



Universiteit  
Leiden  
The Netherlands

## **The importance of sensitive parenting: A longitudinal adoption study on maternal sensitivity, problem behavior, and cortisol secretion**

Voort, A. van der

### **Citation**

Voort, A. van der. (2014, November 27). *The importance of sensitive parenting: A longitudinal adoption study on maternal sensitivity, problem behavior, and cortisol secretion*. Retrieved from <https://hdl.handle.net/1887/29874>

Version: Corrected Publisher's Version

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/29874>

**Note:** To cite this publication please use the final published version (if applicable).

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/29874> holds various files of this Leiden University dissertation.

**Author:** Voort, Anja van der

**Title:** The importance of sensitive parenting : a longitudinal adoption study on maternal sensitivity, problem behavior, and cortisol secretion

**Issue Date:** 2014-11-27

# 1

## **General introduction**

**Sensitive parenting is the foundation for secure attachment relationships and positive social-emotional development of children**

Anja van der Voort  
Femmie Juffer  
Marian J. Bakermans-Kranenburg

*Journal of Children's Services, 9(2), 165-176, 2014*

## Abstract

1

The quality of the attachment relationship between children and their parents is important for children's social-emotional development and can have profound consequences for adaptational processes in later life. The aim of this article is to give an overview of our current knowledge about sensitive parenting and its role in affecting infants' attachment security, and developmental outcomes of attachment. We end with a brief discussion of evidence-based interventions aimed at improving sensitive parenting and the attachment relationship between children and parents. We refer to meta-analyses as quantitative reviews in which all available studies conducted on a particular subject (such as maternal sensitivity and attachment) are included. We conclude that numerous empirical studies and meta-analyses have confirmed the importance of sensitive parenting and attachment security for children's social-emotional development, providing a robust evidence base for translation, implementation, and intervention in practice.

*Keywords:* Adoption, Attachment, Intervention, Behaviour problems, Sensitive parenting, Social competence

## 1. What is attachment?

In the first volume of his well-known trilogy *Attachment and Loss* Bowlby (1969) submitted that from an evolutionary perspective children and their parents form an attachment relationship that optimizes chances of child survival. It is especially salient when children face situations that cause fear or distress. Parents act as a safe haven and make it easier for children to regulate their emotions when feeling anxious or distressed (Bowlby, 1969). Most children are securely attached to their parent(s), and experience their parent as a secure base from which they can explore the world (in this article parents can be mothers, fathers, or other caregivers). However, not all children are securely attached and this may have (long-term) implications for their development.

### 1.1 Measuring attachment

The quality of the attachment relationship can be assessed with the Strange Situation Procedure (SSP; Ainsworth, Blehar, Waters, & Wall, 1978). In the SSP parent and child are observed in a standardized procedure that takes place in an unfamiliar playroom. The parent is asked to leave the child twice and to return within a brief period of time. The behaviour of the child upon the parent's return informs us about the quality of the attachment relationship. The labeling of the classifications as secure and insecure was based on extensive naturalistic home observations of mother-child interactions; associations were found between maternal sensitivity independently assessed at home and child behaviour in the SSP (Ainsworth et al., 1978). When reunited with their parent, secure infants (B) actively seek interaction, and feel comforted by the contact with their parent. They soon return to exploration and play. Avoidant infants (A) do not show much response when their parent leaves. On reunion these infants avoid their parent and continue to play. Ambivalent infants (C) show negative emotions when their parent leaves, and a combination of contact-seeking and resistant behaviour on reunion. They are difficult to comfort following stress (Ainsworth et al., 1978).

