavior

When studying the associations between parenting and children's externalizing behavior, it is important to recognize that parenting encompasses a range of behaviors that are likely to be differentially related to the behavior of the child.

Positive parenting dimensions, such as parental support (e.g., responsiveness, parental involvement) and positive discipline (e.g., reinforcement of good behavior, inductive reasoning), are thought to be beneficial for the development of children by making the child feel comfortable and accepted as a person and teaching the child alternative behaviors for problem-solving (Chen et al., 2003; MacDonald, 1992; Skinner, Johnson, & Snyder, 2005). Indeed, studies consistently show that children low on externalizing behaviors are raised by parents who display high levels of positive parenting (e.g., Feldman & Klein, 2003; Gardner, Sonuga-Barke, & Sayal, 1999; Stormshak, Bierman, McMahon, & Lengua, 2000). At the same time, the behavior of the child influences the extent to which parents use these positive parenting behaviors. Children who show aggressive behaviors are potentially difficult to support and may make it difficult for parents to keep using positive discipline techniques (Lytton, 1990; Fite et al., 2006; Reitz et al., 2006).

Similar bidirectional associations can be expected between children's externalizing behaviors and negative parenting dimensions, such as a lack of structure, psychological control and physical punishment. According to Patterson's coercion model (1995), a lack of structure (e.g., parental failure to be consistent and to follow through with commands) may result in reinforcement of non-compliance and aggressive behavior in the child. Parental use of psychological control (i.e., withdrawal of love, yelling) is thought to harm the child's self-esteem and integrity which may, in turn, constrain the development of socially accepted behavior and lead to elevated levels of externalizing behavior (Barber, 1996; Straus & Field, 2003). Finally, physical punishment is hypothesized to teach the child to expect successful outcomes from hostile behaviors and aggressive interactions. Furthermore, by solving parent–child conflicts with spanking, parents do not teach their children alternative problem-solving strategies, aside from aggression. Thus, a lack of structure and high levels of psychological control and physical punishment are expected to lead to elevated levels of children's externalizing behavior. On the other hand, by displaying high levels of externalizing behavior, children are challenging their parents' resources, making it difficult for parents to stay structured in their parenting and to not use harsh discipline techniques (Lytton, 1990; Fite et al., 2006). In fact, several studies have found an association between high levels of these negative parental behaviors and children's externalizing behavior (Danforth, Barkley, & Stokes, 1991; Stormshak et al., 2000).

Mother–father differences

Despite the growing acknowledgement that fathers play an important role in children's development, research that involves both mother–child and father–child relationships is still scarce. The few studies that have compared these relationships have shown inconsistent results. Some studies found that mothers and fathers affect their child in similar ways and to similar degrees (Caron, Weis, Harris, & Catron, 2006; Davidov & Grusec, 2006), whereas others found that maternal behavior exerts a greater influence on child outcomes than paternal behavior (Aunola & Nurmi, 2005; Brook, Zheng, Whiteman, & Brook, 2001) or that paternal behavior affects the child's behavior in the opposite direction to maternal behavior (Casas et al., 2006). To illustrate, Davidov and Grusec (2006) found similar effects of parental support on children's externalizing behavior for mothers and fathers, whereas other studies reported that only maternal support affected children's externalizing problems (Aunola & Nurmi, 2005; Belsky, Hsieh, & Crnic, 1998; Brook et al., 2001). Brook et al. (2001) found that maternal, but not paternal, psychological control was positively related to increased aggression in toddlers. A study on aggression in preschool children, however, showed a positive relationship between maternal psychological control and physical aggression in boys, whereas paternal psychological control was negatively associated with their sons' aggressive behavior (Casas et al., 2006).

In summary, former studies highlight the importance of examining a broad range of parenting dimensions, as it may be that bidirectional associations between parenting and children's externalizing behavior are different for positive and negative dimensions of parenting. In addition, the literature is inconclusive as to whether mothers and fathers play unique or similar roles in the development of externalizing problems in young children. A more detailed understanding of how a wide range of parenting dimensions is related to children's externalizing behaviors, as well as the relative importance of mothers and fathers may assist in the development and implementation of early intervention programs designed to reduce externalizing behavior.

Study hypotheses

Based on the reviewed empirical literature, we postulated that toddler boys' externalizing behavior would evoke higher levels of parental psychological control and physical punishment and lower levels of parental support and positive discipline which would, in turn, lead to unstructured parenting. We also postulated that high levels of parental psychological control and physical punishment and a lack of structure would lead to more externalizing behaviors within the child, as would lower levels of parental support and positive discipline. Because children are developing rapidly during early childhood, the strength of these associations might change across the four measurement waves. We had no expectations regarding differences between mother–child and father–child relationships, given that empirical evidence regarding this topic is scarce and inconsistent. As there is reason to expect that parenting and child behavior are influencing each other, both within and across measurement waves, we used path analysis to examine both cross-sectional (short-term) effects and cross-lagged (long-term) effects, based on the analytical strategies of Fite et al. (2006), and Vuchinich et al. (1992).

Method

Participants

Participants were mothers and fathers of intact families with a toddler son. Only families with a son were included in the study because boys displaying these early externalizing behaviors are at greater risk for continued behavior problems than girls (Alink et al., 2006; Mesman et al., 2001; Webster-Stratton, 1996). A total of 104 mothers and fathers provided complete data when their sons were 17, 23, 29 and 35 months of age. Mothers and fathers in this study were primarily Dutch/Caucasian (95.4%) and college educated (63.9% of the mothers and 76.7% of the fathers had a college degree or higher). In the first wave, the target children were 17 months of age ($M = 16.9$, $SD = .57$). The age of the mothers ranged from 22 to 44 years ($M = 32.8$, $SD = 3.98$) and the age of fathers ranged from 22 to 48 years ($M = 34.7$, $SD = 4.72$). For 57% of the families, the target child was the first-born child; the average number of children in the participating families was 1.69 ($SD = .91$) at T1 and 2.02 ($SD = .90$) at T4.

Procedure

The study was approved by the ethical committee on research with human participants at the faculty of social sciences of Utrecht University (the Netherlands). Consent from parents was obtained by letter. The recruitment of these families was based on the records of infant welfare clinics in three cities situated in the central region of the Netherlands. A recruitment letter explaining the goals of the project (i.e., to examine the behavior and development of toddlers) was sent to 192 families and followed up with a telephone call. Of these 192 families, 117 families volunteered. Lack of time was the most prevalent reason for refusing to participate. Four self-report inventories were mailed to all participants when the children were 17, 23 and 29 and 35 months of age. The data presented in the current study are part of a larger research project in which specific features of children's temperament were observed during home visits at T1 and T4. Therefore, at T1 and T4 the questionnaires were collected during home visits that were made within two weeks of mailing them out. At T2 and T3, parents were asked to return the completed questionnaires by mail within two weeks. In five families, parents lived separately. These families were excluded from the current study. At T2, two families dropped out because of relocation. At T3, another family dropped out and two families failed to provide complete data regarding the child's externalizing behavior. At T4, one family dropped out and another three families did not provide complete data regarding the child's externalizing behavior. These nine families did not differ from the other families regarding their SES, the child's externalizing behavior or parental behavior at former measurement waves. These families were excluded from the current study.

