Chapter 4

Attachment-based intervention for enhancing sensitive discipline in mothers of 1- to 3-year-old children at risk for externalizing behavior problems: A randomized controlled trial

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Abstract

In a randomized controlled trial with 237 families screened for their 1- to 3-year-old children's high scores on externalizing behavior, the home-based intervention program Video-feedback Intervention to promote Positive Parenting and Sensitive Discipline (VIPP-SD) was tested. VIPP-SD, based on attachment theory and coercion theory, focuses on mirroring and discussing actual parent-child interactions in six 1½-hour sessions with individual families at home. VIPP-SD proved to be effective in enhancing parental attitudes towards sensitivity and sensitive discipline, and in promoting sensitive discipline interactions. Moreover, it resulted in a decrease of overactive problem behaviors in the children. It is concluded that VIPP-SD should become an essential module in attachment-based interventions.

Introduction

One of the most compelling research themes regarding the development of externalizing problems (overactive, oppositional, and aggressive behavior) is the role of early maladaptive parent-child interaction patterns (Burke, Loeber, & Birmaher, 2002; Hinshaw, 2002). Externalizing problems in preschoolers are predictive of a variety of problems in later childhood (Campbell & Ewing, 1990; Mesman & Koot, 2001). Even in 1-year-old children externalizing problems show (at least) short-term stability (Van Zeijl et al., in press; see chapter 2). However, little is known about the role played by parents in the origin of these problems and the possibilities for prevention in the first years of life, emphasizing the importance of investigating the role of early childhood parenting. To date, two main theoretical frameworks have inspired research into maladaptive parent-child interactions: attachment theory and coercion theory.

According to attachment theory, infants are biologically predisposed to use their parent as a haven of safety to provide comfort and protection when they are distressed, and as a secure base from which they can explore the environment (Bowlby, 1969). Attachment theory focuses on the quality of early parental care, in terms of sensitivity and responsiveness, as an important contributor to salient socialization processes in the first years of life (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1969). Secure child-parent attachment relationships in infancy predict positive outcomes in later life, for example social competence (e.g., Fagot, 1997; Sroufe, Egeland, Carlson, & Collins, 2005). Also, a number of longitudinal studies have shown that attachment *in*security and parental *lack of* warmth in early childhood are associated with externalizing problems in later childhood and adolescence (e.g., Belsky, Woodworth, & Crnic, 1996; Greenberg, Speltz, DeKlyen, & Endriga, 1991; Olson, Bates, Sandy, & Lanthier, 2000). Several mechanisms underlying the association between early parental care and child behavioral (mal-)adjustment have been proposed (DeKlyen & Speltz, 2001; Greenberg, 1999), including the formation of negative social expectations, a lack of motivation to internalize rules, poor self-regulation skills, and negative attention-seeking on the part of the child.

Coercion theory is based on the social learning perspective and focuses on ineffective parental discipline (Patterson, 1976, 1982; Snyder, 1995). Specifically, coercion theory states that child externalizing problems are more likely to emerge when a child is reinforced for responding with negative behavior to parental requests or demands. The child is trying to 'coerce' the parent into terminating the

undesired request and the parent's repeated attempts to obtain child compliance are met with increasingly difficult behavior. If this process ultimately leads to the withdrawal of the parent's request, the child's aversive behaviors are negatively reinforced (i.e., rewarded by termination of the undesirable stimulus). Related processes include inconsistent parental discipline and a failure to provide positive reinforcement for compliant and prosocial child behaviors. Several studies have shown that negative reinforcement processes are relevant to the development of externalizing problems in school-aged children (e.g., Patterson, 1982; Prinzie et al., 2003).

By definition, externalizing problems are socially disruptive and may even cause harm to other people. Conversely, the emergence of empathic concern and compliance with parental requests are salient issues in the development of socially appropriate behaviors (see Van IJzendoorn, 1997). In the second year of life, individual differences in empathic feelings and in compliance with parental demands arise (Kagan & Lamb, 1987). Hoffman (1984) suggested that by creating a warm atmosphere and, at the same time, strictly and consistently forbidding behavior that is damaging to others, parents pave the way for feelings of empathy in their children. The type of discipline most fostering empathy is known as induction, with as essential feature that the reasons for a prohibition or parental intervention are made explicit (Eisenberg, 1992; Zahn-Waxler, Radke-Yarrow, & King, 1979). Induction is the opposite of coercive parenting as described by Patterson (1976), which involves overreactive and harsh discipline in response to aversive child behavior, leading to conflict escalation. Several studies documented the effectiveness of inductive discipline (e.g., Grusec & Goodnow, 1994). Londerville and Main (1981) found that mothers of secure infants used inductive discipline more than mothers of insecure infants; mothers of secure infants also used gentler physical interventions and warmer tones in giving commands. Child compliance and cooperation were positively related to the mother's use of inductive and sensitive discipline (Londerville & Main, 1981). Kochanska (1995) found that gentle maternal discipline de-emphasizing power predicted toddlers' committed compliance, in particular for fearful children. In our own lab, we found that mothers' gentle discipline was associated with their daughters' compliance to maternal prohibitions (Van der Mark, Van IJzendoorn, & Bakermans-Kranenburg, 2002). Thus, the combined theoretical frameworks of attachment theory and coercion theory provide the leads for an optimal approach to the development of early childhood intervention.

Attachment-based interventions

The favorable child outcomes of secure attachment relationships and the hypothesis that early interventions may be most effective in preventing less optimal or even deviant developmental pathways in children have led to the development of many early preventive interventions focusing on positive parenting (Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2005a). Usually, these attachment-based intervention programs were aimed at enhancing parental sensitivity, which refers to the ability to accurately perceive children's attachment signals, and to respond to these signals in an adequate and prompt way (Ainsworth, Bell, & Stayton, 1974). In a meta-analysis, including 70 studies representing 88 intervention effects on parental sensitivity and/or children's attachment security, interventions that specifically focused on promoting sensitive parental behavior proved to be rather effective in changing insensitive parenting as well as infant attachment insecurity (Bakermans-Kranenburg, Van IJzendoorn, & Juffer, 2003). Moreover, interventions with a modest number of intervention sessions (up to 16) appeared to be more effective than interventions with larger numbers of sessions, and this was true for clinical as well as for non-clinical groups (Bakermans-Kranenburg et al., 2003).