Main and Solomon (1986) noted that a minority of children could not easily be classified with the A/B/C classifications. These children did not show an organized, coherent pattern during the SSP, but displayed (short moments of) strikingly deviant behaviours. Children who display these behaviours are coded as disorganised (D; Main & Solomon, 1990). Because disorganised behaviour typically occurs in the presence of an underlying insecure or secure strategy, the D classification is always assigned in addition to a secondary best-fitting A, B, or C classification (Main & Solomon, 1990). In normative populations the attachment distribution is 62% B, 15% A and 9% C, and 15% D (see the meta-analysis by Van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). In high risk groups the distribution may differ substantially from the normative distribution. For example, the percentage of the disorganised category may be as high as 51% for maltreated children (derived from Cyr, Euser, Bakermans-Kranenburg, & Van

IJzendoorn, 2010; see Van IJzendoorn et al., 2011), 25% for children from lower class families (Van IJzendoorn et al., 1999) and 43% for children from mothers that abuse alcohol or drugs (Van IJzendoorn et al., 1999).

The SSP was originally developed for 1-year-old children (Ainsworth et al., 1978) and modified SSPs were subsequently used for toddlers and preschoolers (Cassidy & Marvin, 1992). It also has been adapted for older children such as 6-year-olds (Main & Cassidy, 1988).

The Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985) is the gold standard to assess attachment representations of (young) adults. The AAI is a semi-structured interview that lasts about one hour and assesses an individual's current state of mind with respect to attachment. Respondents are asked to talk about and reflect upon their childhood and their experiences of trauma and loss. The AAI does not assess the quality of attachment to a specific person, but rather the ability to reflect upon attachment-related experiences in a coherent way (Hesse, 2008). Based on the coding of this extensive qualitative interview, adults are classified as autonomous, dismissing, preoccupied or unresolved. These four AAI classifications reflect a representational parallel to, and are associated with respectively infant secure, avoidant, ambivalent, and disorganised attachment (Hesse, 2008).

## 1.2 Attachment across cultures

Children become attached to their primary caregivers in diverse cultures and contexts. Although specific behaviours indicative of proximity and contact seeking may be different, e.g., more physical contact in one culture compared to more distal interaction in another culture, attachment relationships seem to have universal features. First, professionals and caregivers across the world appear to have a preference for the secure child as defined by attachment theory: descriptions of the optimally secure child are very similar across cultures (Posada et al., 1995; Posada et al., 2013). Second, secure patterns of attachment seem to develop in the majority of children across cultural contexts. Finally, in many contexts maternal sensitivity has been shown to promote secure attachment and increase the likelihood for better child developmental outcomes (Ainsworth et al., 1978; Mesman, Van IJzendoorn, & Bakermans-Kranenburg, 2012; Posada et al., 2013; Van IJzendoorn & Sagi-Schwartz, 2008).

## 2. The role of sensitive parenting

Attachment does not denote a fixed trait of a child. The quality of a child's attachment is affected by the way the parent and child relate to each other and specifically the way the parent relates to the child. Changes in parenting behaviour may induce changes in the quality of the attachment relationship.

## 2.1 Sensitive parenting

Mary Ainsworth has shown that sensitive parenting is crucial for developing secure attachment relationships. Sensitive parents are able to pick up signals of the child, to interpret them correctly and to act on them promptly and adequately (Ainsworth et al., 1978). In a series of meta-analyses it was confirmed that maternal sensitivity is an important predictor of infant attachment security. A significant, moderate effect size of  $r = .24$  was found (De Wolff & Van IJzendoorn, 1997). The causal role of sensitivity for the development of secure attachment relationships was substantiated in another meta-analysis: Interventions that were more effective in promoting sensitivity also promoted more attachment security (Bakermans-Kranenburg, Van IJzendoorn, & Juffer, 2003). Sensitivity can be measured with Ainsworth et al.'s 9-point sensitivity rating scale (Ainsworth, Bell, & Stayton, 1974) and with other comparable, but not necessarily equivalent instruments (for an overview see Mesman & Emmen, 2013). Apart from maternal sensitivity, several other parenting behaviours have been associated with attachment security. For instance, it has been found that parents need to be able to acknowledge the child's mental state and foresee his or her psychological needs. This ability of reflective functioning has shown to be predictive of secure attachment relationships (Fonagy & Target, 1997).