Measures

Parenting indices

Although the five parenting dimensions discussed in the introduction have been the focus of much research, there is no single instrument to assess all five dimensions in early childhood. Therefore, we used 11 scales from existing valid and reliable instruments that represent the five parenting dimensions. All scales that were originally written in English, and for which no standard Dutch translation was available, were translated by means of a double translation procedure. Since the children in this study are 17 to 35 months of age, several items were not age-appropriate and had to be revised or left out. All five authors of the current paper independently read the items and unanimously identified 7 items that were not age-appropriate as these items presumed complex verbal skills of the child (i.e., 'I talk with my child about thoughts and feelings', 'How often do you tell your child about your own experiences').

In a previous study including the same sample when the children were 17 months old, this five-fold classification of parenting dimensions was evaluated and confirmed by a confirmatory factor analysis. The five parenting dimensions had satisfactory internal consistency and were related with parental personality, contextual features (including SES and marital satisfaction), and children's temperament in the predicted direction (Verhoeven, Junger, Van Aken, Deković, & Van Aken, 2007). For all five parenting dimensions, scores were assigned by computing mean scores of all items in the scales. A high score indicates that the parenting dimension is highly represented within the individual.

Support. Items from two scales, responsiveness ($N = 4$ items) and positive parent–child interactions ($N = 5$ items), were combined to represent the construct of parental support. Items from the responsiveness scale assess the degree to which parents adequately and responsively react to the needs, signals and state of their child. These items come from the Nijmeegse Parenting Questionnaire, a Dutch questionnaire that was originally developed for use by parents with children 0–18-years of age (Gerris et al., 1993). Parents were asked to rate the frequency of their responsive parenting behaviors on a 5-point scale, ranging from 1 = *never* to 5 = *always*. A sample item is, "When my child is upset, I am able to comfort him." Items from the positive parent–child interactions' scale come from Strayhorn & Weidman's (1988) Parenting Practices Scale developed for use by parents of 1-year-old children. Parents were asked to rate the frequency of positive interactions with their son on a 5-point scale, ranging from 1 = *never* to 5 = *many times each day*. A sample item is, "How often do you do something special with your child that he enjoys?" The internal consistencies for the parental support dimension across the four measurement waves ranged from .65 to .77 (mean = .70) for mothers, and from .79 to .81 (mean = .80) for fathers.

Lack of structure. Items from three scales were combined to represent the dimension of parental lack of structure. Items from the first two scales, laxness ($N = 6$ items) and overreaction ($N = 4$ items) are from the shortened version of the Parenting Scale (Irvine, Biglan, Smolkowski, & Ary, 1999) which was originally developed for use by parents of preschool children (18–48 months). Items from the laxness scale assess parental permissiveness and inconsistent discipline. Items from the overreaction scale measure a parent's tendency to react to a child's misbehavior in an unstructured, exaggerated manner. For both laxness and overreaction, the items present a specific parental situation followed by two options that act as opposite anchor points for a

7-point scale. A high score indicates that parents are lax or overreactive in their parenting. A sample item for laxness is, "If my child gets upset when I say 'no', I stick to what I said -or the opposite- I back down and give in to my child." A sample item for overreaction is, "When my child misbehaves, I handle it without getting upset -or the opposite- I get so frustrated that my child can see I'm upset". Items from the third scale, inconsistency in applying discipline, come from the Alabama Parenting Questionnaire, a questionnaire that was originally developed for use by parents of children aged 6- to 13-years (Shelton, Frick, & Wootton, 1996). Parents rated the frequency with which they used different discipline techniques with their sons using a 5-point scale, ranging from 1 = *never* to 5 = *always*. A sample item is "You threaten to punish your child and then do not actually punish him." Since these three scales measuring lack of structure have different rating scales, the scores on these scales were standardized across the four waves and across mothers and fathers, before assigning a score for overall lack of structure. The internal consistencies across the four measurement waves ranged from .80 to .83 (mean = .82) for mothers, and from .78 to .88 (mean = .83) for fathers.

Positive discipline. Items from two scales, parental reinforcement of good behaviour ($N = 6$ items) and induction ($N = 4$ items) were combined to represent the construct of positive parental discipline. Items from the parental reinforcement of good behavior scale come from the Alabama Parenting Questionnaire (Shelton et al., 1996). Parents indicated how often they praised their child's good behavior (i.e. "You praise your child when he behaves well."). Items from the induction scale come from the Nijmeegse Parenting Questionnaire (Gerris et al., 1993). Parents reported how often they point out the consequences of the child's misbehavior. A sample item is "When my child does not listen to me, I explain to him that it annoys me." Both scales are measured on a 5-point scale, ranging from 1 = *never* to 5 = *always*. The internal consistencies across the four measurement waves ranged from .69 to .75 (mean = .73) for mothers, and from .75 to .79 (mean = .77) for fathers.

Psychological control. Items from two scales, love withdrawal ($N = 4$ items) and verbal punishment ($N = 5$ items), were combined to represent parent's use of psychological control. Items representing parent's use of love withdrawal were taken from the Nijmeegse Parenting Questionnaire (Gerris et al., 1993). Parents reported how often they used withdrawal of attention and/or affection as a disciplinary technique (e.g. "When my child misbehaves, I stop talking to him until he pleases me again."). Items representing parental use of verbal discipline were taken from the Discipline Scale of the Parent Behavior Checklist (Fox, 1994), and assessed parents' tendency to raise their voice in response to their child's misbehavior (e.g. "I yell at my child for being too noisy at home."). The Parent Behavior Checklist was developed for parents of children aged 1- to 5-years. Both scales are measured on a 5-point scale, ranging from 1 = *never* to 5 = *always*. The internal consistencies across the four measurement waves ranged from .71 to .75 (mean = .73) for mothers, and from .72 to .80 (mean = .75) for fathers.

Physical punishment. Two scales assessed parental use of physical punishment. Five items were drawn from the Discipline Scale of the Parent Behavior Checklist (Fox, 1994), and three items came from the Alabama Parenting Questionnaire (Shelton et al., 1996). The items measured the frequency with which parents use physical punishment as a way of disciplining their child. On a 5-point scale, parents were asked to indicate how often they use spanking as a disciplinary technique, ranging from 1 = *never* to 5 = *always*. Sample items are "When my child has a temper tantrum, I spank him", and "You spank your child with your hand when he has done something wrong." The internal consistencies across the four measurement waves ranged from .75 to .82 (mean = .79) for mothers, and from .77 to .80 (mean = .79) for fathers.