Based on this meta-analytic evidence, we developed a short-term, behaviorally focused intervention program: Video-feedback Intervention to promote Positive Parenting (VIPP; Juffer, Bakermans-Kranenburg, & Van IJzendoorn, in press). In the VIPP program, parent and child are videotaped during daily situations at home. Video feedback provides the opportunity to focus mother's attention on her child's videotaped signals and expressions, thereby stimulating the parent's observational skills and empathy for her own child. It also enables positive reinforcement of the parent's moments of sensitive behavior shown on the videotape, thus addressing both parts of Ainsworth's definition of sensitivity: (1) accurately perceiving child signals, and (2) adequately responding to them (Ainsworth et al., 1974). Studies using the VIPP approach showed positive effects on parental sensitivity and/or attachment security in non-clinical groups, for example in adoptive families (Juffer, Van IJzendoorn, Bakermans-Kranenburg, in press), and in a childcare setting (Elicker, Georgescu, & Bartsch, in press), as well as in at risk and clinical groups, such as mothers with an insecure representation of attachment (Klein Velderman, Bakermans-Kranenburg, Juffer, & Van IJzendoorn, in press), families with preterm babies and infants affected by atopic dermatitis (Cassiba et al., in press), and mothers with eating disorders and their infants (Woolley, Stein, & Hertzmann, in press).

Recently, the VIPP approach was extended with the objective to include not only parental sensitivity but also parental discipline, resulting in the intervention program Video-feedback Intervention to promote Positive Parenting and Sensitive Discipline (VIPP-SD). From a developmental perspective, parental discipline strategies become increasingly important for managing child behavior during the toddler years (e.g., Belsky et al., 1996). By the end of the first year, when children experience rapid developmental advances in cognitive, linguistic, and motor skills, parenting issues shift from primarily providing nurturance and protection to parenting issues such as firm support, limit setting, and the use of effective control strategies (Sroufe, 1979). Despite their differences, attachment theory and coercion theory show agreement regarding the conceptualization of early parent-child interactions. Both emphasize the importance of contingencies in the socialization process, and both describe a transactional developmental process, focusing on the appropriateness of parents' responses to child behaviors (Ainsworth et al., 1974; Patterson, 1982; Rothbaum & Weisz, 1994).

VIPP-SD thus aims at enhancing parental sensitivity as well as sensitive discipline, that is, parents' ability to take into account the child's perspective and signals (the essential part of parental sensitivity) when discipline is required. Sensitive discipline includes the adoption of more adequate and child-oriented discipline methods, such as induction (Hoffman, 1984) and empathy for the child when he or she is frustrated or angry (Lieberman, 2004).

Differential susceptibility

One of the intervention studies using VIPP showed a differential treatment effect depending on children's temperamental reactivity: parental sensitivity and attachment security were significantly more enhanced in families with highly reactive children than in families with less reactive children (Klein Velderman et al., in press). Moreover, highly reactive infants were more susceptible to their mothers' changes in maternal sensitivity. These outcomes support Belsky's (1997a, 1997b, 2005) hypothesis of differential susceptibility, namely that children vary in their susceptibility to parental rearing because of evolutionary reasons, with some children being highly responsive and others being less or not at all responsive. Belsky (1997b) suggested that negatively emotional or difficult infants may be most affected by rearing influences. Currently, a growing number of studies appear to confirm the moderating role of temperament in the association between parenting and child development (e.g., Blair, 2002; Klein Velderman et al., in press). More specifically, Kochanska (1995) illustrated the interplay between parental

discipline and temperament for children's committed compliance. As described before, in particular fearful children reacted positively to the gentle discipline of their mother. Therefore, we examined whether child temperament moderated the effectiveness of our VIPP-SD intervention on either parenting or child outcomes.

In the current study, the intervention program VIPP-SD was tested in a large sample of families screened for their children's high scores on externalizing behavior in a randomized trial. We tested the following hypotheses: First, we expected the intervention to be effective in changing parental attitudes about sensitive discipline into an attitude of greater acceptance of gentle but firm regulation of the child's behavior in times of conflict. Second, the intervention was expected to be effective in enhancing the parent's sensitive discipline in actual prohibition settings (e.g., refrain from touching a treat). Third, we expected the intervention to decrease the children's externalizing problem behaviors, in particular those externalizing behaviors that are less severe and more common, as the current intervention is of modest duration and intensity. Fourth, intervention effects on the children's problem behaviors were supposed to be mediated by the changes in parenting. Lastly, we tested the influence of child characteristics on the effectiveness of the intervention. Because the age of the children in our study ranged from one to three years, we examined whether intervention with younger children was more effective than intervention starting at a later age. Similarly, we tested whether children with difficult temperaments would be more susceptible to the intervention efforts than relatively easy children.

Method

The SCRIPT study

The Dutch SCRIPT study (Screening and Intervention of Problem behavior in Toddlerhood) is a collaboration between Leiden University (Centre for Child and Family Studies) and the Vrije Universiteit Amsterdam (Department of Developmental Psychology). The study investigates the effectiveness of an early intervention program aimed at reducing externalizing problems in 1- to 3-year-old children by enhancing maternal sensitivity and adequate discipline strategies. It consists of a screening phase in a general population sample and a randomized case-control intervention phase in a selected subsample of children with high levels of externalizing behavior problems. The study was conducted in compliance with Leiden University Medical Center Internal Review Board, and informed consent was obtained from all participants.