## 2.2 Frightening and frightened parenting behaviour

Main and Hesse (1990) hypothesized that frightened and frightening maternal behaviour might contribute to the disorganised behaviours shown by infants in the SSP. Confirmatory evidence was later reported (e.g., Schuengel, Bakermans-Kranenburg, & Van IJzendoorn, 1999). Frightened en frightening parenting behaviour may occur when parents have suffered unresolved loss or traumatic experiences. The upbringing of their child may bring back negative memories and associations, and parents may unconsciously dissociate from these feelings (Hesse & Main, 2006). Examples of dissociative parenting behaviour are altered facial expressions and attack postures. Children who are confronted with frightening or frightened parenting behaviour face an unresolvable dilemma referred to as 'fright without solution': they are afraid of the caregiver who is also their safe haven (Hesse & Main, 2006; Main & Hesse, 1990).

## 2.3 Intergenerational transmission

The parents' state of mind with respect to attachment and their ability to discuss their childhood experiences and loss and trauma in a reflective, open way is an important predictor of the attachment relationship with their own offspring. In a meta-analysis (Madigan, Bakermans-Kranenburg, Van IJzendoorn, Moran, Pederson, & Benoit, 2006) the associations between unresolved representations of attachment of parents, anomalous parenting behaviours (such as frightening parenting behaviour) and disorganised attachment were studied. Unresolved loss of the parent was moderately

associated with children's disorganised attachment ( $r = .30$ ) and this association was partly mediated by anomalous parenting ( $r = .09$ ). These outcomes were comparable to results found for attachment security: the association between parent's attachment representation and infant attachment security ( $r = .47$ ) was suggested to be partly mediated by parental responsiveness ( $r = .11$ ; Van IJzendoorn, 1995). In both meta-analyses the relation between attachment representation of the parent and attachment security of the child was not completely explained by parenting behaviours. Clearly, a 'transmission gap' (Van IJzendoorn, 1995, p. 398) was found that needs further explanation.

Could it be that genetic factors play a role in the intergenerational transmission of attachment as is the case with for example temperament? Studies that focused on main genetic effects do not support this suggestion. Bokhorst, Bakermans-Kranenburg, Fonagy, and Schuengel (2003) found a negligible role of genetics for attachment security and disorganisation. Luijk and colleagues (2011) included two large cohorts and found very few evidence for gene-effects on attachment security or disorganisation. Apart from main effects, gene-environment interactions might play a role, for example in terms of differential susceptibility: susceptible children may benefit more from sensitive parenting, but also suffer more from insensitive or frightening parenting behaviour than less susceptible children (Bakermans-Kranenburg & Van IJzendoorn, 2007; Belsky, Bakermans-Kranenburg, & Van IJzendoorn, 2007). Studies on gene-environment interaction effects have not revealed consistent results. Some studies have shown gene-environment interaction effects involving parental behaviour (e.g., Barry, Kochanska, & Philibert, 2008; Spangler, Johann, Ronai, & Zimmermann, 2009) or attachment representation (Van IJzendoorn & Bakermans-Kranenburg, 2006). Luijk and colleagues (2011) however found no consistent evidence for any interaction effect between six candidate genes and observed maternal sensitivity in their study on two large cohorts. More studies are needed that combine large samples with carefully measured attachment and environmental factors together with genes or genetic pathways. Perhaps that will contribute to bridging the transmission gap between parental attachment representation and infant-parent attachment.

### 3. Attachment of children in deprived situations

Children who are maltreated or live in an institution are mostly deprived of opportunities to form a secure attachment relationship with a stable sensitive caregiver. One might wonder whether these children get a chance to become securely attached at all. Adopted children form a special group because they often experienced deprivation but after adoption they may recover from their adverse experiences.

### 3.1 Maltreatment

It is almost impossible for children not to form an attachment relationship with their caregiver. Even children who are abused by their parents become attached, although this attachment often is not secure and organized (Cyr et al., 2010). In a series of meta-analyses that included 456 maltreated children in 10 different samples, maltreatment was found to be a very large risk for the development of insecure (Cohen's  $d = 2.10$ ) and disorganised (Cohen's  $d = 2.19$ ) attachment patterns (Cyr et al., 2010). A situation of maltreatment clearly creates 'fright without solution' for a child (Hesse & Main, 2006; Main & Hesse, 1990; see section on frightening and frightened parenting behaviour), which is detrimental to the development of secure, organized attachment relationships.