Children's externalizing behavior

Parents filled out the complete version of the Child Behavior Checklist 1 ½–5 (Achenbach & Rescorla, 2000), a widely used measure of children's internalizing and externalizing behavior. Only the broad externalizing scale, consisting of two subscales: attention problems (5 items) and aggressive behavior (19 items), was used in the current study. Parents responded on a 3-point scale, ranging from 0 = *never* to 2 = *often*, as to whether specific behaviors were indicative of their child's behavior. Whereas fathers filled out the Child Behavior Checklist 1½–5 at T3 and T4 only, maternal ratings were available at T1 to T4. Therefore, in the present study only maternal ratings were used. Raw scores were used to indicate the child's level of externalizing behavior. The CBCL has adequate reliability and validity when describing child behavior (Achenbach, 1991; Vignoe, Berube, & Achenbach, 2000). In the present study, the mean Cronbach's alpha for the maternal reported broad externalizing scale across all four measurement waves was .90. Mean scores of all items were computed to represent the child's level of externalizing behavior.

According to the maternal reports, approximately 19% of the toddlers in this sample scored above the borderline clinical range of externalizing behaviors across the four measurement waves. A study by Koot (1993) described the prevalence of behavioral and emotional problems in a nationally representative sample of Dutch parents, and reported that 17.2% of the 2–3 year-old boys scored above the borderline clinical range. Based on these results, the prevalence of externalizing behaviors found in the present study seems to be representative of the Dutch population of 2- and 3-year-old toddler boys.

Statistical analyses

Bidirectional relations between parenting and children's externalizing behavior were examined by testing non-recursive path models (Jöreskog & Sörbom, 2003). Maximum likelihood estimation methods were used with the covariance matrices as input (available on request). Model fit indices were evaluated using the chi-square likelihood ratio statistic, the root mean square error of approximation (RMSEA), the non-normed fit index (NNFI) and the comparative fit index (CFI). A RMSEA value less than .08 and NNFI and CFI values greater than .90 indicate an acceptable fit (Hartman et al, 1999). Because of concerns about the large number of parameters being estimated when all parenting dimensions are included in the same model, separate models were evaluated for each of the five parenting dimensions. Since mothers and fathers in the present study come from the same family – and as a result their behaviors are interrelated – the reciprocal relations between mothering and child behavior and between fathering and child behavior were examined simultaneously in the same model.

For each of the five parenting dimensions, two non-recursive path models were tested. The first model examined the *short-term bidirectional effects*, and the second model tested the *long-term bidirectional effects*. In both models, stability paths (T1➔T2, T2➔T3, and T3➔T4) were included. Additional stability-paths from T1 to T3 or T4 and from T2 to T4 were added only if doing so improved the model's fit and did not change the stability and reciprocal paths. Correlations were estimated between maternal and paternal behavior within each measurement wave because of the interdependence between mothers and fathers.[2]

In addition to examining the stability paths and correlations among maternal and paternal behavior, the model that tested the *short-term bidirectional effects* included cross-sectional paths between mother and child, and between father and child, at T2, T3, and T4. That is, mothering and fathering were allowed to affect child behavior

[2] Additional stability paths and the correlations between mothering and fathering are not depicted in Figs. 1–4 in order to reduce the complexity of the figures.

within the same measurement wave. In turn, child behavior was allowed to influence parenting within the same measurement wave. At T1, the measurements of parenting and children's externalizing behavior contain the developmental prehistory of these variables. At T2, T3, and T4, we were able to control for this prehistory and examine the associations between changes in parenting and children's externalizing behavior. We decided not to estimate the short-term reciprocal paths at T1. Instead of causal paths, we estimated correlations between mothering and child behavior and fathering and child behavior at T1. The model that tested *long-term bidirectional effects* included cross-lagged paths between mothering and child behavior and between fathering and child behavior from T1 to T2, T2 to T3, and T3 to T4. In this second model, correlations were estimated between mothering and child behavior and fathering and child behavior within similar measurement waves.

For both the short-term effect models and the long-term effect models we tested whether the bidirectional relationship between parenting and children's externalizing behaviors (1) changed over time, and (2) was different for mothers and fathers. First, a baseline model was identified in which all paths were free to vary across time and across maternal and paternal parenting behavior. Then, for each type of effect (child-effect on mother, child-effect on father, mother-effect on child, and father-effect on child), a model was run in which these effects were constrained to be equal across time. This constrained model was then compared to the baseline-model. If constraining paths to be equal across time did not lead to a deterioration of the model's fit, the paths' coefficients are not significantly different across time, indicating that there was no development. This procedure was repeated four times; once for the child-effects on mothering, once for the child-effects on fathering, once for the effects of mothering on child behavior, and once for the effects of fathering on child behavior. If constraints were tenable (i.e., did not lead to a decrement in the model's fit), they were maintained in the final path models.

A similar procedure was used to examine mother–father differences. Three constrained models were each compared with the three baseline models; one model in which the child-effects were constrained to be equal for mothers and fathers, one model in which the effects of parenting were constrained to be equal across mothers and fathers, and one model in which the correlations between the initial levels of parenting and the child's behavior were constrained to be equal across mothers and fathers. Constraints that were tenable were maintained in the final path models. Results of the short-term bidirectional model and the long-term bidirectional model are reported separately for each dimension of parenting. The ratio of the number of participants to the number of paths that were examined was approximately 3:1 for all final models.

Results

Descriptive statistics

Table 1 presents the means, standard deviations and minimum and maximum scores for the measures of child's externalizing behavior and parental behaviors. Intercorrelations between the parenting dimensions are presented in Table 2. Analysis of skewness (ranging from −.99 to 1.59) and kurtosis (ranging from −.80 to 2.71) indicated that the variables were normally distributed and that no transformations were necessary (Field, 2005). Paired *t*-tests showed that mothers and fathers significantly differed from each other in their levels of support and positive discipline. At all four measurement times, mothers reported slightly higher levels of support than fathers (*t*-values ranged from 5.32 to 7.16, $p < .001$). With regard to positive discipline, at T2, T3 and T4 mothers reported to use these discipline techniques more often than fathers did (*t*-values ranged from 3.76 to 4.64, $p < .001$).

Table 1
Means, standard deviations and minimum and maximum scores of child and parent behaviors.