Sample selection

Participants were recruited from community records of several cities and towns in the western region of the Netherlands. Children born in a specific time period were selected in order to obtain a group of 1-, 2-, and 3-year-old children. Children were not eligible to participate in the screening phase if they had non-Dutch first names as well as non-Dutch family names (implying a possible lack of familiarity with the Dutch language and meeting exclusion criteria for the intervention phase regarding ethnic background). In the screening phase, parents of 4,615 children were sent questionnaire booklets by mail. We obtained 2,408 questionnaires from primary caregivers (response rate 52%). Unfortunately we were not able to collect detailed information on non-participating families, but there were no child age or child sex differences between responding and non-responding families (respectively $p = .11$ and $p = .38$). To ensure a homogenous sample, only children living with two parents (with the biological mother as the primary caregiver and a father figure - biological or stepfather - as the second caregiver) were eligible for the intervention study (95% of the sample). This selection and the application of several other exclusion criteria (e.g., twins, serious medical condition in child or mother) resulted in the exclusion of 454 cases, leaving a target selection sample of 1,954 children. For each age group, children with scores above the 75th percentile on the CBCL syndrome Externalizing Problems (age 1 year: scores ≥ 13; age 2 years: scores ≥ 19; age 3 years: scores ≥ 20) were selected for the intervention study.

Of the 438 selected families, parents of 246 children (56%) agreed to participate in the intervention study. During the intervention phase, 9 families withdrew from the study, leaving 237 children and their mothers in the intervention sample. Fifty-six percent of the children were boys and over half of the children had siblings (59%). Mean age of the mothers was 33 years and the majority of the parents had a high educational level (one or both parents with Bachelor's or Master's degree in 64% of the sample). There were no significant differences between selected families who agreed to participate in the entire intervention phase and those who did not regarding initial level of child externalizing problems ($p = .99$), child and maternal age ($p = .18$ and $p = .07$), child sex ($p = .84$), and presence of siblings ($p = .98$). The only statistically significant difference was that participating parents had a somewhat higher educational level than non-participating parents, $F(1, 434) = 12.70$, $p < .01$.

Procedure

Participating families were invited for a pretest in the laboratory. The mean time between the screening and the pretest was 3.85 months (*SD* = 0.96, range 0.83 – 6.37); mean age of the children at the pretest was 26.99 months (*SD* = 9.98, range 13.58 – 41.91). During the 1½-hour laboratory session, mother and child completed several tasks (coded afterwards from videotapes with observational measures, by coders unaware of experimental condition) and mothers were asked to fill in some questionnaires.

After the pretest, families were randomly assigned to either the control ($n = 117$) or the intervention ($n = 120$) group. There were no differences between both groups regarding initial level of child externalizing problems ($p = .13$), parental educational level ($p = .46$), child and maternal age ($p = .85$ and $p = .97$), and presence of siblings ($p = .67$). The only statistically significant difference was the percentage of girls, which was higher in the intervention group (51%) as compared to the control group (38%), $\chi^2(1, N = 237) = 4.20$, $p < .05$. Families in the intervention group received six home visits and, parallel in timing, families in the control group received six telephone calls. Approximately one year after the pretest ($M = 12.41$ months, $SD = 1.14$, range 8.25 – 19.49), families from both the intervention and control group visited the laboratory for the posttest, using the same procedures as the pretest. Mean age of the children at the posttest was 39.41 months ($SD = 10.11$, range 25.31 – 56.97).

Intervention program

For the intervention group, a female intervener went into the homes of the families to provide personal feedback on parenting, using videotaped mother-child interactions, as well as information on the development of young children in general. Ten interveners were extensively trained to implement the intervention and received weekly feedback sessions with trainers during the intervention phase. Three of the interveners had a university degree in Education and Child Studies or Psychology; the other seven interveners were Psychology masters students. The duration of each home visit was approximately 1½ hours. The first four intervention sessions took place every month, the last two sessions every other month.

The SCRIPT study applied the video feedback method known as the Video-feedback Intervention to promote Positive Parenting (VIPP; for a full description see Juffer et al., in press). The VIPP program was extended to include information and advice regarding parental discipline, in addition to the focus on parental

sensitivity, resulting in VIPP - Sensitive Discipline (VIPP-SD). The VIPP-SD program aims at enhancing maternal observation skills, knowledge of parenting and the development of young children, empathy for the child, sensitivity, and sensitive discipline strategies.

VIPP-SD

The VIPP-SD intervention was implemented by trained female interveners using standardized protocols (based on the VIPP protocol; Juffer et al., in press). For each home visit, the protocol described the structure, themes, tips, and exercises for mother and child (see also Mesman et al., in press, for a full description of the VIPP-SD intervention sessions). Although the structure and content for every intervention session was the same for all families, the video feedback and practical presentation of the intervention were adjusted to the individual needs of the specific mother-child dyad.

Each intervention session started with videotaping standardized mother-child interactions (e.g., reading a book together), in order to prevent filming mother-child interaction immediately after giving the video feedback. In between home visits, the interveners selected specific video fragments and prepared comments based on the themes of each specific intervention session (see next page). After collecting video material to be used in the next home visit, feedback was given on the video fragments of the previous session, and information and tips were provided with respect to the general themes of sensitivity and discipline. Feedback on themes of previous intervention sessions was always integrated into every new session. The last two sessions (booster sessions) were aimed at enhancing intervention effects by reviewing all tips and feedback. During these booster sessions, two and four months after the first four intervention sessions, fathers were also invited to participate (all other intervention sessions took place in the presence of only mother, child, and intervener).

The VIPP-SD intervention trajectory can be divided into three steps: (1) getting acquainted with the mother and building a relationship, with an emphasis in the video feedback on *child* behavior (sessions 1 and 2); (2) actively working on improving *parenting* behaviors, by showing the mother at what moments her parenting strategies work and to what other situations she could apply these strategies (sessions 3 and 4); and (3) 'booster sessions' *reviewing* all feedback and information from the previous intervention sessions (sessions 5 and 6). Interveners reinforced positive mother-child interactions and effective parenting strategies in a pleasant atmosphere, and the mothers were explicitly involved as the experts on their own child. At the end of the intervention program, the mothers received

a brochure with information on the key issues discussed during the home visits, including the tips and exercises. By giving parents access to this information after the intervention trajectory, we aimed at further enhancement of intervention effects.