### 3.2 Institutional care

Institutional care is often characterized by large group sizes with very few caregivers, a constant change of these caregivers, and a lack of sensitive caregiving creating structural neglect (Van IJzendoorn et al., 2011; but see St. Petersburg-USA Orphanage Research Team, 2008 as an illustration of how institutional care can be improved). Institutionalized children have experienced separation from their birthparent(s) and usually are deprived of opportunities to form stable and continuous attachment relationships with one or a few important caregiver(s). Several studies have indicated that institutionalized children are at high risk for developing insecure and disorganised attachment relationships (e.g., Zeanah, Smyke, Koga, & Carlson, 2005). In 6 studies, only 17 % of institutionalized children were classified as secure while 73% were classified as disorganised (compared to 62% and 15% in the normative population, respectively; Van IJzendoorn et al., 2011).

### 3.3 Adoption

Many adopted children have experienced neglect and deprivation in their birth family or in institutional care. After adoption, these children are taken care of by new parents and get chances for recovery (see for a pioneering study, Yarrow, 1964). Van den Dries, Juffer, Van IJzendoorn, and Bakermans-Kranenburg (2009) analyzed the attachment of 772 adopted children from 17 different studies. Compared to the normative distribution of attachment (62% B and 15% D), adopted children showed fewer secure attachments (47% B) and more disorganised attachments (31% D). Children who were adopted after their first birthday showed more insecure attachment relationships than their non-adopted peers (Cohen's  $d = 0.80$ ), whereas the children adopted before their first birthday were as securely attached as non-adopted children. Regardless of their age at adoption, adopted children were at risk for developing disorganised attachment (Cohen's  $d = 0.36$ ). Compared to the normative population, they were twice as likely to be disorganised (31% vs.15%). It is however important to keep in mind that this percentage is much lower than the 73% disorganised attachments found in

institutionalized children (Van IJzendoorn et al., 2011). Compared to institutionalized children, adopted children seem to show a remarkable catch-up in attachment security which confirms the protective role of adoption and the ability of children to profit from corrective attachment experiences (Van IJzendoorn & Juffer, 2006).

## 4. Developmental outcomes of attachment

The quality of the attachment relationship between a parent and a child can have profound consequences for children's development. Insecure and disorganised children may bring their negative attachment experiences into their new social interactions and therefore may show more adaptational problems in the social and behavioural domains.

### 4.1 Social competence

According to attachment theory children develop so called working models that constitute relationship expectations based on previous experiences. These models will guide their future social interactions (Bowlby, 1973; Bretherton, 1999; Bretherton & Munholland, 2008). Children who are securely attached develop positive working models based on their experiences with sensitive caregivers. They encounter new social situations with a basic sense of trust. In contrast, children with insecure attachment relationships tend to develop a model of the self as incompetent (Bowlby, 1973) and their experiences with an insensitive caregiver may influence their beliefs and expectations regarding future relationships (Bretherton, 1999; Bretherton & Munholland, 2008; Thompson, 2008). In a meta-analysis on 80 samples ( $N = 4,441$ ) attachment security robustly predicted children's social competence with peers (Cohen's  $d = 0.39$ ). Results on the specific attachment classifications revealed that avoidance, resistance, and disorganisation all predicted less social peer competence ( $d = 0.17$ ;  $d = 0.29$ ;  $d = 0.25$ , respectively; Groh et al., 2014).

