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## PREVENTING PRESCHOOL EXTERNALIZING BEHAVIOR PROBLEMS THROUGH VIDEO-FEEDBACK INTERVENTION IN INFANCY

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**ABSTRACT:** In the present study (1) intervention effects on children's preschool behavior problems were evaluated in a high risk sample with an overrepresentation of insecure adult attachment representations in 77 first-time mothers, and (2) predictors and correlates of child problem behavior were examined. Early short-term video-feedback intervention to promote positive parenting (VIPP) focusing on maternal sensitivity and implemented in the baby's first year of life significantly protected children from developing clinical Total Problems at preschool age. Also, compared with the control group, fewer VIPP children scored in the clinical range for Externalizing Problems. No intervention effects on Internalizing clinical problem behavior were found. The VIPP effects on Externalizing and Total clinical Problems were not mediated by VIPP effects on sensitivity and infant attachment or moderated by mother or child variables. Maternal satisfaction with perceived support appeared to be associated with less children's Internalizing, Externalizing, and Total Problems. More research is needed to find the mechanisms triggered by VIPP, but the outcomes could be considered as promising first steps in the prevention of disturbing, externalizing behavior problems in young children.

**RESUMEN:** En el presente estudio, (1) se evaluaron los efectos de la intervención sobre los problemas de conducta prescolar de los niños, tomando como base un grupo muestra de alto riesgo, el cual presentaba una exagerada representación de las imágenes de afectividad en adultos inseguros, en el caso específico de 77 madres primerizas, y (2) se examinaron los métodos de predicción y aspectos correlativos de los problemas de conducta del niño. La Temprana Intervención de Comentarios de Vídeo de Corta Duración para promover una Crianza Positiva (VIPP), enfocada en la sensibilidad maternal e implementada

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durante el primer año de vida del bebé, significativamente protegió a los infantes de la posibilidad de desarrollar problemas de una total naturaleza clínica a edad preescolar. Además, en comparación con el grupo de control, menos niños del grupo VIPP sacaron un puntaje dentro de la escala clínica con relación a problemas de externalización. No se encontraron efectos de la intervención sobre problemas de internalización de conducta clínica. Los efectos de VIPP sobre la externalización y los problemas de total naturaleza clínica no resultaron mediados por los efectos de VIPP sobre la sensibilidad y la afectividad del infante, ni moderados por la madre o las variables del niño. La satisfacción materna con respecto a la percepción de apoyo, presentó una asociación con menos problemas del niño, tanto los de internalización, como los de externalización y los de una total naturaleza clínica. Es necesario continuar la investigación con el fin de descubrir los mecanismos motivados por VIPP, sin embargo los resultados pudieran ser considerados como los prometedores primeros pasos en la prevención de problemas de trastorno de externalización de la conducta en niños pequeños.

**RÉSUMÉ:** Dans cette étude, 1) les effets d'une intervention sur les problèmes de comportement d'enfants d'âge préscolaire sont évalués au sein d'un échantillon à haut risque avec une sur-représentation de représentations d'attachement d'adultes insécures chez 77 mères pour la première fois, et 2) les prédicteurs et corrélations du comportement à problème de l'enfant ont été examinés. Une intervention précoce à court terme avec feedback vidéo ayant pour but de promouvoir le parentage positif (abrégé VIPP en anglais pour "Video-feedback Intervention to promote Positive Parenting") en mettant l'accent sur la sensibilité maternelle et mis en place durant la première année du bébé a sensiblement empêché les enfants de développer des problèmes cliniques importants à l'âge préscolaire. Aussi, comparés au groupe de contrôle, moins d'enfants VIPP se trouvaient dans l'éventail clinique pour des problèmes d'extériorisation. Aucun effet de l'intervention sur les problèmes cliniques de comportement d'intériorisation n'a été trouvé. Les effets VIPP sur les problèmes cliniques d'ensembles et les problèmes cliniques d'extériorisation n'ont pas été influencés par les effets VIPP sur la sensibilité et l'attachement du nourrisson ou modérés par les variables de la mère ou de l'enfant. La satisfaction maternelle avec le soutien perçu semblait être liée avec moins d'intériorisation, moins d'extériorisation et moins de problèmes en général chez les enfants. Des recherches supplémentaires doivent être faites pour découvrir les mécanismes déclenchés par le VIPP, mais les résultats peuvent être considérés comme des premiers pas prometteurs dans la prévention de problèmes de comportement perturbateurs d'extériorisation chez les jeunes enfants.

**ZUSAMMENFASSUNG:** In dieser Studie wurden 1. Interventionseffekte auf die Verhaltensprobleme von Vorschulkindern bei einer Stichprobe mit hohem Risiko getestet, das eine Überrepräsentation von unsicheren, erwachsenen Bindungsrepräsentationen bei 77 erstgebärenden Müttern hatte und 2. Vorhersageindikatoren und Korrelate der Verhaltensprobleme untersucht. Frühe, kurzzeitige, Videofeedback-intervention, um positive Elternschaft (VIPP) zu erreichen, bezog sich auf die mütterliche Feinfühligkeit und wurde im ersten Lebensjahr des Babys gemacht, was dazu führte, dass die Kinder in signifikantem Ausmaß vor klinisch erfassbaren Problemen im Vorschulalter geschützt wurden. Darüber hinaus, verglichen mit einer Kontrollgruppe, hatten weniger VIPP Kinder klinisch fassbare Auffälligkeiten bei externalisierenden Problemen. Es wurden keine Interventionseffekte bei internalisierenden Problemen gefunden. Die Effekte des VIPP auf die klinische Auffälligkeit und die externalisierenden Probleme wurden nicht durch die VIPP Effekte auf die Feinfühligkeit und die Bindung des Kindes gemildert, oder durch mütterliche oder kindliche Variablen beeinflusst. Die mütterliche Zufriedenheit mit der wahrgenommenen Unterstützung schien in Zusammenhang mit geringeren Werten bei internalisierenden, externalisierenden und umfassenden Problemen des Kindes stehen. Es bedarf weiterer Forschung, um die Mechanismen, die mittels VIPP angesprochen werden zu entdecken, aber diese Ergebnisse sollten als viel versprechende erste Schritte bei der Vorbeugung gegen störende, externalisierende Verhaltensstörungen bei kleinen Kindern wahrgenommen werden.

抄録：この研究では、(1)不安定型の成人愛着表象の過剰な表象を持つ、77人の初めて母親になった女性という、高いリスクの対象において、子どもの幼稚園での行動上の問題に対する介入の効果が、評価された。そして(2)子どもの問題行動の予測因子と相関が検証された。母親の感受性に焦点を絞り、赤ちゃんの生後1年目に実施される、早期の短期間の肯定的な養育を促進するためのビデオフィードバック介入 **Video-feedback Intervention to promote Positive Parenting (VIPP)**は、子どもが幼稚園の年齢で臨床的な問題全体を発生させないように、有意に子どもを守った。また、対照群と比べて、臨床の範囲の中で外在化問題を得点した **VIPP** の子ども達は、より少なかった。臨床的な内在化行動問題については、介入の効果は見られなかった。外在化と臨床的な問題全体に対する **VIPP** の効果は、感受性と乳児の愛着に対する **VIPP** 効果によって介在されたり、あるいは母親や子どもの変数によって、加減されたりしていなかった。認知された支援についての母親の満足度は、子どもの内在化、外在化、および問題全体がより少ないことと関連しているように見えた。**VIPP** によって引き起こされるメカニズムを発見するためにもっと多くの研究が必要とされるが、この結果は、幼い子どもにおける障害のある、外在化行動問題を予防する上での、最初の一步を約束するものとして、考慮されることができよう。

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Campbell, Shaw, & Gilliom (2000) provided a historical overview of developmental research devoted to the domain of problem behavior and the risk of later maladjustment for children showing problem behavior in early childhood. They suggested that a focus on the interplay between within-child and parent-child relationship factors may be important for understanding continuity or discontinuity of individual developmental pathways from early problem behavior towards later maladaptive development. Most children who develop persistent behavior problems come from families with risk factors in multiple domains (Campbell et al., 2000; also see Greenberg, 1999; Greenberg, Speltz, & DeKlyen, 1993; Moffitt, 1990). In the current study, we focused on behavior problems in a group of preschool children and their first-time mothers. We tested the effects of an attachment-based intervention in infancy on behavior problems when the child was about 40 months old.

Children in our sample were at risk for the development of behavior problems because of the overrepresentation of mothers with an insecure representation of attachment. Adult's past and present attachment experiences are reflected in their adult attachment representation. This representation of attachment imparts information about the person's beliefs and expectations of how attachment relationships operate and what he or she gains from them (Bowlby, 1973). Attachment representations, as measured with the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985), can be secure or insecure. Insecure adults have difficulties producing and reflecting on memories involving early relationships. They are not capable of presenting and evaluating their memories in a coherent and a consistent way. Two types of insecure representations can be distinguished. Parents with a dismissing representation idealize their parents or devalue the importance of their childhood attachment experiences. Parents with a preoccupied representation are still involved and preoccupied with their past. Crowell,

O'Connor, Wollmers, Sprafkin, & Rao (1991) found associations between maternal attachment classifications and type and severity of psychopathology in their children. Secure mothers were more supportive of and structured with their children. In turn, their children showed low levels of anxiety and depression, were more competent, and had relatively low levels of symptomatology compared to children of insecure mothers. Insecure mothers were less optimal caregivers and mothers with dismissing attachment representations in particular had children with more anxious and depressive symptoms (Crowell et al., 1991).

This association between insecure attachment representations and less optimal caregiving has been amply documented. Attachment representations are thought to affect sensitive responsiveness to child signals, which is in turn associated with the child's socioemotional development. Meta-analytically, the combined effect size ( $d$ ) for the association between parental attachment representation and parental responsiveness amounts to 0.72. Twelve percent of variation in parental responsiveness could be explained by parents' attachment representations (Van IJzendoorn, 1995). Insecure parents run the risk of showing less sensitive responsiveness to their child's signals. Attachment theory emphasizes the importance of a sensitive childrearing environment during children's early years of life (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1984). Children receiving encouragement and support from their parents develop a sense of security and trust in themselves and in significant others; this is associated with more optimal subsequent development (Thompson, 1999). Goldsmith and Alansky (1987) reported in their meta-analysis a medium high effect size of  $d=0.68$  for the association between maternal responsiveness as measured using the Ainsworth rating scales (Ainsworth, Bell, & Stayton, 1974) and children's attachment security. In the same vein, De Wolff and Van IJzendoorn (1997) meta-analysis, including several measures of maternal sensitivity and a large number of studies (30,  $N=1,666$ ), demonstrated a significant relation ( $r=0.22$ ) between parental sensitivity and infant attachment.

Associations have also been revealed between the quality of parental behavior and child behavior problems. Deater-Deckard (2000) reported an association between higher levels of maternal warmth and children's lower scores on externalizing behavior. Similarly, maternal acceptance (Rothbaum, Rosen, Pott, & Beatty, 1995), higher levels of maternal sensitivity (Stams, Juffer, & Van IJzendoorn, 2002), and more optimal parental induction and warm responsiveness (Kerr, Lopez, Olsen, & Sameroff, 2004) were reported to be associated with fewer behavior problems. Rothbaum and Weisz (1994) reported meta-analytic support for the association between more optimal parenting and fewer child externalizing problems.