The first four intervention sessions each had their own theme with respect to sensitivity and discipline. Session 1 focused on exploration versus attachment, by recognizing and acknowledging the differences between explorative behavior and contact seeking (sensitivity), and the importance of distraction and induction as non-coercive responses to difficult child behavior or potentially conflict evoking situations (discipline). The second session centered around "speaking for the child" (Carter, Osofsky, & Hann, 1991), to draw the mother's attention to the child's (subtle) signals and expressions (sensitivity), and positive reinforcement, by praising the child for positive behavior and ignoring negative attention seeking (discipline). In the third session, the importance of adequate and prompt responses to the child's signals was stressed, by showing interaction chains consisting of three components: the child's signal, the mother's sensitive response, and the child's positive reaction to that response (sensitivity). The third session's discipline theme concerned the use of a 'sensitive time-out', to sensitively de-escalate temper tantrums. Sharing emotions (sensitivity) and promoting empathy for the child, in particular while using consistent discipline and clear limit setting (discipline), were the central themes of session 4.

Control condition

Parallel to the intervention sessions, the mothers in the control group received six telephone calls from the interveners, as a dummy-intervention (Juffer et al., 2005a), in order to keep in contact with the mothers and to prevent attrition. In these telephone calls, mothers were invited to talk about the general development of their child. Using a semi-structured interview, several developmental topics were reviewed (e.g., eating, sleeping, playing). Control group mothers received no advice or information about child development in general or (the development of) problem behavior in their child.

Instruments

Internal consistencies of questionnaire data were assessed in the general population screening sample (N = 2,408).

Daily hassles

In the screening phase, the mothers were asked to rate the intensity of 25 indices of potentially stressful events (Kanner, Coyne, Schaffer, & Lazarus, 1981). The intensity of hassle experienced by the mothers was rated on a 5-point scale for each event (0 *no hassle* – 4 *big hassle*). Items asked about daily hassles related to life in general, e.g., money problems or trouble at work. A total score was computed by summing all item scores; Cronbach's alpha was .88.

Marital discord

A subscale of the Dutch Family Problems Questionnaire (Koot, 1997) was used to assess marital discord during the screening phase. The mothers indicated on a 3-point scale whether five statements about their partner relationship and partner support were 0 *not true*, 1 *somewhat or sometimes true*, or 2 *true or often true*. The internal consistency (Cronbach's alpha) was .66. A total score was computed by summing item scores.

Well-being

In the screening phase, the mothers rated their sense of well-being on the Cantrill Ladder (Cantrill, 1965), indicating how they had felt in the past month. This self-anchoring, single item indicator was scored on a scale from 0 to 10 (*very poor – very good*). The Cantrill Ladder has been reported to have good validity, stability, and reasonable reliability (Atkinson, 1982).

Difficult temperament

Child temperament (as perceived by the mother) was measured during the screening phase with the Infant Characteristics Questionnaire (ICQ; Bates, Freeland, & Lounsbury, 1979). The ICQ was translated into Dutch and found reliable by Kohnstamm (1984). The Dutch ICQ contains 33 items, describing concrete behaviors in well-defined situations. The items were rated on a 5-point scale, ranging from 0 *not true* to 4 *true*. Because the ICQ was used in combination with the Child Behavior Checklist (CBCL/1½-5; Achenbach & Rescorla, 2000), five items in the ICQ were discarded because of content-overlap between items of both questionnaires. Next, a one-component analysis was carried out in each age group to derive an overall difficultness factor. The difficultness factor consisted of 14 items in 1-year-old children, 18 items in 2-year-olds, and 16 items in 3-year-old children. Internal consistencies (Cronbach's alphas) were .68, .76, and .75, respectively. For the current study, the sample was split in a group of temperamentally difficult children and a group of children with relatively easy temperaments, in order to test whether children with difficult temperaments were more susceptible to the intervention efforts than relatively easy children. An a priori split was made on the 82.7th

percentile in the general population sample, in accordance with the commonly used borderline/clinical cut-off for the CBCL/1½-5 (see also Klein Velderman et al., in press). Because the three age groups differed in their temperament levels, splits were made separately in each age group.

Externalizing problems

The Child Behavior Checklist for 1½- to 5-year-old children (CBCL/1½-5; Achenbach & Rescorla, 2000) was used to measure externalizing problems, and was completed by the mothers during the laboratory sessions. The mothers indicated whether their child displayed any of the 100 behavioral descriptions in the last 2 months on a 3-point scale (0 *not true*, 1 *somewhat or sometimes true*, and 2 *very true or often true*). Using confirmatory factor analysis, Van Zeijl et al. (in press; see chapter 2) found that the broadband Externalizing Problems syndrome reported for 2- and 3-year-olds by Koot, Van den Oord, Verhulst, and Boomsma (1997) was also applicable to 1-year-old children. To investigate to what extent specific aspects of externalizing problems were affected by the intervention, the three narrowband Externalizing Problems syndromes were used in this paper, i.e., Overactive (5 items), Oppositional (17 items), and Aggressive (9 items). The internal consistencies (Cronbach's alpha) were .66, .89, and .75, respectively.

Maternal attitudes towards sensitivity and sensitive discipline

Two weeks after the posttest, the mothers completed a questionnaire regarding their attitude towards parenting (Bakermans-Kranenburg & Van IJzendoorn, 2003). They were asked to indicate their attitudes' position on a 10 cm line, ranging from *totally disagree* to *totally agree*. Two attitude subscales were extracted: attitude towards sensitivity, consisting of 9 items (e.g., "In my opinion, I should praise my child at least once every day"), and attitude towards sensitive discipline, consisting of 10 items (e.g., "My child must learn that I will get angry when he/she does not listen to me", reversed). Total scores were computed by summing item scores. Cronbach's alphas were .54 and .58 for attitudes towards sensitivity and sensitive discipline, respectively.