	Mother			Father		
	M (*SD*)	*Min*	*Max*	*M* (*SD*)	*Min*	*Max*
Wave 1						
Externalizing behavior	.62 (.32)	.03	1.31			
Parenting dimensions						
Support	4.41 (.35)	3.15	5.00	4.14 (.40)	3.05	4.88
Lack of structure[a]	−.09 (.79)	−2.03	2.02	.00 (.78)	−1.63	2.27
Positive discipline	3.81 (.51)	2.30	5.00	3.68 (.51)	2.00	4.90
Psychological control	1.50 (.38)	1.00	2.40	1.59 (.44)	1.00	2.88
Physical punishment	1.35 (.39)	1.00	2.63	1.42 (.41)	1.00	2.75
Wave 2						
Externalizing behavior	.61 (.29)	.04	1.38			
Parenting dimensions						
Support	4.45 (.28)	3.67	5.00	4.19 (.42)	3.11	5.00
Lack of structure[a]	.04 (.72)	−1.94	1.99	−.07 (.80)	−1.91	2.19
Positive discipline	4.15 (.42)	3.10	5.00	3.89 (.47)	1.90	4.80
Psychological control	1.70 (.41)	1.00	2.78	1.76 (.45)	1.00	2.89
Physical punishment	1.37 (.40)	1.00	2.63	1.38 (.40)	1.00	2.75
Wave 3						
Externalizing behavior	.63 (.34)	.00	1.58			
Parenting dimensions						
Support	4.46 (.28)	3.56	5.00	4.12 (.43)	2.78	5.00
Lack of structure[a]	.05 (.77)	−1.56	2.02	−.03 (.87)	−1.86	2.14
Positive discipline	4.20 (.41)	3.10	5.00	3.98 (.40)	2.80	4.90
Psychological control	1.76 (.42)	1.00	3.00	1.82 (.49)	1.00	3.00
Physical punishment	1.35 (.40)	1.00	2.63	1.36 (.41)	1.00	2.88
Wave 4						
Externalizing behavior	.64 (.30)	.00	1.38			
Parenting dimensions						
Support	4.41 (.32)	3.44	5.00	4.16 (.43)	3.22	5.00
Lack of structure[a]	.06 (.72)	−1.36	2.46	.01 (.88)	−1.74	2.27
Positive discipline	4.26 (.35)	3.30	5.00	4.06 (.42)	2.60	4.90
Psychological control	1.87 (.43)	1.00	2.78	1.89 (.49)	1.00	3.22
Physical punishment	1.31 (.37)	1.00	2.63	1.37 (.43)	1.00	2.88

[a] Standardized scores are reported.

Repeated measures analyses indicated that the levels of maternal lack of structure, $F(100) = 3.40$, $p < .05$, maternal positive discipline, $F(100) = 24.93$, $p < .001$, and maternal psychological control, $F(98) = 30.96$, $p < .001$, increased significantly across time. In addition, levels of paternal positive discipline, $F(99) = 22.42$, $p < .001$, and paternal psychological control, $F(98) = 18.99$, $p < .001$, also increased significantly over time. Parents did not change in their levels of support and physical punishment. Likewise, the levels of children's externalizing behaviors did not significantly change over time.

Support

Short-term effects

The model testing the *short-term bidirectional effects* between parental support and children's externalizing behavior showed a good fit, $\chi^2\ (44) = 49.33$, CFI = .99, NNFI = .99, and RMSEA = .04 (Fig. 1). The correlations among the initial levels of support and children's externalizing behavior differed significantly between mothers and fathers ($\Delta\ \chi^2\ (1) = 5.14$, $p < .05$). A significantly negative association was found between the initial levels of maternal, but not paternal, support and children's externalizing behavior. Cross-sectional paths between children's externalizing behavior and parental support were found at T2, T3 and T4. At all three measurement waves, children's externalizing behavior had a negative effect on both maternal and paternal support, above and beyond previous levels of support. These effects were equally strong across time ($\Delta\ \chi^2\ (2) = 1.06$, $p > .05$ for mothers, and $\Delta\ \chi^2\ (2) = 4.22$, $p > .05$ for fathers) and across

Table 2
Intercorrelations between parenting dimensions.

	Support	Lack of structure	Positive discipline	Psych. control	Physical punish.
Wave 1					
Support		−.38***	.40***	−.18	−.24*
Lack of structure	−.60***		−.02	.46***	.39***
Positive discipline	.38***	−.28**		.09	.12
Psychological control	−.29***	.38***	.12		.45***
Physical punishment	−.10	.11	−.01	.18	
Wave 2					
Support		−.38***	.31**	−.30**	−.38***
Lack of structure	−.40***		−.15	.65***	.42***
Positive discipline	.27**	−.06		−.01	−.17
Psychological control	−.29**	.51***	−.03		.37***
Physical punishment	−.12	.24**	−.05	.33***	
Wave 3					
Support		−.39***	.33***	−.34***	−.13
Lack of structure	−.41***		−.03	.62***	.39***
Positive discipline	.31**	−.16		.01	.03
Psychological control	−.31**	.39***	.00		.36***
Physical punishment	−.16	.20*	−.06	.27**	
Wave 4					
Support		−.44***	.40***	−.33***	−.17
Lack of structure	−.38***		−.23*	.58***	.31**
Positive discipline	.35***	−.20*		−.22*	−.05
Psychological control	−.24*	.49***	−.03		.31**
Physical punishment	−.12	.23*	−.16	.37***	

Note. Correlations for mothers are below diagonal; correlations for fathers are above diagonal.
* $p < .05$; ** $p < .01$; *** $p < .001$.

mothers and fathers ($\Delta\ \chi^2\ (3) = 0.24$, $p > .05$). Although children's externalizing behavior elicited changes in parental support, parental support did not significantly affect children's externalizing behavior.

Long-term effects. The model testing the *long-term bidirectional effects* between parental support and children's externalizing behavior showed that these longitudinal effects did not reach statistical significance.

Lack of structure

Short-term effects

The model testing the *short-term bidirectional effects* for lack of structure is depicted in Fig. 2, and showed an acceptable fit to the data, $\chi^2\ (42) = 61.95$, CFI = .98, NNFI = .97, and RMSEA = .07. The initial levels of maternal lack of structure and children's externalizing behaviors were significantly related to each other, whereas the initial level of paternal lack of structure was unrelated to the child's externalizing behavior. This difference in correlations between the initial levels of children's externalizing behavior on the one hand, and mothering and fathering on the other, was statistically significant, $\Delta\ \chi^2\ (1) = 4.66$, $p < .05$. At T2, T3, and T4, cross-sectional effects of children's externalizing behavior on maternal and paternal lack of structure were found. Children's externalizing behavior had a positive effect on maternal and paternal lack of structure, above and beyond the previous levels of these behaviors. These child-effects were equally strong across time ($\Delta\ \chi^2\ (2) = 0.71$, $p > .05$ for mothers, and $\Delta\ \chi^2\ (2) = 3.49$, $p > .05$ for fathers) and across mothers and fathers ($\Delta\ \chi^2\ (3) = 2.00$, $p > .05$). However, the effect of parental lack of structure on child behavior did not reach statistical significance.

Long-term effects

The model testing the *long-term bidirectional effects* between children's externalizing behavior and parental lack of structure showed no statistically significant cross-lagged effects.