In studies of parent-child relations, externalizing behavior is the most frequently investigated type of child behavior problems (Rothbaum & Weisz, 1994). Interestingly, (in-)sensitive parenting has most clearly been found to be associated with externalizing problems (e.g., Deater-Deckard, 2000; Rothbaum & Weisz, 1994). Weiss, Dodge, Bates, & Pettit (1992) reported consistent evidence of an association between harsh parental discipline and externalizing behaviors, whereas they found no evidence of an association between parenting and internalizing behavior problems. However, they suggested that this could be due to a failure in the sensitivity of their measures and the age at which internalizing problems were assessed in their study (prior to kindergarten). Convincing empirical evidence for the causal relation between parenting behavior on the one hand, and early childhood behavior problems on the other hand, is, however, still lacking. In particular, intervention studies are needed to test this association by increasing positive parenting in an experimental way and then examining whether this results in a reduction of children's problem behavior at a later age. These

intervention studies are most valuable for two reasons: First, to substantiate theoretical assumptions and hypotheses about parenting and child behavior problems, and, second, to design intervention approaches that may help practitioners and parents to prevent preschool problem behavior.

Behavior problems in the preschool years have been of great interest to attachment researchers. Some attachment theorists have hypothesized that secure attachment in infancy may operate as a protective factor in the development of behavior problems (Thompson, 1999). Findings consistent with this view show secure children exhibiting fewer behavior problems than their insecure counterparts (e.g., Erickson, Sroufe, & Egeland, 1985; Suess, Grossmann, & Sroufe, 1992). However, other studies have not revealed a straightforward association between attachment and problem behavior (e.g., Bates, Maslin, & Frankel, 1985; Howes, Matheson, & Hamilton, 1994). Possibly, we should focus on factors mediating the association between attachment and later behavior problems, such as maternal behavior, environmental support, stress, or other factors (e.g., Erickson et al., 1985; Lewis, Feiring, McGuffog, & Jaskir, 1984; Lyons-Ruth, Alpern, & Repacholi, 1993). Ideally, this should be examined in the context of an intervention study to investigate whether early childhood behavior problems can be prevented.

Previous early intervention studies focusing on child behavior problems have sorted diverging results. For example, Bernazzani, Côté, & Tremblay (2001) identified seven randomized or quasiexperimental intervention programs targeting parenting skills of parents with children under the age of 3. Only three of these trials reported some beneficial effects on disruptive behavior or delinquency. Neary and Eyberg (2002) found long-lasting positive effects on child behavior problems of an intervention for preschoolers with disruptive behavior and their parents, targeting changing ineffective parent-child interaction patterns. Effective parenting could be a promising target of interventions aiming at reducing or preventing child behavior problems. In the studies of DeGarmo, Patterson, & Forgatch (2004) and Feinfeld and Baker (2004), improved parenting practices mediated reductions in early child behavior problems. Olds and colleagues (1998) found long-term effects of a home visitation program from before birth until the age of 2, on children's criminal and antisocial behavior, and behavior problems related to use of drugs and alcohol at age 15.

### **VIDEO-FEEDBACK INTERVENTION TO PROMOTE POSITIVE PARENTING**

In the current study, we tested the effects of two attachment-based interventions in a sample of insecure mothers and their children. The first intervention related to the behavioral level. It focused on enhancing mothers' sensitive responsiveness by providing them with Video-Feedback Intervention to Promote Positive Parenting (VIPP). The second intervention combined VIPP with a Representational focus (VIPP-R), thereby additionally aiming at affecting the mother's representation of attachment (also see Bakermans-Kranenburg, Juffer, & Van IJzendoorn, 1998). Rothbaum and Weisz (1994) pointed to a persistent effect of reciprocal parent-child influence, whereby parents' negative caregiving and children's behavior problems become increasingly interwoven. Patterson's coercion theory (e.g., Patterson, 1971; 1976) hypothesizes that repeated parent-child interaction characterized by coercive discipline cumulate over time to establish a system of tense family interaction. Parent and child rein-

force each other in their negative behaviors. The developing coercive behavioral system sets the stage for the development of antisocial behavior (Patterson, 1982).

We implemented VIPP and VIPP-R at a young age, between 7 and 10 months. Parents may be particularly open to suggestions for change in the first year of the baby's life, when they realize that raising a baby creates problems that they might not be able to solve without some extra attention or assistance, and when reciprocal interactive routines have not yet become too fixed. Furthermore, first-time mothers were selected because they may still be involved in a turbulent phase of searching for parenting beliefs and practices that meet the challenge of raising their first child (Holden, Thompson, Zambarano, & Marshall, 1997; Scott & Hill, 2001).

Meta-analytic results showed that interventions to promote positive parenting successfully enhance maternal sensitivity, and, to a lesser extent, infant attachment security (Bakermans-Kranenburg, Van IJzendoorn, & Juffer, 2003). In particular, interventions focusing on sensitive parenting, consisting of a few intervention sessions, and not starting before 6 months of the child's age, were most effective in promoting sensitive parenting as well as infant security, regardless of the presence of multiple problems in the family.

The VIPP approach has previously resulted in positive effects on maternal sensitivity and insecure disorganized infant attachment in adoptive families (Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2005). In an Italian sample of premature children and children with atopic dermatitis and their mothers, VIPP-R resulted in an enhancement of sensitivity for insecure mothers, and increased security for their children (Cassibba et al., in press). These results were not replicated for secure mothers and their children. Furthermore, Elicker et al. (in press) applied the VIPP approach in childcare settings. Their pilot study provided preliminary evidence that this approach could be effective as a training method for caregivers in childcare settings to increase their positive interaction with children. Finally, in a pilot study using VIPP in a sample of mothers with postnatal eating disorders, VIPP resulted in a reduction of conflictual interaction, intrusive behavior, and inappropriate attributions during family meals (Woolley, Stein, & Hertzmann, in press).

In our sample of insecure mothers, VIPP and VIPP-R have sorted short-term effects on sensitive responsiveness. As a result of the intervention, mothers in the intervention groups showed more sensitive caregiving behavior than mothers in the control group when their children were one year of age ( $d=0.49$ ) (Klein Velderman, Bakermans-Kranenburg, Juffer, & Van IJzendoorn, in press). The current study evaluates intervention effects on preschool behavior problems.

### ANTECEDENTS OF PROBLEM BEHAVIOR

Along with maternal attachment representation, maternal sensitive responsiveness, and child attachment security, infant temperament has been shown to predict child behavior problems. Temperament has been linked to internalizing as well as to externalizing problem behaviors. Internalizing behavior problems may be particularly associated with a more anxious, less sociable aspect of child temperament. For example, Rende (1993) reported links between high negative emotionality and low sociability on the one hand, and anxiety, depression, and attention problems on the other hand. Caspi, Henry, McGee, Moffit, & Silva (1995) presented associations between approach, that is, eagerness and willingness to explore stimuli in new situations, and less internalizing problems among boys. They furthermore reported correla-

tions between sluggishness, such as passivity or withdrawal with regard to changing situations or novelty, and more anxiety among girls. Externalizing problems might be more specifically linked to a more oppositional aspect of child temperament. Schwartz, Snidman, & Kagan (1996) found that adolescents who had been characterized as uninhibited at 21 or 31 months of age, that is, children who were, for example, not subdued by novelty, were sociable, often vocalized, and approached unfamiliar persons or objects, scored higher on Total Externalizing, Delinquent Behavior, and Aggressive Behavior Scales in adolescence. In Caspi et al. (1995), lack of control, which refers to the “difficult child” not being able to modulate impulsive expression and not being persistent in problem solving, was more strongly associated with externalizing problems than with internalizing problems (Caspi et al., 1995). However, in a sample of adopted 7-year-olds ( $N=146$ ), Stams et al. (2002) found that children perceived by their mothers as relatively difficult on sociability, persistence, mood, and adaptability, scored higher both on externalizing and internalizing problems.

Family stress and support may be of significant influence on child outcomes too. In Richman’s (1977) study of 99 three-year-olds, social stress was significantly associated with behavior problems. Barron and Earls (1984) computed a total family stress index with scores for marital rating of the parents, mental health status of the mother, the total number of stressful events experienced by the family over the last year, and the number of moves over the lifetime of 3-year-olds. Results showed a correlation of 0.41 ( $p < 0.001$ ) between an index of total family stress and child behavior problems as measured with the Behavior Screening Questionnaire (Richman & Graham, 1971). In Leadbeater and Bishop’s (1994) study, higher scores on preschoolers’ CBCL problem behavior correlated with higher levels of life stress and lower levels of social support in the parents.

### HYPOTHESES

In sum, our sample was at risk for the development of behavior problems because of the overrepresentation of maternal insecure attachment representation, lower maternal sensitivity, and more child attachment insecurity. We expected the rate of preschool problem behaviors in our sample to be lower in the intervention groups than in the control group because of (a) the effectiveness of other applications of VIPP and related interventions promoting positive parenting, and the short-term effects on sensitive parenting of VIPP and VIPP-R in our sample in particular, and (b) empirical support for associations between maternal sensitivity, child-parent attachment, and child behavior problems. We hypothesized that intervention effects on children’s behavior problems were mediated by intervention effects on parental sensitivity or child-parent attachment.

Furthermore, it may be that intervention effects on behavioral problems only hold for more susceptible subgroups of children and their parents. Therefore, correlates of preschool behavior problems in our sample were studied. We examined whether preschool or infant functioning and mother or child characteristics were associated with behavior problems at preschool age. On the basis of past research, we expected sensitive parenting (Crowell et al., 1991; Rothbaum & Weisz, 1994; Stams et al., 2002), temperament (Caspi et al. 1995; Guerin, Gottfried, & Thomas, 1997; Rende, 1993; Schwartz et al., 1996; Stams et al., 2002), social support, and stress (Barron & Earls, 1984; Leadbeater & Bishop, 1994) to be correlates

of preschool behavior problems. We consequently tested for child attachment security, temperament, and perceived support and stress as possible moderators of intervention effects on behavior problems.

## METHOD

### *Selection*

Mothers with first-born 4-month-old infants were identified by using town hall records of a city in the western part of the Netherlands and records of the children's health centers in five neighboring villages. We selected first-time mothers with more than 8 but less than 14 years of formal education, because (information) resources tend to be less available to these mothers than to higher educated women (Viswanath, Kahn, Finnegan, Hertog, & Potter, 1993).

We invited mothers to the institute to participate in the Adult Attachment Interview (AAI; George et al., 1985; Hesse, 1999; see below). On the basis of audiotaped AAIs ( $n=262$ ), the second and fourth authors, both trained by and reliable with Main and Hesse, assigned a tentative attachment classification to the interview (also see Bakermans-Kranenburg et al., 1998; Klein Velderman, Bakermans-Kranenburg et al., in press). Eighty-four mothers (32.1%) thus classified as insecure were included in the study. Three of them only participated in the pretest home visit (3.6% attrition), one because of the child's illness and two because of lack of time. The present paper focuses on the 81 remaining mothers.