### 4.2 Behaviour problems

Insensitive parenting and insecure and disorganised attachments are also risk factors for developing problem behaviours. Insecurely attached children are less able to regulate their emotions which puts them at risk of developing feelings of fear and anger (Thompson, 2008). Attachment insecurity and attachment disorganisation were both shown to be predictors of externalising problems as reported by mothers in a series of meta-analyses on 69 studies ( $N = 5,947$ ; Cohen's  $d = 0.31$  and  $d = 0.34$ , respectively; Fearon, Bakermans-Kranenburg, Van IJzendoorn, Lapsley, & Roisman, 2010). These findings support the notion that insecurity in general is related to externalising behaviour, while they partially confirm earlier findings that emphasized the role of disorganised attachment in the development of externalising problems and

later psychopathology (for a review see Green & Goldwyn, 2002; for a meta-analysis see Van IJzendoorn et al., 1999).

A series of meta-analyses on internalising behaviour problems (42 studies,  $N = 4,614$ ) revealed that attachment insecurity and specifically avoidance were related to internalising problems (Cohen's  $d = 0.15$  and  $d = 0.17$ , respectively; Groh, Roisman, Van IJzendoorn, Bakermans-Kranenburg, & Fearon, 2012). It should be noted that internalising problem behaviour is more difficult to identify for both parents and teachers than externalising problem behaviour. On the whole, attachment insecurity and attachment disorganisation are linked to behaviour problems, but more clearly to the development of externalising problems than to internalising problems. For a more complete understanding of these results we need more knowledge about underlying mechanisms and possible causal chains (Fearon et al., 2010).

### 4.3 Social and behavioural outcomes in an adoption sample

In many studies the associations between parental sensitivity, attachment security, and child behaviour may be confounded with genetic make-up. Studying adoption samples (with no genetic links between adoptive parents and adopted children) enables us to disentangle environmental from genetic effects. In the Leiden Longitudinal Adoption Study (LLAS) 160 early-adopted children, 75 boys and 85 girls, were followed from infancy to adolescence. The children were adopted from Sri-Lanka ( $n = 86$ ), South Korea ( $n = 49$ ), and Colombia ( $n = 25$ ). All children were adopted at a very young age (mean age at adoption 11 weeks) and taken care of by Caucasian adoptive parents. Maternal sensitivity was measured longitudinally in infancy, middle childhood, and adolescence. The Erickson scales (Erickson, Sroufe, & Egeland, 1985) were used and adapted to be age appropriate, e.g., it was taken into account that the interaction between mother and child becomes more verbal and less physical when children get older. Over time, maternal sensitivity was moderately stable, with no stability from infancy to middle childhood.

It was shown that a secure attachment relationship with the mother and more maternal sensitivity (in infancy, middle childhood, and adolescence) were both important predictors for beneficial outcomes in the domain of social development in middle childhood and adolescence (Jaffari-Bimmel, Juffer, Van IJzendoorn, Bakermans-Kranenburg, & Mooijaart, 2006; Stams, Juffer, & Van IJzendoorn, 2002). Also, the association between parental sensitivity and children's problem behaviour was (at least partly) confirmed. Maternal sensitivity in adolescence predicted less delinquent behaviour (but not aggressive behaviour) in adolescence even when controlling for temperamental predispositions (Van der Voort, Linting, Juffer, Bakermans-Kranenburg, & Van IJzendoorn 2013). Maternal sensitivity in infancy and middle childhood predicted less inhibited behaviour of adopted adolescents and indirectly predicted less internalising problems (Van der Voort, Linting, Juffer, Bakermans-Kranenburg,

Schoenmaker, & Van IJzendoorn 2014). Finally, it was shown that sensitivity plays an important role in the continuity of attachment when genetic confounding is controlled for. In the LLAS, adopted children were more likely to show a stable secure attachment relationship when their adoptive mothers were sensitive in early childhood as well as in adolescence. When mothers were less sensitive in early childhood, but more sensitive in adolescence, adopted children were more likely to change from an insecure to a secure attachment relationship (Beijersbergen, Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2012). Together, these findings suggest that even in genetically unrelated parent-child dyads parental sensitivity may protect against the development of children's problem behaviour and that it is important to take into account early as well as concurrent factors (Lamb, Thompson, Gardner, Charnov, & Connell, 1985).