Positive discipline

For positive discipline, both models testing the *short-term* ($\chi^2\ (47) = 52.59$, CFI = .99, NNFI = .98, and RMSEA = .03) and

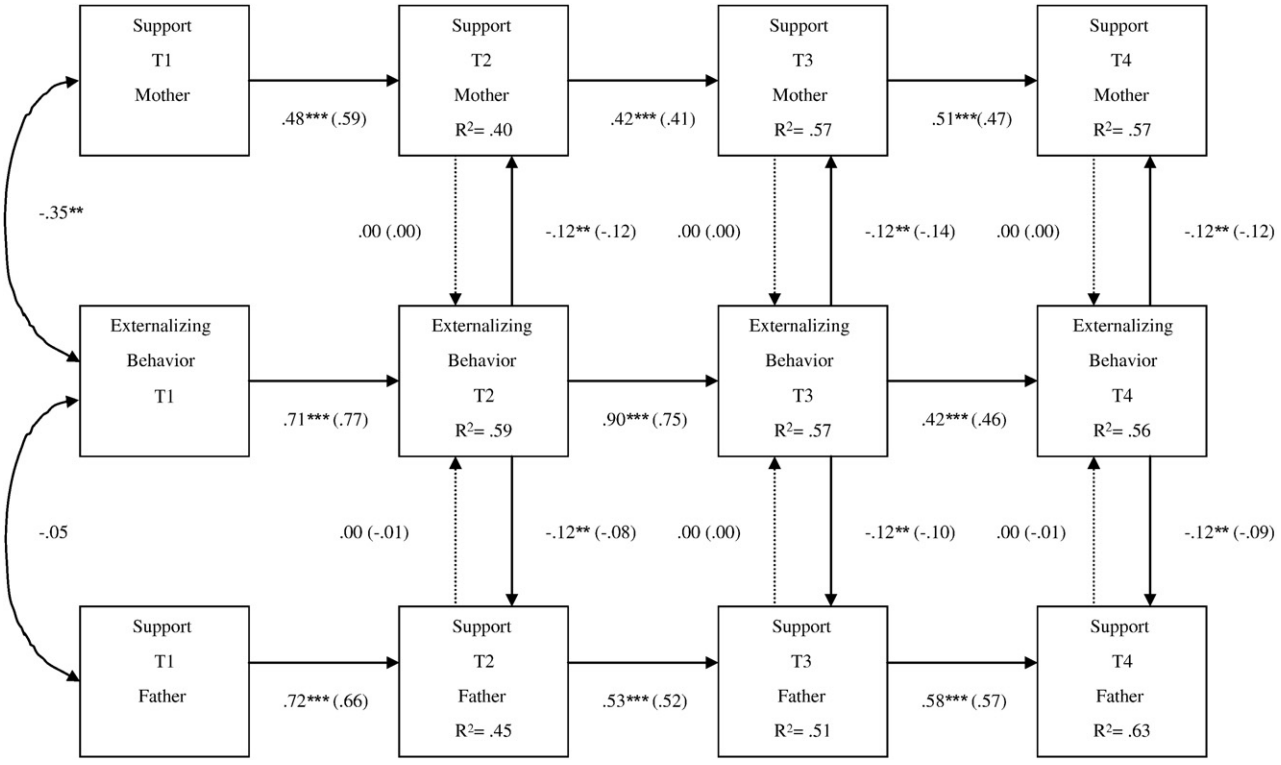

Fig. 1. The final model for the short-term bidirectional relationship between parental support and children's externalizing behavior. *Note*. Unstandardized beta's are reported outside parentheses and standardized beta's are reported inside parentheses. **$p < .01$; ***$p < .001$.

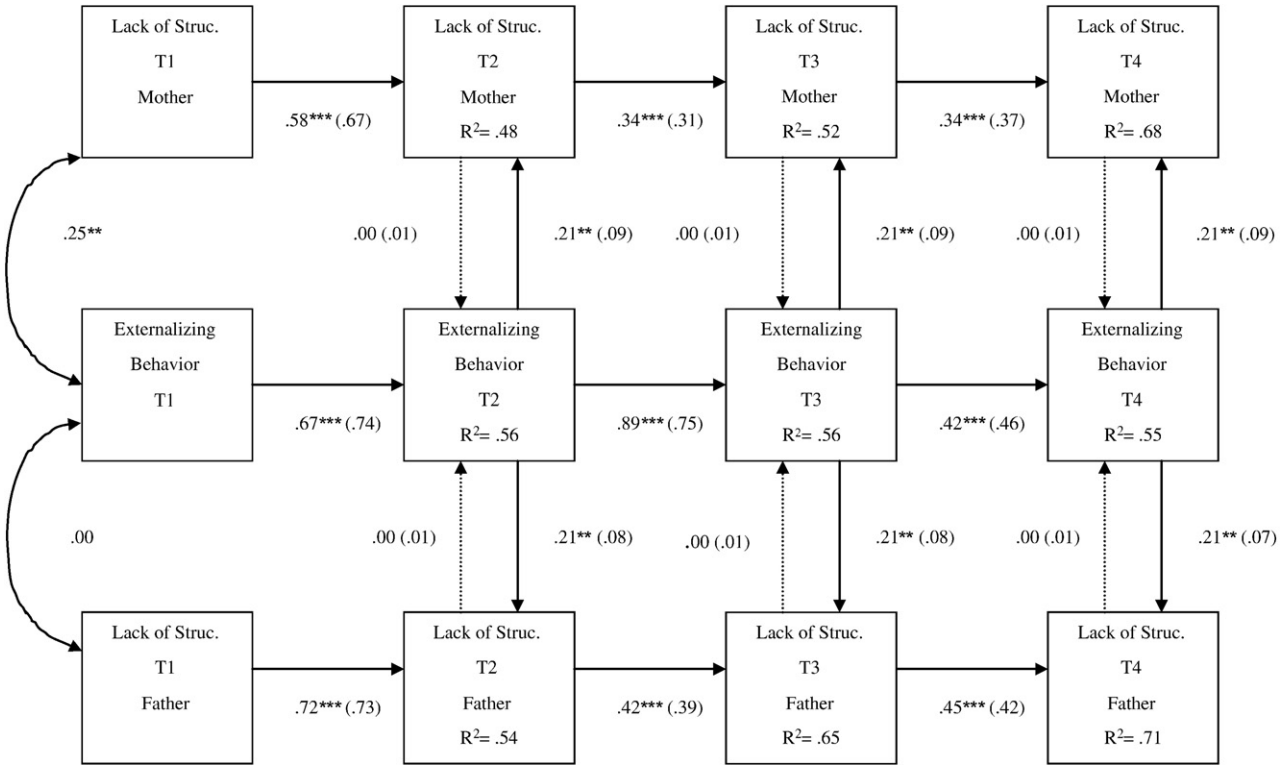

Fig. 2. The final model for the short-term bidirectional relationship between parental (lack of) structure and children's externalizing behavior. *Note* = Lack of Structure. Unstandardized beta's are reported outside parentheses and standardized beta's are reported inside parentheses. $^{**}p < .01$; $^{***}p < .001$.

long-term (χ^2 (41) = 42.28, CFI = .99, NNFI = .99, and RMSEA = .02) *bidirectional effects* failed to find statistically significant effects between children's externalizing behavior and parental positive discipline. The initial levels of children's externalizing behaviors and parental positive discipline were also unrelated for both mothers and fathers.

Psychological control

Short-term effects

The model testing the *short-term bidirectional effects* between children's externalizing behavior and parental psychological control showed an acceptable fit to the data, χ^2 (44) = 71.36, CFI = .96, NNFI = .94, and RMSEA = .08 (Fig. 3). The association between the initial levels of parental psychological control and children's externalizing behavior was significantly different for mothers and fathers ($\Delta\ \chi^2$ (1) = 6.46, $p < .05$). The initial levels of children's externalizing behavior and maternal psychological control were positively associated. With regard to the cross-sectional effects, at T2, T3 and T4, children's externalizing behavior had a positive effect on both maternal and paternal psychological control, above and beyond previous levels of this parental behavior. These effects were equally strong across time ($\Delta\ \chi^2$ (2) = 0.56, $p > .05$ for mothers, and $\Delta\ \chi^2$ (2) = 0.30, $p > .05$ for fathers) and across mothers and fathers ($\Delta\ \chi^2$ (3) = 0.27, $p > .05$). None of the parent-effects reached statistical significance.