Mothers were randomly assigned to one of three groups. Twenty-seven mothers were assigned to the control group, receiving no intervention. Twenty-eight mothers participated in the VIPP group, receiving video-feedback and brochures about sensitive caretaking. Finally, 26 mothers were assigned to the VIPP-R group, provided with similar video-feedback intervention and brochures, and additional representational discussions.

### *Participants*

The mothers had an average age of 27.8 years ( $SD=3.63$ ) and their mean educational level was 2.51 ( $SD=0.96$ ) on a scale ranging from 1 to 4, with 1: *Primary school or junior secondary vocational education*, and 4: *Senior secondary general education followed by senior secondary vocational education*. The sample consisted of 40 boys and 41 girls, equally divided over the control and intervention groups. Control mothers were on average 2 years older than intervention mothers,  $t(78)=2.72$ ,  $p<0.01$ ,  $d=0.75$ . No other pretest differences between control and intervention mothers were found (also see Klein Velderman, Bakermans-Kranenburg et al., in press).

### *Procedure*

*Pre-test.* The first home visit ( $T_1$ ) of usually one hour and a half (Bakermans-Kranenburg et al., 1998) took place at a mean age of 6.83 ( $SD=1.03$ ) months of the child's age. During this visit the home visitor introduced herself to the mother and explained the procedure. In the two intervention groups, the home visitor explicitly asked permission for four further home visits. All mothers were asked to complete a questionnaire on social support (Van den Boom,



1988). Next, mothers were asked to complete a “baby’s diary” (St. James-Roberts, personal communication, April 1993; also see Wolke, 1993), noting the baby’s behavior (sleeping, awake and satisfied, fussing, or crying) and parental activities with the baby (e.g., feeding, bathing, playing, carrying the baby around) for three consecutive days. The baby’s diary was used in the first intervention session to talk about the baby’s crying behavior. Finally, the home visitor made video observations of the mother-infant dyads to assess sensitive responsiveness during free play. Thus, control mothers also experienced filming in the home during mother-infant interactions and reporting their own and their baby’s behavior in a baby’s diary, although we did not reflect on the diary with control mothers. Control mothers did not receive any further intervention.

Three female home visitors (including the second and third authors) with a university degree in education and child studies implemented the first home visits and four subsequent intervention sessions. They knew that respondents were selected on the basis of their insecure attachment representation, but were unaware of the mothers’ type of insecurity (the tentative dismissing versus preoccupied classification, see below), and of all other information about the mothers or infants enrolled in the intervention. The second author only worked with mothers for whom she had not coded the AAI in the selection procedure.

*Post-tests.* The first post-test ( $T_2$ ) consisted of a session at home and a session at the institute, starting one month after the intervention took place. At 11 months, video-recorded observations of the mother-infant dyads at home were made by a research assistant unknown to the mother, in order to observe maternal sensitive responsiveness during free play. At 13 months, the mothers were invited to the institute with their child to assess the quality of the infant-mother attachment and to observe the mothers’ sensitive responsiveness during free play.

When the children were 40 months old, the second post-test ( $T_3$ ) took place. Families were visited at home for, on average, two and a half hours of video-recorded observations. The first two hours were unstructured, always including a lunch and other daily activities. Subsequently, mother watched her child playing a hammering game; mother and child were asked to play with clay for fifteen minutes; and mother and child were asked to play without toys for five minutes. These observations were used to code children’s attachment behavior using the Attachment Q-Sort (AQS; Waters, 1995). Twenty more minutes of video observations were made to observe maternal sensitive responsiveness during free play. Finally, mothers filled in a questionnaire on child behavior problems.

Three mothers did not participate in the post-test at 40 months (3.7% attrition): One control mother and two VIPP-R mothers. One of the intervention mothers suffered a life-threatening disease. The other two mothers did not have enough time available to participate in the second post-test. In the present paper, one mother-child dyad in the VIPP group was excluded from the analyses because of substantial delay in the child’s mental development. Post-test results will be presented for the remaining 77 mother-child pairs.

### *Measures*

*Behavior problems.* At the second post-test ( $T_3$ ), mothers were asked to fill in the Dutch translation of the Child Behavior Checklist for children aged 2-3 (CBCL/2-3; Achenbach, 1992; Koot, 1993; Koot, Van den Oord, Verhulst, & Boomsma, 1997). We computed the syndromes as Oppositional ( $\alpha=0.88$ ), Withdrawn/Depressed ( $\alpha=0.65$ ), Aggressive ( $\alpha$

=0.81), Anxious ( $\alpha=0.81$ ), Overactive ( $\alpha=0.72$ ), Sleep Problems ( $\alpha=0.72$ ), and Somatic Problems ( $\alpha=0.45$ ). Furthermore, scores were computed for Internalizing ( $\alpha=0.84$ ), Externalizing ( $\alpha=0.82$ ), and Total Problems ( $\alpha=0.92$ ) (Koot, 1993; Koot et al., 1997).

*Maternal attachment representation.* The Adult Attachment Interview (AAI; George et al., 1985) is a semistructured interview presenting the respondent with the tasks to produce and reflect on memories involving early relationships, while simultaneously maintaining coherent, collaborative discourse (Hesse, 1999). *Secure* or *autonomous* (F) adults are capable of keeping this balance. They present and evaluate their memories in a coherent and consistent way. As contrasted with secure adults, insecure adults are not able to comply with these tasks in a coherent manner. *Insecure dismissing* (Ds) adults display a tendency to minimize the significance of past attachment experiences. In contrary, *insecure preoccupied* (E) adults find it difficult to move in a timely way through the interview format. These adults are passively preoccupied with their attachment figures or experiences, or have a feeling of continuing anger (Hesse, 1999; Main, 1995). An additional classification as *unresolved* (U) is assigned when there are momentary lapses in the discourse or monitoring of reasoning during the discussion of traumatic experiences such as loss or abuse.

In our study the AAI was used as a selection instrument. Mothers were selected on the basis of their insecure attachment representation. In order to facilitate timely intervention, the time-consuming transcription of the interview was not done, and a tentative attachment classification was assigned on the basis of the audiotaped AAIs by the second and fourth author, both trained by and reliable with Main and Hesse. When one of the coders felt uncertain about the classification the second coder also classified the audiotaped interview. If the outcome differed the case was not included in the study sample.

*Sensitive responsiveness.* Ainsworth, Bell, & Stayton, (1971, 1974) defined maternal sensitive responsiveness as the mother's ability to perceive her baby's signals accurately, and to respond to them promptly and appropriately. In the present study, "sensitive responsiveness" was assessed on the basis of 10 minutes of free play at home at 6 months for the pre-test ( $T_1$ ), and at 11 months (at home) and 13 months (at the institute) for the first post-test ( $T_2$ ). We instructed mothers to play with their infants as they liked. Each mother was provided with the same collection of toys (e.g., a squeaking duck, a mirror, rattles). Ainsworth's rating scale for sensitivity (Ainsworth et al., 1974) was used to independently assign scores for the three sessions. This scale ranges from (1) *highly insensitive* to (9) *highly sensitive*. The three coders were unaware of other data concerning the respondents. Intercoder reliabilities were high (mean intraclass correlation 0.84, range 0.83 – 0.86,  $n = 25$ ).  $T_2$  post-test sensitivity scores were significantly correlated ( $r=0.45, p < 0.001$ ), therefore aggregated mean scores for maternal sensitivity at  $T_2$  were used in subsequent analyses.

At the second post-test ( $T_3$ , 40 months), three coders scored maternal sensitive responsiveness on the basis of 20 minutes of free play with and without toys at home, using the "maternal sensitivity" scale from Biringen et al.'s (2000) Emotional Availability Scales (EAS). EAS maternal sensitivity (closely related to the concept defined by Ainsworth et al., 1974) refers to the way a mother perceives her child and responds to his or her signals. Her responses should be well timed and appropriate. Coders were unaware of other data concerning the respondents. Intercoder reliabilities were high (mean intraclass correlation 0.74, range 0.72–0.76,  $n=25$ ).

*Child-mother attachment.* The Strange Situation Procedure (SSP; Ainsworth et al., 1978) was used to observe infant-mother attachment when the children were 13 months old. This standardized procedure involves a series of episodes in which the infant is exposed to mildly stressful events: The entrance of a stranger and two separations from the parent, followed by a reunion. The infants' patterns of attachment behavior were coded by the second or fourth author and classified as *secure* (B), *insecure-avoidant* (A), or *insecure-resistant* (C). Infants classified as *disorganized* [(D); Main and Solomon, 1990] were also assigned a forced alternative classification as A, B, or C. Both coders were unaware of other information concerning the dyads. Intercoder reliability was adequate (92%,  $kappa = 0.73$  for the three-way A, B, C classifications; 88%,  $kappa = 0.82$  for the four-way A, B, C, D classifications,  $n=25$ ). Furthermore, we used the simplified Richters et al. (1988) algorithm to compute a continuous score for attachment security (Van IJzendoorn & Kroonenberg, 1990) on the basis of the interactive SSP scale scores for "proximity seeking," "contact maintaining," "resistance," and "avoidance." The intercoder reliability for these continuous security scores was adequate, intraclass correlation 0.76 ( $n=14$ ; single measure, absolute agreement).

At 40 months of age, child-mother attachment was scored using the Attachment Q-Sort (AQS; Waters & Deane, 1985). The AQS consists of ninety cards describing typical (attachment) behaviors. On the basis of two hours of video-recorded observations for each child at home, two coders who were unaware of other information of the dyads sorted the cards into 9 piles (with 10 cards each) ranging from "most descriptive of the child" to "least descriptive of the child." Intercoder reliability was high (intraclass correlation = 0.92,  $n=12$ ). To compute attachment security scores, each child's sorting was correlated with an expert's sort of the 'ideal' securely attached child (Waters, 1987). Furthermore, we computed Howes and Smith (1995) AQS subscales *avoidance* ( $\alpha=0.15$ ) and *comfort seeking* ( $\alpha=0.83$ ). Because of low reliability of the avoidance scale, only the scale for comfort seeking was used in further analyses. Children scoring high on comfort seeking enjoy proximity of their caregiver. These children maintain or actively seek proximity, and receive comfort from this proximity when upset (Howes & Smith, 1995).

*Temperament.* At 6 months of the baby's age, temperament of the infants was assessed using the Dutch translation of the Infant Behavior Questionnaire (IBQ; Rothbart, 1981). The IBQ was designed to assess temperament by asking caregivers about particular behaviors of infants. The IBQ consists of six subscales: Activity Level, Smiling and Laughter, Fear, Distress to Limitations, Soothability, and Vocal Activity. As in Rothbart (1986), a seventh scale, "Overall Reactivity," was computed by subtracting the standardized scores on "Smile and Laughter" ( $\alpha=0.73$ ) and "Activity" ( $\alpha=0.72$ ) from the standardized score on "Distress to Limitations" ( $\alpha=0.64$ ). In line with Klein Velderman, Bakermans-Kranenburg et al. (in press), we considered infants with scores on Overall Reactivity at or above the 80<sup>th</sup> percentile at T<sub>3</sub> ( $>1.35$ ) as highly reactive ( $n=16$ ). The remaining 61 infants, scoring below the 80<sup>th</sup> percentile, were considered less reactive.