Maternal sensitivity

The mothers' sensitive responsiveness was assessed during structured play in the laboratory sessions. In the pretest, dyads were given three problem-solving tasks during a total time of 15 minutes; in the posttest they were given two tasks in 10 minutes. The mothers' Supportive presence, Intrusiveness, and Clarity of instruction were rated on 7-point scales, using the Erickson scales (Egeland, Erickson, Moon, Hiester, & Korfmacher, 1990). In principle, the problem-solving tasks were too difficult for children of these ages (different toys were used in each

age group) and mothers were instructed to help their child in the way they would usually do. The average intraclass correlation (single rater, absolute agreement) for intercoder reliability (for all separate pairs of seven coders) was .75 (range .71 – .80; $n = 30$). An overall sensitivity rating was computed. To this end, Intrusiveness scores were reversed and because the three subscales were not equally distributed, the three subscale scores were standardized before adding up.

Maternal discipline

Specific maternal discipline strategies were observed during the laboratory sessions in a 10-minute 'don't' task. The child was shown a treat, which was subsequently given to the mother with the (written) instruction to refrain from giving the treat to the child until the end of the session, 10 minutes later. During this task, the mother was asked to fill in a questionnaire, while the child was offered no toys for the first 5 minutes and was allowed to play with toys available in the room for the last 5 minutes. All maternal discipline strategies were coded, whether or not they concerned the forbidden treat (e.g., they could also concern the toys). Coding procedures were based on Kuczynski, Kochanska, Radke-Yarrow, and Girnius-Brown (1987), and Van der Mark and colleagues (2002). The following maternal discipline strategies were observed: Distraction, Reinforcing alternative activities, Induction, Understanding (positive strategies), Prohibition, Physical obstruction, and Giving in (negative strategies). *Distraction* was coded when mothers redirected the child's attention by giving an alternative to the present situation or the child's behavior. When *Reinforcing alternative activities*, mothers gave an encouraging response to the child's initiative not concerning the treat, in order to keep the child distracted. *Induction* referred to mothers' explanations of why the child was not allowed to do something or of the consequences of the child's behavior. *Understanding* was coded when mothers displayed interest in or understanding of the child's feelings or thoughts. *Prohibition* concerned any prohibition, command, or disapproval with respect to the child's behavior. *Physical obstruction* was coded when mothers in any way physically obstructed the child from getting the treat. Finally, *Giving in* was coded when mothers did not follow through on (part of) a prohibition, either by actively or passively giving in. Coding was ended before the intended 10-minute duration if mothers completely gave in by handing the child the treat. For 1-year-old children (both in the pre- and posttest), the duration of this task was set at 8 minutes, because of the fatiguing length of the laboratory session for children in this age group. Therefore, the exact duration of the 'don't' task in the pre- and posttest varied from 3 to 10 minutes and all frequencies were recomputed to a standard 10-minute duration. The average intraclass correlation (single rater, absolute agreement) for intercoder reliability (for all separate pairs of five coders) was .85 (range .61 – .95; $n = 30$).

Statistical analyses

There were some missing data on the posttest outcome measures (1 for maternal sensitivity, 3 for maternal discipline, and 13 for maternal attitudes). These missing data were substituted with the mean score on the variable for children with the same sex, age, parental educational level, and experimental condition.

Outliers were only found for observed maternal discipline strategies. When these outliers ($z > |3.29|$) were Winsorized (i.e., "moved in close to the good data"; Hampel, Ronchetti, & Rousseeuw, 1986, p. 69) by replacing the outlying scores with the next highest value (with a $z < |3.29|$) in the distribution, results were similar.

Results

Preliminary analyses

In order to describe the intervention sample (both experimental and control group) in relation to the general population, independent sample *t*-tests were conducted on several child and parent variables (see Table 4.1).

Table 4.1: Group differences for screening versus intervention sample

	Screening sample (n = 2,032[a])		Intervention sample (n = 237)		Group differences
	Mean	*SD*	Mean	*SD*	*t*-value
Child difficult temperament	1.35	0.52	1.89	0.52	-14.85 **
Child externalizing					
Overactive	2.17	1.80	4.10	1.66	-16.82 **
Oppositional	6.77	5.33	14.95	5.07	-22.46 **
Aggressive	2.21	2.19	4.88	2.66	-14.86 **
Family background					
Parental educational level	3.93	1.05	3.92	1.07	0.11
Maternal age	33.71	4.26	33.15	4.22	1.91
Number of siblings	0.81	0.81	0.76	0.77	0.88
Daily hassles	13.48	9.98	20.47	12.70	-8.18 **
Marital discord	1.37	1.56	2.13	1.84	-6.09 **
Maternal well-being	7.30	1.48	6.74	1.54	5.44 **

Note: [a] Because of missing data , $n_{screening}$ ranges from 1,927 to 2,032 and $n_{intervention}$ ranges from 229 to 237. ** $p < .01$.

Table 4.2: Correlations among all outcome measures and child age

N = 237	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
Child characteristics														
1. Child age	-													
Child externalizing														
2. Overactive	.12	-												
3. Oppositional	.27**	.49**	-											
4. Aggressive	.01	.28**	.49**	-										
Maternal sensitivity[a] and discipline[b]														
5. Sensitivity	.04	-.21**	-.10	-.14*	-									
6. Distraction	-.41**	-.07	-.11	-.05	.00	-								
7. Reinforcing alternatives	-.11	-.08	-.09	-.04	.10	.13*	-							
8. Induction	-.06	.10	.10	.16*	.04	.31**	.03	-						
9. Understanding	-.13*	-.07	-.10	-.04	.16*	.25**	.24**	.10	-					
10. Prohibition	-.31**	.09	.02	.25**	-.14*	.29**	-.04	.37**	-.03	-				
11. Physical obstruction	-.32**	.04	-.03	.17*	-.23**	.33**	-.14*	.23**	-.01	.49**	-			
12. Giving in	-.04	.10	.03	.17*	-.06	.15*	-.19**	.35**	-.05	.42**	.29**	-		
Maternal attitudes[c]														
13. Towards sensitivity	.11	.04	.05	-.01	.09	.11	.00	.10	.07	-.06	-.08	-.07	-	
14. Towards sensitive discipline	.09	-.12	-.11	-.18**	.00	-.02	.08	-.06	.07	-.10	-.11	-.02	.09	-

Note: [a] $n = 236$. [b] $n = 234$. [c] $n = 224$. * $p < .05$. ** $p < .01$.