Long-term effects

The model examining the *long-term bidirectional effects* showed that paternal psychological control had a negative, longitudinal effect ($b = -.05$, $p < .05$) on children's externalizing behavior that was equally strong for all measurement waves ($\Delta\ \chi^2$ (2) = 0.54, $p > .05$). However, constraining the longitudinal effects for maternal and paternal psychological control did not deteriorate the model fit ($\Delta\ \chi^2$ (3) = 2.27, $p > .05$), indicating that mothers and fathers influenced their child's behavior to an equal extent. When constraining these longitudinal effects, the effects of paternal psychological control no longer reached statistical significance. This suggests a trend wherein paternal psychological control has a negative effect on children's externalizing behavior.

Physical punishment

Short-term effects

The model in which the *short-term bidirectional effects* between children's externalizing behavior and parental physical punishment was tested, showed an adequate fit to the model, χ^2 (45) = 75.87, CFI = .96, NNFI = .94 and RMSEA = .08, and is depicted in Fig. 4. The initial levels of children's externalizing behaviors and parental physical punishment were unrelated, and these relations were not different for mothers and fathers ($\Delta\ \chi^2$ (1) = 1.98, $p > .05$). Children's externalizing behavior had statistically significant, positive, cross-sectional effects on both maternal and paternal physical punishment above and beyond previous levels of this parenting dimension. These effects were equally strong across time ($\Delta\ \chi^2$ (2) = 0.30, $p > .05$ for mothers, and $\Delta\ \chi^2$ (2) = 0.65, $p > .05$ for fathers) and across mothers and fathers ($\Delta\ \chi^2$ (3) = 0.80, $p > .05$). None of the parent-effects reached statistical significance.

Long-term effects

The model testing *the longitudinal bidirectional effects* between children's externalizing behavior and parental physical punishment showed that paternal physical punishment had a statistically significant, negative effect ($b = -.07$, $p < .05$) on children's externalizing behaviors. This effect was equally strong across time ($\Delta\ \chi^2$ (2) = 1.15, $p > .05$). However, constraining the longitudinal effects for maternal and paternal physical punishment did not deteriorate the models fit ($\Delta\ \chi^2$ (3) = 5.23, $p > .05$), indicating that mothers and fathers influenced their child's behavior to an equal extent. When constraining

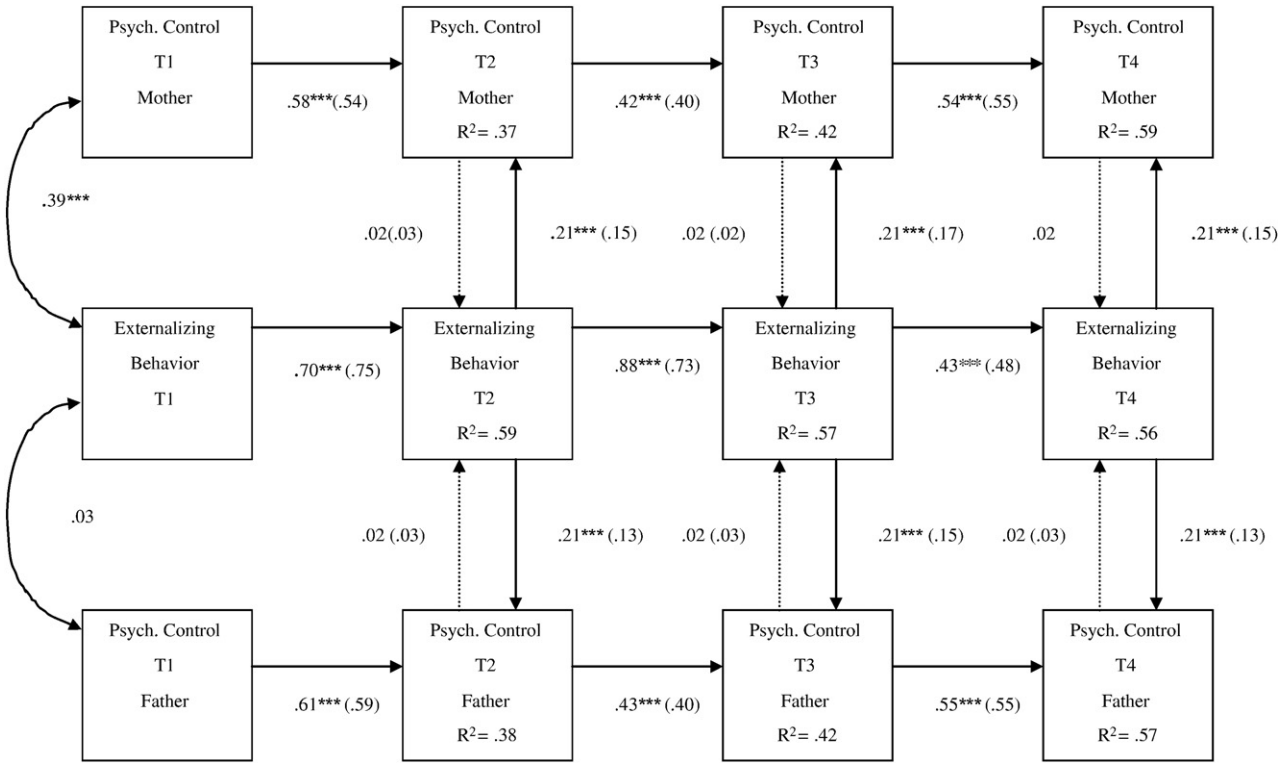

Fig. 3. The final model for the short-term bidirectional relationship between parental psychological control and children's externalizing behavior. *Note.* Psych Control = Psychological Control. Unstandardized beta's are reported outside parentheses and standardized beta's are reported inside parentheses. ***p < .001.

these longitudinal effects, paternal physical punishment no longer had a statistically significant effect on children's externalizing behavior 6 months later, suggesting a trend wherein paternal physical punishment has a negative effect on children's externalizing behavior.