We used the baby's diary (St. James-Roberts, personal communication, April 1993; also see Wolke, 1993), handed to the mothers during the pretest, to obtain information about babies' crying behavior. For three consecutive days, mothers noted the amount of time their baby was crying, scored in quarters of hours. For each child, the mean duration of crying (in quarters of hours a day) was used in the analyses.

Maternal temperament was measured at T<sub>2</sub> using the Emotionality, Activity, and Socia-

bility (EAS) dimensions by Buss and Plomin (1984). Mothers rated 20 items, for example, “I am easily frightened,” on a 5-point scale ranging from (1) *not at all characteristic of me* to (5) *very characteristic of me*. Emotionality relates to intensity of emotional reactions. Adults scoring high on this dimension easily become upset and are characterized as being short tempered. Sociability refers to the tendency to affiliate and interact with others. Finally, the general level of energy output is represented by the Activity dimension (Buss & Plomin, 1984). We did not use “Activity” ( $\alpha=0.67$ ) in our analyses, because we were more interested in the socioemotional aspects of maternal temperament. Sociability ( $\alpha=0.57$ ) and the emotionality subscales Fearfulness ( $\alpha=0.71$ ) and Distress ( $\alpha=0.73$ ) were therefore used in the analyses.

*Support and stress.* To measure mothers’ daily support and stress from their environment, we used a support and stress questionnaire (Van den Boom, 1988). The questionnaire was handed to the mothers at the first home visit, and for a second time at T<sub>2</sub> during the post-test home visit. The questionnaire consists of 15 items presenting potential sources of support in daily life, such as friends and family. Respondents indicate for each of the 15 items whether they regard these as a source of support or not. Most mothers (84.5% at T<sub>1</sub> and 75.4% at T<sub>2</sub>) noted 9–13 sources of support. However, for example, contact with other parents or assistance from a mother-in-law is less informative about experienced support than the mother’s satisfaction with this contact or assistance. Mothers answered on a 5-point Likert scale how satisfied they felt about each source of support. We computed “total support” experienced by the mothers by averaging the 15 satisfaction scores ( $n=77$ ,  $\alpha_{T1}=0.71$ ,  $\alpha_{T2}=0.73$ ). The number of support sources was not used in the analyses.

The second part of the questionnaire asks respondents for sources of stress. Mothers indicated for 24 questions in 15 domains (e.g., own or husband’s work, marital relationship, child’s hospitalization, child’s development) the amount of stress, worries, or satisfaction on 5-point Likert scales. The “total stress” index was computed by counting every domain with at least one score of 4 or 5 on worries or stress, or a 1 or 2 for satisfaction. This index ranged from 0 to 7 at T<sub>1</sub> and 0 to 8 at T<sub>2</sub> with at both times a mode of 1.

*Maternal health.* At T<sub>2</sub>, mothers completed the Dutch validated translation (“Algemene Gezondheidsvragenlijst,” AGV-28; Ormel and Giel, 1984) of the General Health Questionnaire (GHQ-28; Goldberg & Hillier, 1979). Mothers answered for 28 items if their health in this domain (1) *had not changed or had improved over the last weeks*, (2) *was the same as always*, (3) *had become somewhat worse or offered them somewhat less satisfaction*, or (4) *had markedly changed for worse*. Higher scores point to more health complaints. We computed a mean maternal general health score on the basis of the 28 items. Cronbach’s alpha for this scale equaled 0.88.

### **Intervention**

The interventions were implemented when the babies were between 7 and 10 months of age. Intervention efforts in the video group were directed at stimulating and reinforcing maternal sensitivity by means of brochures about sensitive parenting and personalized video feedback (as used in Juffer, Hoksbergen, Riksen-Walraven, & Kohnstamm, 1997, and elaborated in the VIPP protocol; Juffer, Bakermans-Kranenburg, & Van IJzendoorn, in press). We provided

mothers in the video + discussions group with additional discussions about their attachment experiences aiming at affecting the mother's representation of attachment; VIPP with a Representational focus (VIPP-R; Juffer et al., in press). Both interventions took place during four home visits of, on average, an hour and a half (in the VIPP group) to three hours (in the VIPP-R group) each, with intervening periods of three to four weeks (for case studies see Juffer, Van IJzendoorn, & Bakermans-Kranenburg; Klein Velderman, Juffer, Bakermans-Kranenburg, & Van IJzendoorn, in press).

An intervention protocol delineated the main structure of each intervention session (Juffer et al., in press). Each session started with making the videotape in order to prevent the mother-infant dyad from being filmed immediately after the video feedback. These videotaped mother-infant interactions were standardized in the four intervention sessions, and involved playing together, the mother bathing the infant, and cuddling. The recordings were for use in the next intervention session. Next, the video-feedback intervention was implemented using the videotape from the previous session, followed by the attachment discussions in the VIPP-R group. Video feedback was prepared by the home visitors in the period between home visits. They selected specific episodes they wished to bring to the mother's attention and prepared pertinent comments to these episodes. At regular intervals, intervention experiences were discussed with the fourth author, who was also blind to specific information collected on the dyads involved in the intervention.

In every intervention session, the video feedback, as well as the representational part of the VIPP-R, had its own specific theme as outlined in the intervention protocol. The first VIPP session, for example, focused on children's contact seeking and exploration, and the first VIPP-R discussion on separations in early childhood experienced by the mother in her own childhood and experienced with her own child. The attachment discussions in the VIPP-R group were initiated by using questionnaires or projective material; for example, some pictures from the Separation Anxiety Test (SAT; Hansburg, 1980) in the first intervention session. For more extensive information about the process of the two interventions, we refer to Bakermans-Kranenburg et al. (1998) and Klein Velderman, Juffer et al. (in press).

### *Statistical Analyses*

First, the incidence of behavior problems in our sample is presented. Secondly, we explored intervention effects both on continuous CBCL problem scores and on the number of children in the clinical range. Although scores above the borderline cutoff include scores in the borderline as well as clinical range, we defined these scores as *clinical* problem behavior. Next, we examined the potential mediation of the intervention effects on problem behavior by sensitivity or attachment. For a mediator to be significant, the mediator must be significantly associated with the independent and dependent variable, and reduce the association between these variables (Baron & Kenny, 1986). Therefore, we first investigated long-term intervention effects on these two constructs (for short-term intervention effects, see Klein Velderman, Bakermans-Kranenburg et al., in press). As a second step, we examined correlations between sensitivity and attachment on the one hand, and behavior problems on the other hand. If significant long-term intervention effects were to be found, and sensitivity or attachment was significantly related to behavior problems, we intended to test the intervention effect when the possible mediator was controlled as a last step of analysis. The intervention effect in this last

step would have to be smaller than in the first for it to be significantly mediated (Baron & Kenny, 1986).

We examined whether the infant's temperament, security of attachment, and mother's perceived support or stress and temperament were possible moderators of intervention effects on behavior problems. As follows from Baron and Kenny (1986), we regressed behavior problems on intervention, the possible moderator, and the multiplication of the (standardized) possible moderator and intervention. In case of a significant effect of the multiplication of intervention and possible moderator, while intervention and the moderating factor are controlled, moderator effects are indicated (Baron & Kenny, 1986).

Finally, we explored pretest and post-test correlates of behavior problems. Multiple hierarchical regression analyses were performed to predict preschool Total, Externalizing, and Internalizing Problems. We controlled for intervention effects. Significant correlates of behavior problems were entered in the regression analyses in hierarchical blocks of  $T_3$ ,  $T_2$ , and  $T_1$ . Missing cases were excluded pairwise.

Two outliers on  $T_3$  were identified. One child in the VIPP group was found to be an outlier on the AQS, with a standardized AQS security score lower than  $-3.29$  (Tabachnick & Fidell, 2001, p. 67). One VIPP-R mother-child pair was found to be an outlier on the EAS sensitivity. For both outliers, scores on the pertinent variables were winsorized (Hampel, Ronchetti, Rousseeuw, & Stahel, 1986; Tabachnick & Fidell, 2001).

Data on the baby's diary were available for 72 of the 77 mothers participating at  $T_3$ . Five mothers did not (consistently) fill in the diary and were not included in the analyses. A total of 78 mothers returned the EAS questionnaire, 75 of whom were participating at  $T_3$ . As a result of missing values for these two measures,  $n$  may vary in the analyses. In case of missing values for a respondent who did complete a questionnaire, these were substituted by the mean or mode (Achenbach, 1992).

## RESULTS

### *Incidence of Behavior Problems*

In Table 1, the incidence of problem behavior is presented for the total sample and for the intervention and control groups separately. Children scored on average 5.83 ( $SD=4.84$ ) on Internalizing problem behavior, 20.51 ( $SD=9.80$ ) on Externalizing problem behavior, and 40.71 ( $SD=18.23$ ) on Total Problems. These scores exceeded scores on the CBCL/2-3 in the Dutch community sample (Koot, 1993). Children in our study scored significantly higher on Internalizing [ $t(495)=2.79, p<0.01$ ], Externalizing [ $t(495)=3.05, p<0.01$ ], and Total Problems [ $t(495)=3.46, p<0.01$ ]. Twenty-eight children (36.4%) in our sample scored in the clinical range for Internalizing Problems, 21 children (27.3%) for Externalizing Problems, and 23 children (29.9%) for Total Problems. Proportions of children scoring in the clinical range for Internalizing ( $z=3.81, p<0.01$ ), Externalizing ( $z=2.45, p=0.01$ ), and Total Problems ( $z=3.11, p<0.01$ ) were significantly higher than the proportions of clinical children in Koot's (1993) sample. The number of children in the clinical range on the CBCL subscales ranged from 6 to 9 (also see Table 1).

**TABLE 1.** Incidence of CBCL Problem Behavior in the Total Sample and Separate Groups, With Comparison of Groups on Continuous Problem Scores and Number of Children in the Clinical Range

	Total sample			VIPP-R (n=24)			VIPP (n=27)			Control (n=26)		
	Continuous		Clinical	Continuous		Clinical	Continuous		Clinical	Continuous		Clinical
	M	SD	n	%	M (SD)	n	M (SD)	n	M (SD)	n		
N=77												
Oppositional	13.08	6.10	8	10.4	14.54(5.57)	4	11.15(5.75)	2	13.73(6.61)	2		
Withdrawn/depressed	1.92	2.01	9	11.7	2.00(2.09)	3	1.89(2.24)	2	1.88(1.75)	4		
Aggressive	3.71	2.95	8	10.4	4.50(3.34)	4	3.07(2.37)	1	3.65(3.06)	3		
Anxious	3.91	3.37	9	11.7	4.33(3.86)	3	3.93(3.51)	5	3.50(2.77)	1		
Overactive	3.71	2.21	6	7.8	4.54(1.93)	3	3.26(2.19)	1	3.42(2.32)	2		
Sleep problems	2.64	2.49	6	7.8	3.42(2.84)	3	1.96(1.89)	1	2.62(2.56)	2		
Somatic problems	0.42	2.49	21	27.3	0.58(0.93)	8	0.33(0.68)	7	0.35(0.75)	6		
Internalizing	5.83	4.84	28	36.4	6.33(5.16)	9	5.81(5.17)	7	5.38(4.30)	12		
Externalizing	20.51	9.80	21	27.3	23.58(9.12)	9	17.48(8.68)	3*	20.81(10.85)	9		
Total problems	40.71	18.23	23	29.9	47.46(18.71)	9	35.07(14.52)	3*	40.35(19.77)	11		

Note: Clinical cutoff: T=60 for Internalizing, Externalizing, and Total Problems; T=67 for the syndrome scales [see Koot (1993), Koot et al. (1997)].  
 (\* $p < 0.05$ , one-tailed significance; comparison with control).