Families participating in the intervention study were significantly different from the other families in the original screening sample regarding child difficult temperament, marital discord, daily hassles, and of course child externalizing problems (all showing higher levels in the intervention sample than in the original screening sample). Maternal well-being was lower in the intervention sample than in the original screening sample. Parental educational level, maternal age, and number of siblings were similar in both groups, as was child sex, $\chi^2(1, N = 2{,}408) = 1.86$, $p = .17$. Thus, the families involved in the current trial were from similar backgrounds, but struggled with more problematic child behavior as well as a more stressful family life in general.

To check the random group assignment and to establish the initial similarity of the intervention and control group, independent sample *t*-tests were applied to the pretest values of all outcome measures. There were no significant differences between the intervention and control group on any of the outcome measures (all *p*s > .17).

Correlations among all variables of interest are presented in Table 4.2 (page 82). Oppositional child behavior was not correlated to any maternal behavior or attitude, overactive behavior was only significantly correlated with observed maternal sensitivity ($r = -.21$, $p < .01$), but aggressive behavior was significantly correlated to observed maternal sensitivity ($r = -.14$, $p < .05$), induction ($r = .16$, $p < .05$), prohibition ($r = .25$, $p < .01$), physical obstruction ($r = .17$, $p < .05$), giving in ($r = .17$, $p < .05$), and maternal attitude towards sensitive discipline ($r = -.18$, $p < .01$). It should be noted that maternal attitudes were not significantly correlated to the observed maternal behaviors. Furthermore, positive discipline strategies were not necessarily negatively correlated with negative strategies. In fact, this was only true for reinforcing alternative activities with physical obstruction ($r = -.14$, $p < .05$) and with giving in ($r = -.19$, $p < .01$) .

For the dichotomous child characteristics sex and difficult temperament, independent sample *t*-tests were performed to establish relations with the outcome variables. The only significant difference between boys ($n = 132$) and girls ($n = 105$) was the higher level of aggressive behavior in boys, $t(234) = 4.80$, $p < .01$, partial $\eta^2 = .08$. Differences between children with difficult ($n = 102$) and relatively easy ($n = 135$) temperaments were found on the following variables: oppositional, $t(235) = -3.27$, $p < .01$, partial $\eta^2 = .04$; aggressive, $t(184) = -3.51$, $p < .01$, partial $\eta^2 = .05$; and overactive child behavior, $t(192) = -2.61$, $p < .05$, partial $\eta^2 = .03$; as well as on the maternal discipline strategy understanding, $t(208) = 2.48$,

Table 4.3: Descriptive statistics for all outcome measures

	Total sample (*N* = 237)		Control group (*n* = 117)				Intervention group (*n* = 120)				Control versus Intervention group
			Boys (*n* = 73)		Girls (*n* = 44)		Boys (*n* = 59)		Girls (*n* = 61)		
Outcome measures	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***	***F*-value[d]**
Child externalizing											
Overactive	3.81	1.90	3.93	1.79	4.25	2.08	3.66	1.84	3.49	1.91	4.41 *
Oppositional	14.35	5.68	14.45	6.10	15.05	5.53	13.81	5.56	14.23	5.46	1.15
Aggressive	4.84	3.10	5.38	3.43	4.09	2.43	5.95	3.14	3.64	2.55	0.02
Maternal sensitivity[a]											
Sensitivity	0.00	2.31	-0.08	2.61	0.13	2.14	-0.29	2.35	0.29	2.01	0.01
Maternal discipline[b]											
Distraction	4.14	4.39	3.34	3.61	4.64	4.81	4.24	5.17	4.68	4.09	1.12
Reinforcing alternatives	14.79	9.44	15.64	10.41	16.25	9.67	14.42	9.13	13.05	8.19	3.27
Induction	3.40	3.01	2.72	2.70	3.27	2.66	3.68	3.46	4.03	3.05	4.82 *
Understanding	2.04	3.45	1.67	2.67	1.48	2.98	3.03	4.78	1.95	2.93	4.20 *
Prohibition	7.62	6.60	8.14	7.07	7.23	5.33	7.32	6.01	7.54	7.43	0.04
Physical obstruction	2.54	3.75	3.10	4.10	1.75	2.52	2.74	4.01	2.25	3.75	0.04
Giving in	0.40	0.97	0.40	1.09	0.47	1.00	0.39	1.01	0.37	0.78	0.21
Maternal attitudes[c]											
Towards sensitivity	62.15	10.39	61.03	9.85	56.20	9.12	65.05	10.48	64.96	9.95	25.22 **
Towards sensitive discipline	59.05	11.46	57.74	10.97	56.73	12.19	61.50	10.07	59.91	12.52	3.87

Note: [a] Standardized values, $n = 236$. [b] $n = 234$. [c] $n = 224$. [d] $df = 1$, $df_{error} = 223$. * $p < .05$. ** $p < .01$.

$p < .05$, partial $\eta^2 = .02$. Children with difficult temperaments showed higher levels of externalizing problems and their mothers used less understanding as a discipline technique as compared to children with relatively easy temperaments.