Discussion

The current study investigated the bidirectional relationship between toddler boys' externalizing behaviors and five dimensions

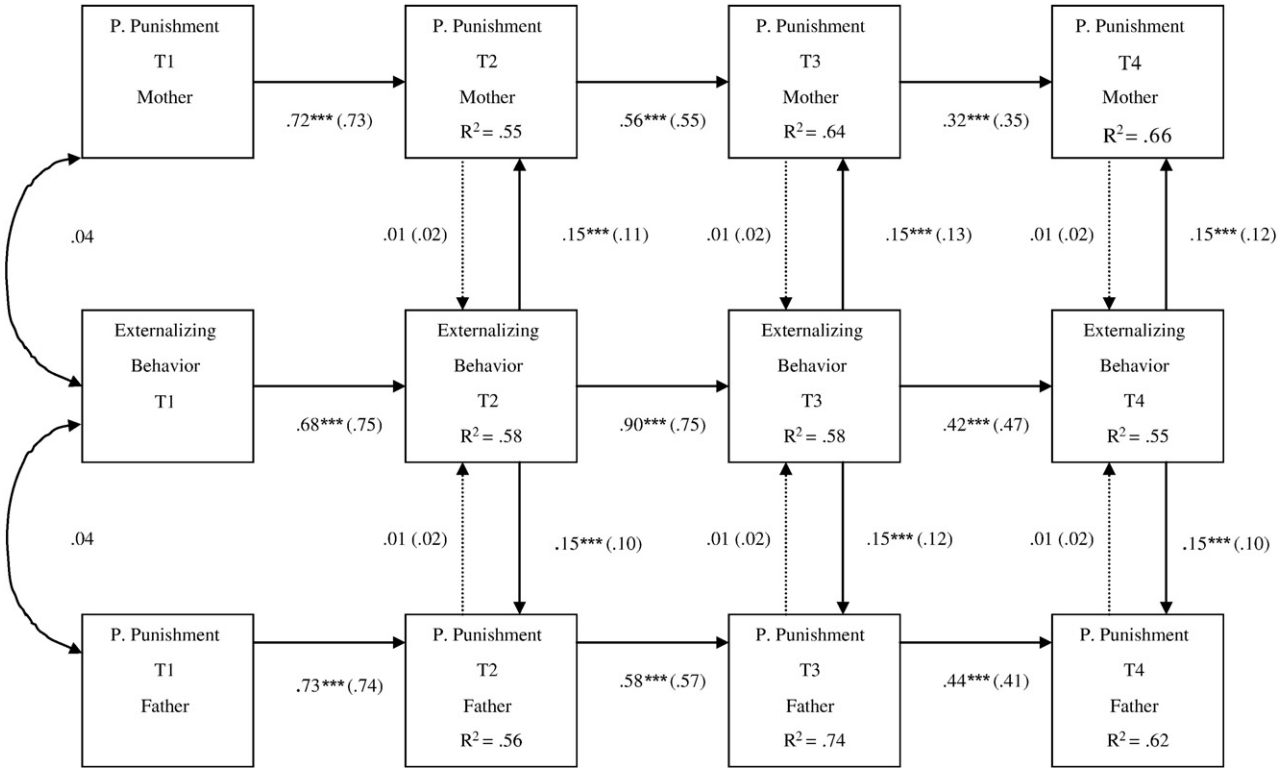

Fig. 4. The final model for the short-term bidirectional relationship between parental physical punishment and children's externalizing behavior. *Note*. P. Punishment = Physical Punishment. Unstandardized beta's are reported outside parentheses and standardized beta's are reported inside parentheses. ***p < .001.

of mothering and fathering from the time the children were 17 months until they were 35 months of age. We found no evidence of bidirectionality between children's externalizing behavior and parenting during toddlerhood. Although children's externalizing behavior influenced parental behaviors, the reverse was not established. Furthermore, these child-effects occurred only within the same measurement wave and were equally strong across time and across mothers and fathers.

Child-effects

Toddler boys' externalizing behavior was found to influence parental support, lack of structure, psychological control and physical punishment at 23, 29 and 35 months of age. Boys who show higher levels of externalizing behavior elicit less supportive and structured parenting. Furthermore, these boys evoke higher levels of parental psychological control and physical punishment. This pattern of child-effects possibly reflects parental reaction to the increasingly difficult behavior of the child. Higher levels of behavioral problems in children are associated with a decline in parental satisfaction and self-security (Shaw & Bell, 1993). Especially when parents are rearing a difficult child, parenting challenges intensify (Scaramella & Leve, 2004). Parents may be discouraged by their child's tendency to be difficult and are more likely to disengage from their child (Sanson, Hemphill, & Smart, 2004), which is partly expressed by lower levels of parental support. In addition, when children are displaying high levels of misbehavior, parents have to constantly change their parental behaviors in order to find a strategy that works with the child. As a consequence, parents become less structured in their childrearing. Likewise, high levels of children's externalizing behaviors challenge parents' patience. When dealing with their difficult child, parents may lose their temper and turn to harsh discipline tactics, such as psychological control and physical punishment.

In contrast to our hypothesis, no associations were found between boys' externalizing behavior and parental positive discipline. A possible reason for a lack of this relationship is the content of the construct of positive discipline. In the current study, the parenting dimension of positive discipline contains parental reinforcement of good behavior and parental inductive reasoning. An increase in the child's externalizing behavior does not necessarily imply a decrease in the child showing positive behavior. This might explain why parents did not decline in their levels of parental reinforcement when their child's levels of externalizing behavior increased. In addition, although parents increase their levels of harsh discipline in response to the child's increased levels of externalizing behavior, this does not automatically imply that parents do not explain to their child why their behavior is unwanted.

Parent-effects

The current study did not find statistically significant effects of parenting on boys' externalizing behavior above and beyond the previous levels of these behaviors. This is in contrast with our hypothesis and inconsistent with theoretical models that assume a bidirectional relationship between children's behavior and parenting. How can we explain the finding that parenting did not appear to influence toddlers' externalizing behavior in our study? One explanation lies in the developmental period that was chosen to examine the parent-child bidirectionality. During toddlerhood, major developmental changes take place including physical, cognitive, and motor control changes. The emergence of sophisticated verbal skills, self-awareness and goal-oriented behavior contributes to a strong push for independence in children. At the same time, parents begin to impose rules and limits, both in response to their child's newfound autonomy and as a natural part of the socialization process. Clashes between a child's self-assertion and the parent's limit setting efforts lead to more frequent episodes of frustration and upset (Campbell, 1995; Coie & Dodge, 1998; Tremblay, 2004). Changes in individual differences in the levels of externalizing behaviors during this period may be more dependent on intrinsic variability within children, such as temperamental characteristics, measures of intelligence, and specific cognitive abilities, than on extrinsic variability such as parental behaviors.

Second, it might be that the parents in the current study provide sufficiently supportive environments for children's development. According to Scarr (1992), as long as parents are 'good enough', it does not matter in which family children grow up, as parents have few differential effects on children. Ordinary differences between parents have little effect on children's development, unless the parental behaviors are outside of a normal range (Scarr, 1992). The sample of the current study consisted of well functioning, two-parent families, who showed adequate parenting (i.e., high levels of support and positive discipline, low levels of harsh punishment). Future studies should investigate whether individual differences in parenting do affect children's externalizing behavior in at-risk and clinical samples.

A third possible explanation may be that children demonstrate substantial variability in their responses to parental behaviors. Some children are more susceptible to childrearing than others (Belsky, 2005; Paterson & Sanson, 1999). The combination of highly susceptible children and non-susceptible children in one sample may reduce the main effects of parenting, causing it to drop below significance. A previous study with the same sample found that effects of parenting on children's externalizing behavior were restricted to toddlers with a difficult temperament (i.e. a combination of low levels of inhibitory control and soothability, and high levels of frustration and activity level) (Van Aken, Junger, Verhoeven, Van Aken, & Deković, 2007).