### ***Intervention Effects on Behavior Problems***

No intervention effects were found on the CBCL continuous problem scores (Table 1). However, significant group differences were found on the number of children scoring in the clinical range for Total Problems,  $\chi^2(2, n=77)=7.12, p=0.03$ . Also, the proportion of intervention children with clinical Total Problems was significantly lower than the proportion in the control group,  $\chi^2(1, n=77)=2.90, p=0.04$  (one-tailed). In chi-square tests with *a priori* contrasts, the two intervention groups were contrasted separately to the control group. In the VIPP group three children (11.1%) scored in the clinical range, compared to 11 (42.3%) in the control group. This difference was significant,  $\chi^2(1, n=53)=6.63, p<0.01$  (one-tailed). The proportion of clinical VIPP children was comparable to the proportion of children in the clinical range (15.2%) in the normative sample of Koot (1993),  $z=0.58, p=0.56$ , whereas the proportion in the control group exceeded this percentage,  $z=3.58, p<0.01$ . No significant difference between VIPP-R and control children was found,  $\chi^2(1, n=50)=0.12, p=0.73$ . For Externalizing Problems, three children (11.1%) in the VIPP group, and nine children (37.5%) in the VIPP-R group scored in the clinical range, compared to 9 (34.6%) in the control group (see Table 1). As for Total Problems, the proportion of children with clinical Externalizing Problems in the VIPP group was significantly lower than in the control group,  $\chi^2(1, n=53)=4.18, p=0.02$  (one-tailed). The VIPP proportion of children scoring in the clinical range was comparable to the percentage in the Dutch community sample (15.7%) (Koot, 1993),  $z=0.64, p=0.52$ , whereas the proportion in the control group was significantly higher,  $z=2.50, p=0.01$ . Again, we did not find significant differences between VIPP-R and control group,  $\chi^2(1, n=50)=0.05, p=0.53$ . No group differences were found in the number of children scoring in the clinical range for Internalizing problem behavior,  $\chi^2(2, n=77)=2.36, p=0.31$ .

### ***Long-Term Intervention Effects on Maternal Sensitivity and Attachment Security***

In order to test whether the VIPP effect on the number of children in the clinical range for Externalizing and Total Problems was mediated by effects on first post-test ( $T_2$ ) or concurrent ( $T_3$ ) maternal sensitivity or quality of the attachment relationship, we first tested for intervention effects on sensitivity and attachment. Significant short-term intervention effects on maternal sensitivity at  $T_2$  were found, with VIPP mothers scoring significantly higher than control mothers,  $d=0.46$  (Klein Velderman, Bakermans-Kranenburg et al., in press). At  $T_3$ , no significant long-term intervention effects were found on EAS sensitivity,  $t(75)=0.15, p=0.44$  (one-tailed),  $d=0.04$ . Scores did not differ for mothers of the VIPP, VIPP-R, or control group,  $F(2, 74)=0.20, p=0.82$ . Furthermore, mothers in the three groups did not show significantly different development in their standardized sensitivity scores from the pretest to the first and second post-test. Scores did not significantly change over time,  $F(2, 73)=0.01, p=0.99$ .

No long-term intervention effects on children's AQS security scores were found either,  $t(75)=0.22, p=0.41$  (one-tailed),  $d=0.05$ . Type of intervention did not sort different results,  $F(2, 74)=1.31, p=0.28$ . VIPP children's mean security score was 0.44 ( $SD=0.29$ ), compared to 0.32 ( $SD=0.30$ ) for VIPP-R children, and 0.37 ( $SD=0.24$ ) for control children.



### *Maternal Sensitivity as Mediator*

VIPP affected only maternal sensitivity at T<sub>2</sub>,  $d=0.46$ . No short-term intervention effect on attachment at T<sub>2</sub> was found. Therefore, the first condition (Baron & Kenny, 1986) for sensitivity and attachment to act as mediators of the VIPP effect on clinical problem behavior did only hold for sensitivity at T<sub>2</sub>. Because the effects on clinical problems were found in the VIPP group in contrast to the control group, these two groups were included in further mediator analyses. Maternal sensitivity scores did not differentiate between children in the clinical and children in the normal range for Total Problems,  $t(51)=1.61$ ,  $p=0.11$ ,  $d=0.52$ , and Externalizing Problems,  $t(51)=1.17$ ,  $p=0.25$ ,  $d=0.36$ . Sensitivity thus did not mediate the VIPP effect on clinical Total or Externalizing problem behavior.

### *Moderation of the VIPP Effect on Clinical Behavior Problems*

The background variables infant temperament and security of attachment, and support and stress at T<sub>1</sub> and T<sub>2</sub> and maternal temperament at T<sub>2</sub> were examined as possible moderators of the effect of participation in the VIPP or control group on the Externalizing and Total Problems in the clinical versus the normal range. Clinical behavior problems were regressed, separately for Total and Externalizing behavior problems, on (1) VIPP or control condition, (2) the possible moderator, and (3) the product of these two (standardized) variables. With intervention and the possible moderating factor controlled, no significant interaction effects were found ( $p>0.05$ ).

### *Regression for CBCL Behavior Problems*

*Regression for total problems.* Total Problems significantly correlated with support at T<sub>1</sub> and T<sub>2</sub> (see Table 2): Mothers who were less satisfied with the support they received at T<sub>1</sub> had preschoolers with more behavioral problems. Moreover, children with more Total Problems, had mothers who were less healthy and less sociable at T<sub>2</sub> (Table 2). Table 3 shows the results of the multiple hierarchical regression analysis for Total Problems based on these correlates. Independent variables were entered in two hierarchical steps, specified by order of measurement, that is, from most to less recent: (1) total support, maternal general health, and maternal sociability at T<sub>2</sub>; and (2) total support at T<sub>1</sub>. The regression equation was significant,  $F(4, 74)=3.45$ ,  $p<0.05$ , predicting 17% of variance. However, none of the correlates were significant predictors of Total Problems (Table 3). Children scoring in the clinical range on the Total Problems scale differed from the children in the normal range on the same four mother variables that were associated with continuous Total Problems: Their mothers were less satisfied with perceived support at T<sub>1</sub> and T<sub>2</sub>, were less healthy, and were less sociable (Table 2).

In a sequential logistic regression analysis, we first controlled for VIPP condition, and then entered in two steps: (1) total support, maternal general health, and maternal sociability at T<sub>2</sub>; and (2) total support at T<sub>1</sub>. Controlling for VIPP, these four correlates were no significant predictors of Total Problems in the clinical range (Table 4). The regression equation explained 27% of variance,  $\chi^2(5, n=75)=16.17$ ,  $p<0.01$ . VIPP was a significant determinant of Total clinical behavior problems ( $p=0.03$ ), explaining 14% of variance. Participation in VIPP predicted less Total Problems.

**TABLE 2.** Correlations of Pretest and Post-Test Variables With CBCL Internalizing (Int.), Externalizing (Ext.), and Total Problems (Tot.), and a Comparison of Children in the Normal or Clinical Range on These Syndrome Scales

	N	Int.			Int. Normal			Int. Clinical			Ext.			Ext. Normal			Ext. Clinical			Tot.			Tot. Normal			Tot. Clinical						
		r	M	SD	M	SD	r	M	SD	M	SD	r	M	SD	M	SD	r	M	SD	M	SD	r	M	SD	M	SD	r	M	SD			
Overall Reactivity IBQ	77	0.27*	-0.34	1.88	0.45*	1.34	-0.06	-0.01	1.80	1.62	0.09	-0.16	1.83	0.21	1.52																	
Crying duration baby's diary	72	0.24*	3.31	2.19	4.87**	2.26	0.11	3.84	2.43	4.04	2.05	3.61	2.35	4.58	2.18																	
Maternal sensitivity	77	0.02	4.32	1.36	4.10	1.08	-0.14	4.40	1.20	3.82	1.36*	4.29	1.15	4.12	1.52																	
Total support	77	-0.32**	4.18	0.30	3.94**	0.32	-0.26*	4.13	0.34	3.98	0.27*	4.15	0.34	3.94*	0.26																	
Total stress	77	-0.06	1.98	1.44	2.00	1.41	0.09	1.96	1.48	2.05	1.28	1.80	1.46	2.43*	1.24																	
Richter security	77	0.03	0.41	2.47	0.63	2.91	-0.15	0.67	2.61	0.02	2.68	0.66	2.39	0.09	3.12																	
D score SSP	77	0.06	3.10	2.24	3.57	2.26	0.05	3.39	2.33	2.95	2.01	3.28	2.29	3.26	2.19																	
Maternal sensitivity	77	0.10	5.38	1.24	5.46	1.36	0.00	5.40	1.22	5.42	1.44	5.31	1.21	5.65	1.41																	
Total support	77	-0.26*	4.11	0.30	3.94*	0.37	-0.18	4.07	0.36	3.99	0.27	4.10	0.33	3.93*	0.32																	
Total stress	77	0.00	1.06	1.41	1.25	1.51	.09	1.11	1.47	1.19	1.36	1.00	1.44	1.43	1.41																	
Maternal general health	77	0.04	1.84	0.42	1.91	0.29	0.25*	1.84	0.38	1.93	0.35	1.81	0.38	2.00*	0.34																	
Maternal Sociability EAS	75	0.03	12.85	3.11	12.50	3.32	-0.22*	13.02	3.06	11.95	3.38	13.29	2.74	11.43*	3.73																	
Maternal Distress EAS	75	0.15	6.96	2.76	8.86*	3.37	0.15	7.63	2.99	7.76	3.51	7.29	2.82	8.52	3.64																	
Maternal Fearfulness EAS	75	0.14	8.00	3.14	9.46*	3.25	0.17	8.37	3.16	9.00	3.46	8.27	3.30	9.17	3.08																	
AQS security	77	-0.09	0.41	0.26	0.33	0.31	-0.21*	0.42	0.29	0.28*	0.24	0.38	0.31	0.37	0.20																	
AQS seeks comfort	77	-0.17	6.18	1.88	5.03**	1.66	-0.24*	5.93	1.95	5.30	1.62	5.79	1.95	5.69	1.72																	
EAS maternal sensitivity	77	0.19*	5.79	1.78	5.92	1.31	-0.11	5.94	1.66	5.56	1.75	5.87	1.56	5.77	1.77																	
CBCL Ext./Int.	77	0.32**	18.27	9.04	24.43**	9.99	0.32**	5.23	4.98	7.43*	4.13																					
Boys	N	t	n	%	n	%	t	n	%	n	%	t	n	%																		
Highly reactive	T <sub>1</sub>	77	0.99	23	46.9	17	60.7	0.16	29	51.8	11	52.4	-0.06	29	53.7	11	47.8															
Secure attachment	T <sub>2</sub>	77	1.37	9	18.4	7	25.0	-1.33	13	23.2	3	14.3	-0.41	12	22.2	4	17.4															
Disorganized attachment	T <sub>2</sub>	77	0.43	32	65.3	17	60.7	1.46	38	67.9	11	52.4	0.83	37	68.5	12	52.2															
	T <sub>2</sub>	77	0.07	12	24.5	8	28.6	0.16	16	28.6	4	19.0	-0.02	15	27.8	5	21.7															

Note: Clinical means above borderline cutoff. T = 60 for Internalizing, Externalizing, and Total Problems (see Koot, 1993; Koot et al., 1997).  
 \*  $p < 0.10$ . \*\*  $p < 0.05$ . \*\*\*  $pp < 0.01$ , two-tailed.