#### **4.4 Neurobiological correlates**

In the past few decades more studies have focused on the neurobiological correlates of early attachment. Of interest are studies on the Hypothalamic-Pituitary-Adrenal axis (HPA axis); the secretion of cortisol is linked to emotional and stress regulation. Cortisol follows a diurnal pattern with high levels in the morning, a peak 30-45 minutes after awakening, and decreasing levels during the day. In situations of acute stress cortisol levels may increase as an adaptation to the stressor (Bruce, Gunnar, Pearse, & Fisher, 2013). In general, securely and organized attached children seem to show smaller increases in cortisol levels when confronted with a challenge such as the Strange Situation Procedure (Luijk et al., 2010; Roisman et al., 2009; Van IJzendoorn et al., 1999). When studying daily cortisol curves, Luijk and colleagues (2010) found a flattened diurnal pattern of cortisol secretion in 14-month olds with a disorganised attachment compared to non-disorganised infants, which is consistent with the flattening curves found in institutionalized children (Gunnar & Vasquez, 2001). Interpersonal stressors in early life may result in hypocortisolism (down regulation of the system resulting in lower basal cortisol levels; Heim, Ehlert, & Hellhammer, 2000) in later life. Roisman and colleagues (2009) for example found that adolescents who had experienced maternal insensitive parenting in the first three years of life, had lower awakening cortisol levels than adolescents with more sensitive mothers. However, studies on cortisol do not reveal a simple process of hormonal adaptation but instead reveal a complex system. Establishing norms to specify (a) typical diurnal curves, and making cortisol assessments between studies more comparable, may clarify part of this complexity (Bruce et al., 2013).

## 5. Promoting secure attachment relationships

Promoting secure attachment relationships can have beneficial (long-term) outcomes for children. For instance, placement in a nurturing foster family appears to enhance the quality of attachment of formerly institutionalized children (Smyke, Zeanah, Fox, Nelson, & Guthrie, 2010: Bucharest Early Intervention Project). Studies have also shown that involving parents in attachment-based interventions can promote attachment security in children at risk, such as maltreated children (Bernard et al., 2012; Moss et al., 2011).

In two meta-analytical studies, the effects of attachment-based interventions were analyzed (Bakermans-Kranenburg et al., 2003; Bakermans-Kranenburg, Van IJzendoorn, Juffer, 2005). The first series of meta-analyses focused on interventions that aimed at promoting (observed) sensitivity and/or attachment security (70 studies,  $N = 7,636$ ). Overall, randomized interventions were moderately successful in enhancing sensitivity (Cohen's  $d = 0.33$ ) and attachment security (Cohen's  $d = 0.20$ ). In particular short-term interventions that started after the child's age of 6 months and focused on maternal sensitivity, were successful in promoting sensitivity as well as attachment security (Bakermans-Kranenburg et al., 2003). The second series of meta-analyses included 15 studies that aimed at reducing attachment disorganisation. Interventions that started after 6 months of age and focused on maternal sensitivity succeeded in reducing attachment disorganisation (Cohen's  $d = 0.23$  and  $d = 0.26$ , respectively; Bakermans-Kranenburg et al., 2005).

The Video-feedback Intervention to promote Positive Parenting and Sensitive Discipline (VIPP-SD; Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2008) is an intervention that meets the empirical criteria found in the meta-analyses. This brief, interaction-focused intervention aims at promoting positive parent-child relationships by focusing on sensitive parenting and sensitive discipline. Sensitive discipline refers to non-coercive responses to challenging child behaviours, such as explaining the consequences of the child's behaviour for others. Mother and child are videotaped in their home setting and afterwards episodes of the video are discussed with the mother. The intervener reinforces sensitive behaviours of the mother in order to increase the likelihood that this behaviour will be used more often (Juffer et al., 2008). The VIPP-SD has been used successfully in families with adopted children (Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2005), mothers with an insecure attachment representation (Klein-Velderman, Bakermans-Kranenburg, Juffer, & Van IJzendoorn, 2006), insensitive mothers (Kalinauskiene et al., 2009), and families with children with externalising problems (Van Zeijl et al., 2006). It also has been proven to be effective in family child-care (Groeneveld, Vermeer, Van IJzendoorn, & Linting, 2011), and further studies of this intervention in various populations are in progress (for an overview see Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2014).