Fourth, the significance of parenting behavior for children's externalizing behaviors may not be evident before children enter school (Scaramella & Leve, 2004). The developmental importance of the early parent–child relationship is that children learn strategies for interacting with others (i.e., other children, teachers), which affects future behavior and relationships. Thus, it might be that the effects of parenting on children's externalizing behaviors are not yet visible at this early age.

Short-term versus long-term effects

Consistent with the studies of Fite et al. (2006) and Vuchinich, Banks, and Patterson (1992), the current study found that child behavior influenced parenting within the same measurement wave but not across measurement waves. As suggested in the introduction, this may indicate that the processes through which child behavior influences parenting are short-term rather than long-term. It seems logical that when children show elevated levels of externalizing behavior, parents react to these behaviors immediately and not six months later. As proposed by the bidirectional models of Bell (1977) and Patterson (1995), specific behaviors in the child elicit specific reactions in the parent and vice versa. For example, the child whines and protests, the parent tries to stop this whining, and the child stops whining. The current study, however, did not measure such behavioral sequences. Future studies should test these models by observing sequential parent–child interactions.

Changes of the bidirectional parent–child relationship

With regard to changes in bidirectional relationships across time, we found that the child-effects on parenting were stable from 23 to 35 months. This stability in child-effects may be caused by the relatively short period between the measurement waves, and the overall short time span of 18 months. Measurement waves were only 6 months apart, which might have been too short a timeframe to detect significant changes in parent–child relationships. More significant changes in parent–child relationships may be expected

during transitions from developmental stages, such as from elementary school age to adolescence (Fite et al., 2006).

Mother–father differences

One of the major issues addressed in the current study is the comparison of the mother–son and father–son relationships. Mothers reported higher levels of positive parental behaviors (i.e., support and positive discipline) than fathers did. However, mothers and fathers reported similar levels of lack of structure, psychological control and physical punishment. This is consistent with previous findings documenting differences in responsiveness and warmth between mothers and fathers, but not in other parental behaviors (Calzada, Eyberg, Rich, & Querido, 2004; Kendler, Sham, & MacLean, 1997).

Despite these differences in maternal and paternal behavior, we found no evidence for differences between the mother–son and father–son associations. Although it has been suggested that mothers and fathers play a different role in the development of their children, in the current study we found no evidence for differences between the mother-child and father–child relationships. Children affect both their parents in a similar way. That is, both mothers and fathers respond to their children's externalizing behaviors similarly. This finding is in line with a study by Kochanska, Friesenborg, Lange and Martel (2004) that found that maternal and paternal behavior is equally determined by their child's temperamental features. Davidov and Grusec (2006) also found similar associations between maternal and paternal support and children's externalizing behavior.

There were, however, significant differences between the mother–son and father–son associations when the child was 17 months old. Although the initial levels of children's externalizing behavior were significantly correlated with maternal support, structure and psychological control, we did not found these same patterns with paternal behavior. This is in accordance with previous studies that showed stronger associations with children's externalizing behavior for mothering than fathering (Aunola & Nurmi, 2005; Belsky et al., 1998; Brook et al., 2001). As suggested by Sroufe (2000) and Woodworth, Belsky and Crnic (1996), the myriad of developmental changes that take place during the child's second and third year seem likely to draw fathers more actively into parenting. This might explain why the associations between paternal behavior and child behavior become stronger after the transition from infancy to toddlerhood.

The finding that there were significant differences between mothers and fathers regarding the parent–child associations at 17 months, but not at later measurement waves, might also reflect a 'shared method bias' (Podsakoff, Mackenzie, Lee, & Podsakoff, 2003). In the current study, only mothers reported about the boys' externalizing behaviors. In the longitudinal path models of the current study, in contrast to the first measurement wave, the levels of parenting and boys' behavior at later measurement waves were statistically controlled for previous levels of these behaviors. Thus, the associations between parenting and boys' behavior at later measurement waves were also controlled for the 'shared method bias', explaining why mother–father differences were found at the first, but not the later measurement waves. Nevertheless, the findings of the current study suggest that fathers must not be ignored in the study of child socialization, at least when the child is young and male and the target behavior is externalizing.

Limitations

The results of this study should be interpreted in light of the limitations of the study. First, the information on parental behaviors and boys' externalizing behaviors were obtained by self-reports. It is important to keep in mind that parental reports reflect parents' perceptions of their own and their child's behavior and may not be identical to their actual behaviors. Another limiting factor is the potential measurement error associated with the parenting scales. Although we had good reasons to use self-reported information on parenting (i.e., parents are in the unique position to report on a variety of behaviors, including those that are not readily amenable to direct observations), and to allow mothers to report about their son's externalizing behavior (in 71.2% of the sample, mother was the primary caregiver), the results of the current study should be replicated by using other measurements of parenting (such as observations) that are more internally consistent and are reported by multiple informants. At T3 and T4, fathers also reported about their son's externalizing behavior. Additional analyses revealed that the correlations between maternal and paternal reports of boys' externalizing behavior are moderate ($r =$ .56 at T3 and $r =$ .58 at T4). Moreover, fathers perceived significantly lower rates of externalizing behavior than mothers. Despite these gender differences in parents' perceptions of their son's externalizing behavior, the parenting dimensions were similarly related to maternal and paternal reports of boys' externalizing behavior at T3 and T4. There was only one exception: paternal psychological control was more strongly correlated with paternal reports than with maternal reports of externalizing behavior, stressing the importance of future studies to include reports on child behavior by both parents.

A second limitation is the use of a relatively homogenous sample consisting of Dutch intact, middle-class families with a male toddler. Future studies should examine to what extent the present results can be generalized to parent–daughter dyads, and to families in different circumstances, such as one-parent families, step-parents, and clinical samples.

In addition, two statistical limitations should be mentioned. With regard to the models that were tested in the current study, it should be noted that chances of Type 2 errors were elevated because of the number of paths that were examined within the models. Although the paths were not examined arbitrarily (e.g., predictions were made regarding the character of the effects), it is important that future studies confirm the results of the present study. Second, although longitudinal panel designs are a powerful means of estimating reciprocal causal effects, they do not offer an automatic method for "proving causality" (Finkel, 1995).

Implications and summary

Within the context of its limitations, the current study shows that child-effects are stronger than parent-effects during toddlerhood, suggesting that the child is the changing factor and these changes within the child are the guidelines for the developing relationship between parenting and child behavior. Children who display high levels of externalizing behavior are at risk for evoking dysfunctional parental behaviors, such as a lack of support and structure, and a more frequent use of harsh discipline tactics (psychological control and physical punishment). It seems important to assist parents to cope with the increasing externalizing behaviors of their toddler and help them to develop more effective parental strategies. Parenting programs should not only focus on the potential downside of harsh parental discipline tactics for children, but also on the benefits of positive parenting behavior (i.e., support) on children's optimal development. Moreover, the results of this study indicate that in two-parent families, it is important to involve both parents – mothers as well as fathers – in these parenting programs.

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