**TABLE 3.** Hierarchical Regression Analyses on the CBCL Total, Externalizing, and Internalizing Problem Behavior

		<i>B</i>	$\beta$	<i>p</i>	<i>R</i> <sup>2</sup>	<i>R</i> <sup>2</sup> change	<i>F</i> change	<i>n</i>	<i>F</i>
Total problem behavior									
T <sub>2</sub>	Total support	-0.83	-0.02	0.92	0.13	0.13	3.62*	75	3.45*
	Maternal general health	6.32	0.13	0.29					
	Maternal Sociability	-0.88	-0.15	0.19					
T <sub>1</sub>	Total support	-13.68	-0.25	0.11	0.17	0.03	2.70		
Externalizing problem behavior									
T <sub>3</sub>	CBCL internalizing	0.49	0.24	0.03	0.14	0.14	5.80**	77	4.68**
	AQS seeks comfort	-1.08	-0.21	0.06					
T <sub>2</sub>	Maternal general health	5.58	0.21	0.07	0.20	0.06	5.74*		
T <sub>1</sub>	Total support	-3.02	-0.10	0.40	0.21	0.01	0.71		
Internalizing problem behavior									
T <sub>3</sub>	CBCL externalizing	0.14	0.28	0.02	0.11	0.11	9.10**	73	4.73**
T <sub>2</sub>	Total support	-0.50	-0.04	0.81	0.15	0.04	3.38*		
T <sub>1</sub>	Overall Reactivity	0.65	0.23	0.04	0.26	0.11	3.21*		
	Crying duration	0.36	0.18	0.10					
	Total support	-2.36	-0.16	0.28					

\* $p < 0.10$ . \* $p < 0.05$ . \*\* $p < 0.01$ , two-tailed.

*Regression for externalizing problems.* Children who displayed more Externalizing Problems sought less comfort and were more internalizing at T<sub>3</sub>, and had mothers who were less satisfied with the support they received at T<sub>1</sub> and were less healthy at T<sub>2</sub> (Table 2). Independent variables (1) Internalizing Problems and AQS comfort seeking at T<sub>3</sub>, (2) maternal general health at T<sub>2</sub>, and (3) total support at T<sub>1</sub> were entered as three hierarchical steps into a regression analysis for Externalizing Problems. Internalizing Problems was found to be of significant influence in the regression equation for Externalizing Problems (Table 3). In addition, maternal health at T<sub>2</sub> added significantly to the explanation of differences in Externalizing Problems. Total support at T<sub>1</sub> was not found to contribute significantly to the explanation of Externalizing problem behavior. The overall equation explained 21% of variance,  $F(4, 76) = 4.68$ ,  $p < 0.01$ . Table 3 shows that the other two correlates of clinical Externalizing Problems were not significant in the regression. Because no significant correlates of clinical Externalizing Problems were found, logistic regression was performed on the basis of VIPP only. In the whole sample, the logistic regression equation on the basis of VIPP was significant,  $\chi^2(1, n = 77) = 6.06$ ,  $p = 0.01$ , explaining 11% of variance (Table 4), which is in line with the results for Total clinical behavior problems. Participation in VIPP predicted less preschool clinical Externalizing problem behavior.

*Regression for internalizing problems.* Children who displayed more Internalizing Problems appeared to be more reactive, cried more at 6 months of age, and had mothers who were less satisfied about the support they received at T<sub>1</sub> and T<sub>2</sub> (Table 2). Furthermore, scores on Externalizing Problems were significantly related to Internalizing problem scores,  $r(76)$

**TABLE 4.** Sequential Logistic Regression Analyses on the CBCL Clinical Versus Normal Range for Total, Externalizing, and Internalizing Problem Behavior

		<i>B</i>	<i>Wald</i>	<i>p</i>	<i>R</i> <sup>2</sup>	<i>R</i> <sup>2</sup> <i>change</i>	$\chi^2$ <i>change</i>	<i>n</i>	$\chi^2$
Total Clinical Problem Behavior									
	VIPP	-1.54	4.57	0.03	0.14	0.14	7.60**	75	16.17**
T <sub>2</sub>	Total support	0.33	0.09	0.76	0.26	0.12	7.33 <sup>+</sup>		
	Maternal general health	1.02	1.66	0.20					
	Maternal Sociability	-0.14	2.36	0.12					
T <sub>1</sub>	Total support	-1.26	1.23	0.27	0.27	0.10	1.24		
Externalizing Clinical Problem Behavior									
	VIPP	-1.50	4.90	0.03	0.11	0.11	6.06*	77	6.06*
Internalizing Clinical Problem Behavior									
T <sub>3</sub>	CBCL externalizing	0.07	3.59	0.06	0.19	0.19	10.71**	70	27.63**
	AQS seeks comfort	-0.40	4.62	0.03					
T <sub>2</sub>	Total support	0.35	0.07	0.79	0.29	0.10	5.91 <sup>+</sup>		
	Maternal Distress	0.17	2.15	0.14					
T <sub>1</sub>	Overall Reactivity	0.44	3.96	0.05	0.44	0.15	11.02*		
	Crying duration	0.26	3.51	0.06					
	Total support	-1.65	1.68	0.20					

<sup>+</sup>*p*<0.10. \**p*<0.05. \*\**p*<0.01, two-tailed.

=0.32, *p*<0.01. Table 3 presents the results of hierarchical regression analyses of these variables (*n*=72). Externalizing Problems were entered as a first step of analysis. As a second step, we entered total support at T<sub>2</sub>. Lastly, the independent variables Overall Reactivity, crying duration, and total support at T<sub>1</sub> were entered into the regression analysis. Externalizing Problems at 40 months contributed significantly to the equation. Furthermore, children who were more reactive at the pretest showed more Internalizing behavior problems at 40 months of age. The overall regression equation explained 26% of the variance in Internalizing Problems, *F*(5,72)=4.73, *p*<0.01 (Table 3).

Compared to children scoring in the normal range for Internalizing behavior, children in the clinical range were more reactive, cried more, and had mothers who were less satisfied with the support they received at T<sub>1</sub>; they had mothers who were more emotionally distressed and who were less satisfied with support at T<sub>2</sub>. The children sought less comfort and showed more Externalizing behavior problems themselves at T<sub>3</sub> (Table 2). In a logistic regression analysis, these correlates, that is, (1) Externalizing Problems and comfort seeking at T<sub>3</sub>, (2) total support and Maternal Distress at T<sub>2</sub>, and (3) Overall Reactivity, crying duration, and total support at T<sub>1</sub>, were entered as hierarchical steps of independent variables. Comfort seeking and Reactivity were significant predictors. A total of 44% of variance in clinical Internalizing Problems was explained by the overall equation,  $\chi^2(7, n=70)=27.63$ , *p*<0.01 (Table 4).

### DISCUSSION AND CONCLUSIONS

In the present study we found evidence for the effectiveness of an attachment-based video-feedback intervention in infancy in preventing preschool clinical Externalizing and Total

behavior problems. Children in our sample were at risk for developing behavior problems because of the overrepresentation of insecure attachment representations among their mothers. In a randomized control-group trial, two interventions were implemented. The first intervention, VIPP, provided mothers of first-born infants aged 7–10 months with video feedback and written information about parenting to enhance sensitive parenting. The second intervention, VIPP-R, combined these elements with attachment discussions about the mothers' childhood attachment experiences in relation to their current caregiving.

At preschool age, elevated problem scores were found in our sample compared to a Dutch normative community sample (Koot, 1993). In contrast to our expectations, no intervention effects on the continuous scores for Internalizing, Externalizing, and Total Problems were found. However, the VIPP program resulted in a decreased number of children in the clinical range for Externalizing and Total Problems compared to the control group. Whereas, respectively, 35% and 42% of the preschoolers in the control group scored in the clinical range on Externalizing and Total Problems; these percentages were reduced to 11% in the VIPP group. The VIPP proportions of children scoring in the clinical range for Externalizing and Total Problems were comparable to proportions in the normative sample of Koot (1993), whereas the control group proportions exceeded these norms.

In contrast to results for the VIPP group, the number of children with clinical problem behavior in the VIPP-R group was not different from the control group. Less satisfaction with the representational part of the intervention, and possibly more tension caused by the attachment discussions in this intervention, might have led to less intervention profits for VIPP-R mothers compared to VIPP mothers (Klein Velderman, Juffer et al., in press). Alternatively, the representational part of the intervention might have taken so much (emotional) attention that the targeting on positive parenting behavior was jeopardized.

Next, predictors of continuous and clinical behavior problems were examined. Total support at the pretest and post-test, maternal general health and maternal Sociability, were significantly correlated to children's preschool Total Problems, but neither of these variables particularly contributed to the prediction of Total Problems.

Externalizing problem behavior was found to be correlated to and contributed to the explanation of differences in Internalizing Problems and *visa versa*. Furthermore, pretest and post-test maternal support, children's Overall Reactivity, and crying duration correlated to Internalizing Problems. Externalizing Problems and Overall Reactivity were the strongest and only significant predictors for Internalizing Problems. Our results corresponded to our expectations that temperament would be associated with behavior problems, and were in line with findings of Rende (1993) and Caspi et al. (1995) that measurements of a less oppositional aspect of temperament would be most significantly associated with Internalizing Problems. In logistic regression analysis, Overall Reactivity also appeared to contribute significantly to the prediction of Internalizing clinical behavior problems. Moreover, children's comfort seeking was associated with fewer clinical Internalizing Problems.

Mothers' satisfaction with support when their children were six months of age, appeared to be a correlate of children's behavior problems at preschool age. Total support was found to be related to Internalizing, Externalizing, as well as to Total Problems at preschool age. We suggest that expanding parents' environmental support networks could be a promising goal of interventions aiming at the prevention of preschool children's behavior problems and later maladjustment.

In contrast to our expectations, we did not find an association between maternal sensi-

tivity and children's behavior problems. Rothbaum and Weisz (1994) meta-analytically studied the influence of parental caregiving on child externalizing behavior in nonclinical samples. They found a generally linear increase in effect size and percentages of significant effects when moving from parent measures assessing just one variable loading on an acceptance-responsiveness factor, to measures assessing all five variables loading on that factor. The first variable was approval: Maternal praise and encouragement to the child's behavior. Secondly, a mother should guide her child, explain policy, and be clear about rules. Motivational strategies, including rewards, and punishment were named as a third variable. Rothbaum and Weisz furthermore stated that orders and control should be clear and consistent, and not interfering. Finally, a synchrony factor included attentive, responsive, and sensitive caregiving. Our sensitivity measure particularly focused on synchrony, and to a lesser extent on the other four variables. It is possible that the current study, measuring a narrow aspect of sensitivity in a relatively small sample ( $n=77$ ), did not yield enough power to detect a significant association between maternal sensitivity and problem behavior.