Intervention effects

To assess intervention effects, a 2 x 2 (sex by experimental condition) MANCOVA was performed on child externalizing problems (overactive, oppositional, and aggressive), observed maternal sensitivity, observed maternal discipline (seven different discipline techniques), and maternal attitudes (towards sensitivity and sensitive discipline). Child age was entered as a covariate, because of the broad age range: 25 to 57 months. According to Wilks' criterion, the combined dependent variables were significantly affected by the intervention, $F(13, 220) = 4.06$, $p < .01$, partial $\eta^2 = .19$, and were significantly related to child sex, $F(13, 220) = 4.14$, $p < .01$, partial $\eta^2 = .20$, but the interaction between child sex and experimental condition was not significant, $F(13, 220) = 1.03$, $p = .43$. The combined dependent variables were also significantly related to child age, $F(13, 220) = 8.31$, $p < .01$, partial $\eta^2 = .33$. Univariate tests (see also Table 4.3, on page 84) revealed that children in the intervention condition showed significantly less overactive behavior (partial $\eta^2 = .02$) as compared to control group children, and that intervention mothers used significantly more understanding (partial $\eta^2 = .02$) and induction (partial $\eta^2 = .02$) when disciplining their child as compared to mothers in the control condition. Intervention mothers had also a more favorable attitude towards sensitivity (partial $\eta^2 = .10$) than control group mothers, and they tended to be more favorable to sensitive discipline as well ($p = .05$, partial $\eta^2 = .02$). The intervention similarly affected boys and girls. There were no different intervention effects for interveners with and without a university degree. Parental attitudes towards sensitive discipline and sensitive discipline behaviors did not mediate the change in children's overactive problem behavior as they were not associated with this outcome variable.

To test whether the intervention was more successful in one of the age groups (1-, 2-, or 3-year-olds), we repeated the abovementioned analysis as a 3 x 2 x 2 (age group by sex by experimental condition) MANOVA. In this analysis, the interaction between age group and experimental condition was not significant, $F(26, 426) = 0.86$,$p = .65$, as was the three-way-interaction between age group, child sex, and experimental condition, $F(26, 426) = 1.14$, $p = .29$. The intervention was not more effective in one of the three age groups.

In a 2 x 2 x 2 (temperament by sex by experimental condition) MANCOVA, with child age as covariate, we tested whether temperamentally difficult children were differentially affected by the intervention as compared to children with relatively easy temperaments. The interaction between child temperament and experimental condition was not significant, $F(13, 216) = 0.92$, $p = .54$. The three-way-interaction between child temperament, sex, and experimental condition was not significant either, $F(13, 216) = 0.94$, $p = .51$. The intervention was not differentially effective in children with difficult or relatively easy temperaments.

Discussion and conclusion

In a randomized controlled trial with families screened for children's high scores on externalizing behavior, the attachment-based intervention program VIPP-SD proved to be effective. The intervention program, based on a combination of insights derived from attachment and coercion theory about sensitive discipline, did improve parental attitudes towards sensitivity and sensitive discipline, it enhanced some components of actual parental sensitive discipline interactions, and it resulted in a decrease of externalizing behaviors, in particular overactive behaviors in the children. We were not able to demonstrate that the parental attitudes and behaviors as assessed in the current study were indeed causally mediating the change in children's overactive problem behavior.

The VIPP-SD intervention proved to be effective in stimulating positive parental attitudes towards sensitive childrearing and sensitive discipline, which is the first goal of the program; but changing attitudes does not necessarily imply a similar change in parental behaviors toward the child. Like in numerous other parenting studies (Holden, 1995), the current investigation documented the divergence between parental attitudes and practices, as we did not find any relation between attitudes towards sensitivity or sensitive discipline and actual parental sensitive (discipline) behaviors. Nevertheless, the VIPP-SD intervention also enhanced parental practices, in particular positive sensitive discipline strategies, i.e., induction and understanding. Induction has been emphasized as a crucial parental approach to discipline in a variety of theories focusing on the development of children's empathy and morality (e.g., Hoffman, 1984). In our study, induction refers to parental explanations during parent-child interaction of why the child was not allowed to act in a certain way, for example because of the negative consequences for other persons. The second strategy, understanding, is reflected in the mothers' display of interest in or understanding of the child's feelings or thoughts. Mothers' empathic concern for the children's needs is not only a prerequisite for sensitivity

in general, but it also may be a model for the child's development of empathic concern (Van IJzendoorn, 1997). The intervention program was not effective in decreasing the number of observed negative discipline strategies, such as prohibition, physical obstruction, or giving in to the child's demands.

The VIPP-SD program was effective in decreasing the rate of overactive problem behaviors in the children, but it did not manage to affect oppositional or aggressive problem behaviors. From a close look at the CBCL items constituting the three scales for externalizing problem behaviors, it is evident that overactive behaviors indicate the child's inclination for disruptive behavior but to a less severe degree than in the items included in the oppositional or aggressive syndromes. Because our VIPP-SD program was restricted to six sessions, its effectiveness may have been limited to the less severe problem behaviors, but further investigations with varying numbers of intervention sessions are needed to test this conjecture. Furthermore, these effects may only become apparent or larger during the course of the child's later development (cf. Van Lier, Vuijk, & Crijnen, 2005).

We failed to detect the precise mechanism through which the children's problem behaviors are affected. More favorable attitudes towards sensitive discipline and enhanced sensitive discipline behaviors did not appear to be related to overactive problem behaviors in the children. Although we have used a focused intervention approach and should therefore be better able to indicate the effective ingredient of the intervention than in a broadband approach, the specific parental behaviors mediating the change in the children's problem behaviors have not been assessed in the current investigation. The findings point to a 'transmission gap' (Van IJzendoorn, 1995), in that the VIPP-SD program affected parenting attitudes and behaviors as well as children's overactive problem behavior, but it did not uncover the link between parenting and child behavior. Because we applied intervention strategies focusing on parent-child interactive behaviors (through the use of video feedback and the mirroring of behavior), we have some evidence for the idea that parents of children with externalizing behavior problems profit from teaching them to carefully observe their children, to respond to them in an appropriate way, and to discipline their rule-breaking behaviors in a gentle but consistent way, even without extending the support system of the parents or discussing their cognitive representations of attachment (Bakermans-Kranenburg et al., 2003). Elsewhere, we argued for a piecemeal approach to constructing effective interventions, starting with testing the effectiveness of small building blocks or intervention modules that after successful evaluations might be combined into an even more effective overall program (Van IJzendoorn, Bakermans-Kranenburg, & Juffer, 2005). Also, the

modular approach fits nicely into a stepwise upgrading of intervention intensity in which one might start with a single intervention module addressing the most common problems, and continue with more specific modules if earlier intervention efforts do not bear fruit in supporting more seriously disturbed families.