Our measure of sensitivity possibly may thus not have captured all aspects of positive maternal caregiving relevant to the development of preschool behavior problems. This possible shortcoming of our measurement of caregiving might therefore explain why we did not find sensitivity as a mediating factor to explain the two VIPP effects on clinical behavior problems. Results of the present study support our hypothesis that an attachment-based intervention can be effective in protecting infants from developing disturbing externalizing preschool behavior problems, but the mechanism through which this result was reached, could not be determined. The intervention had resulted in more sensitive parenting in the short run (Klein Velderman, Bakermans-Kranenburg et al., in press) and thereby possibly more optimal caregiving in general. We hypothesize that this increased positive parenting in the VIPP group might have compensated for the risks for preschool behavior problems present in our sample. Although the effects on clinical problem behaviors were not mediated by intervention effects on sensitivity, we hypothesize that it was the broader behavioral effect on caregiving, including the mothers' increased capability to see things from their child's point of view, which resulted in a lower rate of clinical behavior problems in the VIPP group. It might be worthwhile measuring more aspects of caregiving in future intervention research.

The present study was furthermore limited because of the sample size and the way in which behavior problems were measured. Due to the small sample size, some statistical analyses lacked power. However, we found significant support for our hypothesis that the intervention would result in fewer externalizing preschool behavior problems. For the purpose of exploring the effectiveness of VIPP related to behavior problems, the power of the intervention proved to be sufficient. The measurement of behavior problems was, however, limited by the fact that we used a questionnaire, namely the CBCL/2-3, and not observations. The questionnaire was filled in by mothers; we were thus measuring maternal perceptions of children's problematic behavior. The CBCL/2-3 has, however, been used in numerous studies on preschool behavior problems and has been thoroughly validated. The VIPP effect may display a change in maternal perceptions or maternal resiliency, but we would like to stress that maternal perceptions could be just as relevant as actual child behavior (Weinfield et al., 2004). Nevertheless, observational assessment of problem behaviors might be more reliable and valid, and lead to stronger results with less error variance. Assessment of behavior problems through multiple informants would also be an option to improve the validity of measurement.

In conclusion, we would like to plea for explicit attention to a more extensive measurement of caregiving in further research in order to find the mechanisms through which the VIPP was effective in decreasing behavior problems. Moreover, the expansion of maternal environmental support networks might be a valuable addition to our attachment-based video-feedback intervention that turned out to be effective in reducing the development of clinical Externalizing and Total Problems in a sample that was clearly at risk considering their elevated clinical scores compared to normative samples. Finally, observational procedures of child behavior problems, or usage of multiple informants for the replication of our findings, should be recommended.

Our study may be important for mental health providers planning or implementing intervention or prevention programs on behavioral problems in early childhood. To begin with, our results support recent meta-analytic findings (Bakermans-Kranenburg et al., 2003) in favor of brief interventions with a clear focus. We found support for the effectiveness of a 4-session video-feedback intervention in preventing clinical Externalizing and Total behavior problems. Furthermore, young infants and their parents have not traditionally been the main focus of intervention programs on children's behavior problems. There are examples of programs aimed at young children (e.g., DeGarmo et al., 2004; Feinfeld & Baker, 2004; also see Neary & Eyberg, 2002) but most interventions on behavior problems are aimed at school-aged children and adolescents (e.g., Lewis, Powers, Kelk, & Newcomer, 2002; Schrag & Henderson, 1996; Spoth, Gyll, Chao, & Molgaard, 2003). Moreover, programs have more often focused on the treatment of behavior problems at an age that parental discipline was important. Parental discipline strategies were a main topic in The Healthy Steps Initiative (Caughy, Miller, Genevro, Huang, & Nautiyal, 2003), consisting of home visits starting when the child was between 16 and 18 months of age. The same was true of the study of Bradley et al. (2003), focusing on effective discipline and the reduction of parent-child conflict. An improvement in parenting practices was accompanied by a reduction in preschool problem behavior.

However, parents may be particularly open to suggestions for change in the first year of the baby's life, when they realize that raising a baby creates problems that they might not be able to solve without assistance, and when interactive routines have not yet become to be fixed. At this young age, parental discipline strategies are not yet the main focus of attention. The child's behavior is still mostly regulated by its parents. Instead, social emotional attunement of parent and child is the main issue. On the other hand, parents can be taught and reinforced to take their child's perspective, which is a necessity for positive disciplinary strategies at a later age. The VIPP effects on preschool behavior problems show that our video-feedback intervention implemented between the 7th and the 10th months of the baby's age, may be a promising first step in designing programs for the prevention of externalizing behavior problems in young children.

## REFERENCES

- Achenbach, T.M. (1992). *Manual for the Child Behavior Checklist/2-3 and 1992 profile*. Burlington: University of Vermont, Department of Psychiatry.
- Ainsworth, M.D. S., Bell, S.M., & Stayton, D.J. (1971). Individual differences in Strange Situation behavior of one-year-olds. In H. R. Schaffer (Ed.), *The origins of human relations* (pp. 17–56). London: Academic.

- Ainsworth, M.D. S., Bell, S.M., & Stayton, D.J. (1974). Infant-mother attachment and social development: Socialization as a product of reciprocal responsiveness to signals. In M.P.M. Richards (Ed.), *The integration of a child into a social world* (pp. 99–135). London: Cambridge University Press.
- Ainsworth, M.D. S., Blehar, M.C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the Strange Situation*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Bakermans-Kranenburg, M.J., Juffer, F., & Van IJzendoorn, M.H. (1998). Intervention with video feedback and attachment discussions: Does type of insecurity make a difference? *Infant Mental Health Journal*, 19, 202–219.
- Bakermans-Kranenburg, M.J., Van IJzendoorn, M.H., & Juffer, F. (2003). Less is more: Meta-analysis of sensitivity and attachment interventions in early childhood. *Psychological Bulletin*, 129, 195–215.
- Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182.
- Barron, A., & Earls, F. (1984). The relation of temperament and social factors to behavior problems in 3-year-old children. *Journal of Child Psychology and Psychiatry*, 25, 23–33.
- Bates, J.E., Maslin, C.A., & Frankel, K.A. (1985). Attachment security, mother-child interaction, and temperament as predictors of behavior-problem ratings at age three years. *Monographs of the Society for Research in Child Development*, 50, 167–193.
- Bernazzani, O., Côté, C., & Tremblay, R.E. (2001). Early parent training to prevent disruptive behavior problems and delinquency in children. *Annals of the American Academy of Political and Social Sciences*, 578, 90–103.
- Biringen, Z., Robinson, J.L., & Emde, R.N. (2000). Appendix B: The Emotional Availability Scales (3rd ed.; an abridged Infancy/Early Childhood Version). *Attachment and Human Development*, 2, 256–270.
- Bowlby, J. (1973). *Attachment and loss. Volume 2: Separation: Anxiety and anger*. New York: Basic Books.
- Bowlby, J. (1984). *Attachment and loss. Volume 1: Attachment (Revised ed.)*. London: Penguin Books.
- Bradley, S.J., Jadaa, D.A., Brody, J., Landy, S., Tallett, S.E., Watson, W., et al. (2003). Brief psychoeducational parenting program: An evaluation and 1-year follow-up. *Journal of the American Academy of Child and Adolescent Psychiatry*, 42, 1171–1178.
- Buss, A.H., & Plomin, R. (1984). *Temperament: Early developing personality traits*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Campbell, S.B., Shaw, D.S., & Gilliom, M. (2000). Early externalizing behavior problems: Toddlers and preschoolers at risk for later maladjustment. *Development and Psychopathology*, 12, 467–488.
- Caspi, A., Henry, B., McGee, R.O., Moffit, T.E., & Silva, P.A. (1995). Temperamental origins of child and adolescent behavior problems: From age three to fifteen. *Child Development*, 66, 55–68.
- Cassibba, R., Van IJzendoorn, M.H., Coppola, G., Bruno, S., Costantini, A., Gatto, S., et al. (in press). Supporting families with at risk, sick children: An Italian study. In F. Juffer, M.J. Bakermans-Kranenburg, & M.H. van IJzendoorn (Eds.), *Promoting positive parenting: An attachment-based intervention*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Caughy, M.O., Miller, T.L., Genevro, J.L., Huang, K.Y., & Nautiyal, C. (2003). The effects of Healthy Steps on discipline strategies of parents of young children. *Journal of Applied Developmental Psychology*, 24, 517–534.



- Crowell, J.A., O'Connor, E., Wollmers, G., Sprafkin, J., & Rao, U. (1991). Mothers' conceptualizations of parent-child relationships: Relation to mother-child interaction and child behavior problems. *Development and Psychopathology*, 3, 431–444.
- Deater-Deckard, K. (2000). Parenting and behavioral adjustment in early childhood: A quantitative genetic approach to studying family processes. *Child Development*, 71, 468–484.
- DeGarmo, D.S., Patterson, G.R., & Forgatch, M.S. (2004). How do outcomes in a specified parent training intervention maintain or wane over time? *Prevention Science*, 5, 73–89.
- De Wolff, M.S., & Van IJzendoorn, M.H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development*, 68, 571–591.
- Elicker, J., Georgescu, O., & Bartsch, E. (in press). Increasing the sensitivity of infant-toddler child care providers: Applying the VIPP approach. In F. Juffer, M.J. Bakermans-Kranenburg, & M.H. van IJzendoorn (Eds.), *Promoting positive parenting: An attachment-based intervention*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Erickson, M.F., Sroufe, L.A., & Egeland, B. (1985). The relationship between quality of attachment and behavior problems in preschool in a high-risk sample. *Monographs of the Society for Research in Child Development*, 50, 147–166.
- Feinfeld, K.A., & Baker, B.L. (2004). Empirical support for a treatment program for families of young children with externalizing problems. *Journal of Clinical Child and Adolescent Psychology*, 33, 182–195.
- George, C., Kaplan, N., & Main, M. (1985). Adult Attachment Interview. Unpublished manuscript, University of California, Berkeley.
- Goldberg, D.P., & Hillier, V.F. (1979). A scaled version of the GHQ. *Psychological Medicine*, 9, 805–816.
- Goldsmith, H.H., & Alansky, J.A. (1987). Maternal and infant temperamental predictors of attachment: A meta-analytic review. *Journal of Consulting and Clinical Psychology*, 55, 805–816.
- Greenberg, M.T. (1999). Attachment and psychopathology in childhood. In J. Cassidy, & P.R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 469–496). New York: The Guilford Press.
- Greenberg, M.T., Speltz, M.L., & DeKlyen, M. (1993). The role of attachment in early development of disruptive behavior problems. *Development and Psychopathology*, 5, 191–213.
- Guerin, D.W., Gottfried, A.W., & Thomas, C.W. (1997). Difficult temperament and behaviour problems: A longitudinal study from 1.5 to 12 years. *International Journal of Behavioral Development*, 21, 71–90.
- Hampel, F.R., Ronchetti, E.M., Rousseeuw, P.J., & Stahel, W.A. (1986). *Robust statistics: The approach based on influence functions*. New York: Wiley.
- Hansburg, H.G. (1980). *Adolescent separation anxiety: A method for the study of adolescent separation problems*. New York: Krieger.
- Hesse, E. (1999). The Adult Attachment Interview: Historical and current perspectives. In J. Cassidy & P.R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 395–433). New York: The Guilford Press.
- Holden, G.W., Thompson, E.E., Zambarano, R.J., & Marshall, L.A. (1997). Child effects as a source of change in maternal attitudes toward corporal punishment. *Journal of Social and Personal Relationships*, 14, 481–490.
- Howes, C., Matheson, C.C., & Hamilton, C.E. (1994). Maternal, teacher, and child care history correlates of children's relationships with peers. *Child Development*, 65, 264–273.

- Howes, C., & Smith, E.W. (1995). Children and their child care caregivers: Profiles of relationships. *Child Development*, 4, 44–61.
- Juffer, F., Bakermans-Kranenburg, M.J., & Van IJzendoorn, M.H. (2005). The importance of parenting in the development of disorganized attachment: Evidence from a preventive intervention study in adoptive families. *Journal of Child Psychology and Psychiatry*, 46, 263–274.
- Juffer, F., Bakermans-Kranenburg, M.J., & Van IJzendoorn, M.H. (in press). Introduction and outline of the VIPP and VIPP-R program. In F. Juffer, M.J. Bakermans-Kranenburg, & M.H. van IJzendoorn (Eds.), *Promoting positive parenting: An attachment-based intervention*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Juffer, F., Hoksbergen, R.A.C., Riksen-Walraven, J.M.A., & Kohnstamm, G.A. (1997). Early intervention in adoptive families: Supporting maternal sensitive responsiveness, infant-mother attachment and infant competence. *Journal of Child Psychology and Psychiatry*, 38, 1039–1050.
- Juffer, F., Van IJzendoorn, M.H., & Bakermans-Kranenburg, M.J. (1997). Intervention in transmission of insecure attachment: A case study. *Psychological Reports*, 80, 531–543.
- Kerr, D.C.R., Lopez, N.L., Olson, S.L., & Sameroff, A.J. (2004). Parental discipline and externalizing behavior problems in early childhood: The roles of moral regulation and child gender. *Journal of Abnormal Child Psychology*, 32, 369–383.
- Klein Velderman, M., Bakermans-Kranenburg, M.J., Juffer, F., & Van IJzendoorn, M.H. (in press). Effects of attachment-based interventions on maternal sensitivity and infant attachment: Differential susceptibility of highly reactive infants. *Journal of Family Psychology*.
- Klein Velderman, M., Juffer, F., Bakermans-Kranenburg, M.J., & Van IJzendoorn, M.H. (in press). First impressions count: Process evaluation and case study of VIPP and VIPP-R. In F. Juffer, M.J. Bakermans-Kranenburg, & M.H. van IJzendoorn (Eds.), *Promoting positive parenting: An attachment-based intervention*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Koot, H.M. (1993). Problem behavior in Dutch preschoolers. Unpublished doctoral dissertation, Erasmus University Rotterdam, Rotterdam, The Netherlands.
- Koot, H.M., Van den Oord, E.J.C.G., Verhulst, F.C., & Boomsma, D.I. (1997). Behavioral and emotional problems in young preschoolers: Cross-cultural testing of the validity of the Child Behavior Checklist/2-3. *Journal of Abnormal Child Psychology*, 25, 183–196.
- Leadbeater, B.J., & Bishop, S.J. (1994). Predictors of behavior problems in preschool children of inner-city Afro-American and Puerto Rican adolescent mothers. *Child Development*, 65, 638–648.
- Lewis, M., Feiring, C., McGuffog, C., & Jaskir, J. (1984). Predicting psychopathology in six-year-olds from early social relations. *Child Development*, 55, 123–136.
- Lewis, T.J., Powers, L.J., Kelk, M.J., & Newcomer, L.L. (2002). Reducing problem behavior on the playground: An investigation of the application of schoolwide positive behavior supports. *Psychology in the Schools*, 39, 181–190.
- Lyons-Ruth, K., Alpern, L., & Repacholi, B. (1993). Disorganized infant attachment classification and maternal psychosocial problems as predictors of hostile-aggressive behavior in the preschool classroom. *Child Development*, 64, 572–585.
- Main, M. (1995). Recent studies in attachment: Overview, with selected implications for clinical work. In S. Goldberg, R. Muir, & J. Kerr (Eds.), *Attachment theory: Social, developmental, and clinical perspectives* (pp. 407–474). New York: Analytic Press.
- Main, M., & Solomon, J. (1990). Procedures for identifying infants as disorganized/disoriented during the Ainsworth Strange Situation. In M.T. Greenberg, D. Cicchetti, & E.M. Cummings (Eds.), *Attachment in the preschool years* (pp. 121–160). Chicago: University of Chicago Press.

- Moffitt, T.E. (1990). Juvenile delinquency and attention deficit disorder: Boys' developmental trajectories from age 3 to age 15. *Child Development*, 61, 893–910.
- Neary, E.M., & Eyberg, S.M. (2002). Management of disruptive behavior in young children. *Infants and Young Children*, 14, 53–67.
- Olds, D., Henderson, C.R., Jr., Cole, R., Eckenrode, J., Kitzman, H., Luckey, D., et al. (1998). Long-term effects of nurse home visitation on children's criminal and antisocial behavior: 15-year follow-up of a randomized controlled trial. *Journal of the American Medical Association*, 280, 1238–1244.
- Ormel, J. & Giel, R. (1984). AGV-28 (vertaalde en bewerkte GHQ-28) (translated and adapted GHQ-28). Unpublished manuscript, Afdeling Sociale Psychiatrie, Rijksuniversiteit Groningen, The Netherlands.
- Patterson, G.R. (1971). *Families: Applications of social learning to family life*. Champaign, IL: Research Press.
- Patterson, G.R. (1976). The aggressive child: Victim and architect of a coercive system. In E.J. Mash, L.A. Hamerlynck, & L.C. Handy (Eds.), *Behavior modification and families* (pp. 267–316). New York: Brunner/Mazel.
- Patterson, G.R. (1982). *Coercive family process*. Eugene, OR: Castilia.
- Rende, R.D. (1993). Longitudinal relations between temperament traits and behavioral syndroms in middle childhood. *Journal of the American Academy of Child and Adolescent Psychiatry*, 32, 287–290.
- Richman, N. (1977). Behavior problems in preschool children: Family and social factors. *British Journal of Psychiatry*, 131, 523–527.
- Richman, N., & Graham, P.J. (1971). A behavior screening questionnaire for use with three-year-old children, preliminary findings. *Journal of Child Psychology and Psychiatry*, 12, 5–33.
- Richters, J.E., Waters, E., & Vaughn, B.E. (1988). Empirical classification of infant-mother relationships from interactive behavior and crying during reunion. *Child Development*, 59, 512–522.
- Rothbart, M.K. (1981). Measurement of temperament in infancy. *Child Development*, 52, 569–578.
- Rothbart, M.K. (1986). Longitudinal observation of infant temperament. *Developmental Psychology*, 22, 356–365.
- Rothbaum, F., Rosen, K.S., Pott, M., & Beatty, M. (1995). Early parent-child relationships and later problem behavior: A longitudinal study. *Merrill-Palmer Quarterly*, 41, 133–151.
- Rothbaum, F., & Weisz, J.R. (1994). Parental caregiving and child externalizing behavior in nonclinical samples: A meta-analysis. *Psychological Bulletin*, 116, 55–74.
- Schrag, J.A., & Henderson, K. (1996). *School-based intervention assistance teams and their impact on special education: Final report (ED 392 196)*. Alexandria, VA: National Association of State Directors of Special Education.
- Schwartz, C.E., Snidman, N., & Kagan, J. (1996). Early childhood temperament as a determinant of externalizing behavior in adolescence. *Development and Psychopathology*, 8, 527–537.
- Scott, D.A., & Hill, J. (2001). Stability and change in parental beliefs in first-time mothers from the pre- to postnatal period. *Journal of Reproductive and Infant Psychology*, 19, 105–119.
- Spoth, R., Gyll, M., Chao, W., & Molgaard, V. (2003). Exploratory study of preventive intervention with general population African American families. *Journal of Early Adolescence*, 23, 435–468.
- Stams, G.J. J. M., Juffer, F., & Van IJzendoorn, M.H. (2002). Maternal sensitivity, infant attachment, and temperament predict adjustment in middle adulthood: The case of adopted children and their

- biologically unrelated parents. *Developmental Psychology*, 38, 806–821.
- Suess, G.J., Grossmann, K.E., & Sroufe, L.A. (1992). Effects of infant attachment to mother and father on quality of adaptation in preschool: From dyadic to individual organization of self. *International Journal of Behavioral Development*, 15, 43–65.
- Tabachnick, B.G., & Fidell, L.S. (2001). *Using multivariate statistics*. Boston: Allyn and Bacon.
- Thompson, R.A. (1999). Early attachment and later development. In J. Cassidy & P.R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 265–286). New York: The Guilford Press.
- Van den Boom, D.C. (1988). Neonatal irritability and the development of attachment: Observation and intervention. Unpublished doctoral dissertation, Leiden University, Leiden, The Netherlands.
- Van IJzendoorn, M.H. (1995). Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin*, 117, 387–403.
- Van IJzendoorn, M.H., & Kroonenberg, P.M. (1990). Cross-cultural consistency of coding in the Strange Situation. *Infant Behavior and Development*, 13, 469–485.
- Viswanath, K., Kahn, E., Finnegan, J.R., Jr., Hertog, J., & Potter, J.D. (1993). Motivation and the ‘knowledge gap’: Effects of a campaign to reduce diet-related cancer risk. *Communication Research*, 20, 546–563.
- Waters, E. (1987). Attachment Behavior Q-Set. (Revision 3.0). Unpublished manuscript, State University of New York, Stony Brook.
- Waters, E. (1995). The Attachment Q-Set. *Monographs of the Society for Research in Child Development*, 60, 247–254.
- Waters, E., & Deane, K.E. (1985). Defining and assessing individual differences in attachment relationships: Q-methodology and the organization of behavior in infancy and early childhood. *Monographs of the Society for Research in Child Development*, 50, 41–65.
- Weinfeld, N.S., Whaley, G.J.L., & Egeland, B. (2004). Continuity, discontinuity, and coherence in attachment from infancy to late adolescence: Sequelae of organization and disorganization. *Attachment and Human Development*, 6, 73–97.
- Weiss, B., Dodge, K.A., Bates, J., & Pettit, G.S. (1992). Some consequences of early harsh discipline: Child aggression and a maladaptive social information processing style. *Child Development*, 63, 1321–1335.
- Wolke, D. (1993). The treatment of problem crying behaviour. In I. St. James-Roberts, G. Harris, & D. Messer (Eds.), *Infant crying, feeding and sleeping: Development, problems and treatments* (pp. 44–79). New York: Harvester Wheatsheaf.
- Woolley, H., Stein, A., & Hertzmann, L. (in press). The use of video-feedback intervention to promote positive parenting (VIPP) with English mothers with post natal eating disorders and their infants. In F. Juffer, M.J. Bakermans-Kranenburg, & M.H. van IJzendoorn (Eds.), *Promoting positive parenting: An attachment-based intervention*. Hillsdale, NJ: Lawrence Erlbaum Associates.