The effectiveness of the VIPP-SD intervention did not appear to be dependent on child age: families with younger children did not profit more from the intervention than families with older children. It should however be noted that the intervention was conducted with a rather age-homogeneous sample of infants and toddlers, and that we cannot exclude the possibility that much earlier or later interventions would be more successful. According to a meta-analysis of attachment-based interventions the idea of 'earlier is better' could not be substantiated (Bakermans-Kranenburg et al., 2003).

In the current study, we did not find support for the theory of differential susceptibility (Belsky, 1997a, 1997b, 2005). Children with difficult temperaments were not differentially affected by the intervention compared to children with relatively easy temperaments. The use of the ICQ (Bates et al., 1979) to assess temperament limits the temperamental dimension included in the current intervention to difficultness. Other dimensions may be more important from the perspective of differential susceptibility, such as behavioral inhibition (Kagan, Reznick, & Gibbons, 1989), fearfulness (Kochanska, 1995), or emotional reactivity (Klein Velderman et al., in press). Belsky (2005) suggested that especially *highly negatively* emotional infants may be more susceptible to rearing influences than infants with lower levels of reactivity. Difficultness may not fully reflect negative emotionality, and the existing data show that proof of the differential susceptibility hypothesis critically depends on the definition and measurement of the pertinent temperamental dimension.

The VIPP-SD intervention program showed statistically significant effects on various parental attitudes and sensitive discipline behaviors, as well as on children's overactive problem behaviors. The question is, however, whether its effectiveness is sizeable as well. We would argue that the program indeed affected the families in a substantial way. Effect sizes ranged from $d = 0.67$ for attitudes towards sensitivity, to $d = 0.27$ for parental understanding as a discipline strategy. The latter of these two may seem a rather modest outcome, but it should be noted that VIPP-SD certainly can make a substantial difference in the lives of numerous young children and their parents struggling with externalizing problem behaviors. In terms of the Binomial Effect Size Display (BESD; McCartney & Rosenthal, 2000),

defined as the change in success ratio as a result of an intervention, the effect size $d = 0.27$ indicates a success ratio in the experimental group of .50 + .07 = .57; the success ratio in the control group would be .50 - .07 = .43. The difference of 14% between the experimental and control group would amount to a difference that is quite substantial if we translate this outcome to the millions of children and their families who might profit from a rather small and focused program. In terms of odds ratio, the effect size of $d = 0.28$ for overactive behavior problems amounts to 1.66; that is, the risk for overactive behavior problems is 1.66 times larger without the VIPP-SD compared to the situation in which the program would be available to the families screened for externalizing behavior problems. Of course, our VIPP-SD is rather brief and the problem behaviors addressed quite complex. Exaggerated expectations about its effectiveness should therefore be tempered. However, the effect size found in this study is similar to what in the medical sciences is regarded as a substantial treatment effect (McCartney & Rosenthal, 2000).

The feasibility of VIPP-SD on a large-scale basis is facilitated by its rather short duration, detailed protocol, and the relatively modest training required for implementing the intervention. We found that in total 170 hours of instruction and practice in VIPP-SD for 10 interveners was sufficient to adequately implement the intervention. The VIPP-SD intervention proved to be equally effective when implemented by undergraduate students, or by PhD students in child development. Since the intervention trajectory is limited to six sessions in an 8-month period, families are not confronted with high staff turnover (Spieker, Nelson, DeKlyen, & Staerkel, 2005). It remains to be tested to what population our findings regarding the effectiveness may be generalized. The families participating in the intervention study showed higher levels of child externalizing problems, marital discord, and daily hassles, as well as lower levels of maternal well-being compared to the other families in the original screening group, but families from higher socio-economic backgrounds were overrepresented in that population as well as in our intervention study group. The next step is to test whether our intervention program would be similarly effective in more troubled families from lower socio-economic backgrounds. Clearly, further research into the generalizability of our findings is necessary.

The last two sessions of the VIPP-SD intervention are aimed at enhancing intervention effects by reviewing all previous feedback. During these booster sessions, the fathers were invited to participate along with the mothers, as their involvement may enhance intervention effects through their support to implement the newly acquired skills (Bakermans-Kranenburg et al., 2003). Only

few attachment-based interventions included both parents (Dickie & Gerber, 1980; Metzl, 1980; Scholz & Samuels, 1992; see also Bakermans-Kranenburg et al., 2003) and their effectiveness was rather disappointing. In one study mothers even seemed to suffer from greater intervention participation by their partners (Dickie & Gerber, 1980). Nevertheless, attachment theory stresses the child's attachments to both mother and father, as well as the importance of secure attachments between the parents, and the need for working with the whole family system in case of problems (Byng-Hall, 1999). Our families suffered more from marital discord and daily hassles than families from the general population, which may be sufficient reason to address both parents in VIPP-SD. Because paternal attitudes or behaviors were not assessed as outcome measures, we cannot evaluate the effectiveness of this specific ingredient of the intervention.

In sum, the VIPP-SD intervention program, based on attachment theory and coercion theory, was rigorously tested in a randomized trial using a detailed intervention protocol, a dummy-treatment for the control group, and independent coders unaware of group status of the participants. VIPP-SD proved to be effective in enhancing parental attitudes towards sensitivity and sensitive discipline, ctual sensitive discipline interactions, and it resulted in a decrease in overactive behaviors in the children.