In sum, several interventions have shown that promoting sensitive parenting and parent-child relationships is possible. Brief, interaction-focused programs such as the VIPP-SD program are most promising.

## 6. Conclusions

Empirical studies and meta-analyses have confirmed the role of secure attachments for children's development and shown that parental sensitivity is an important predictor of secure attachment relationships. Insecure and disorganised children appear to be at risk for adaptational problems in the social and behavioural domains (e.g., externalising behaviour problems). When parenting behaviour is not optimal the development of a secure relationship is at risk. Parents' sensitive behaviour is partly determined by their own attachment representations: if parents have not come to terms with their own attachment history it is not impossible, but more difficult for them to be sensitive caregivers and this may affect the attachment relationship with their own child. In situations of adversity such as maltreatment or institutional care, children are likely to develop insecure and disorganised attachments. However, studies on adopted children (Van den Dries et al., 2009), formerly institutionalized children placed in foster families (e.g., Smyke et al., 2010) and maltreated children (Bernard et al., 2012; Moss et al., 2011) suggest that children are able to (partly) overcome their insecure attachment if they are taken care of by sensitive parents.

It is thus essential to promote sensitive parenting in early but also in later life. Numerous empirical studies and meta-analyses have confirmed the importance of sensitive parenting and attachment security for children's social-emotional development, providing a robust evidence base for translation, implementation, and intervention in practice. Brief, interaction-focused, evidence-based interventions aimed at improving sensitive parenting may be implemented more broadly in populations at risk for attachment-related problems to enhance optimal child outcomes.

## 7. Summary of implications for policy and practice

- Empirical studies and meta-analyses have confirmed the role of secure attachment relationships for children's development and shown that parental sensitivity is an important predictor of secure attachment relationships.
- Insecure and disorganised children appear to be at risk for problems in the social and behavioural domains (e.g. externalising behaviour problems).
- Brief, interaction-focused, evidence-based interventions aimed at improving sensitive parenting may be implemented more broadly in populations at risk for attachment-related problems to enhance optimal child outcomes.

## References

- Ainsworth, M.D.S., Bell, S.M. and Stayton, D. (1974), "Infant-mother attachment and social development", in Richards, M.P. (Ed.), *The Introduction of the Child into a Social World*, Cambridge University Press, London, pp. 99-135.
- Ainsworth, M.D.S., Blehar, M.C., Waters, E. and Wall, S. (1978), *Patterns of Attachment. A Psychological Study of the Strange Situation*, Lawrence Erlbaum, Hillsdale, NJ.
- Bakermans-Kranenburg, M.J. and Van IJzendoorn, M.H. (2007), "Research review: genetic vulnerability or differential susceptibility in child development: the case of attachment", *Journal of Child Psychology and Psychiatry*, Vol. 48 No. 12, pp. 1160-73.
- Bakermans-Kranenburg, M.J., Van IJzendoorn, M.H. and Juffer, F. (2003), "Less is more: meta-analysis of sensitivity and attachment interventions in early childhood", *Psychological Bulletin*, Vol. 129 No. 2, pp. 195-215.
- Bakermans-Kranenburg, M.J., Van IJzendoorn, M.H. and Juffer, F. (2005), "Disorganized infant attachment and preventive interventions: a review and meta-analysis", *Infant Mental Health Journal*, Vol. 26 No. 3, pp. 191-216.
- Barry, R.A., Kochanska, G. and Philibert, R.A. (2008), "G x E interaction in the organization of attachment: mothers' responsiveness as a moderator of children's genotypes", *Journal of Child Psychology and Psychiatry*, Vol. 49 No. 12, pp. 1313-20.
- Beijersbergen, M.D., Juffer, F., Bakermans-Kranenburg, M.J. and Van IJzendoorn, M.H. (2012), "Remaining or becoming secure: parental sensitive support predicts attachment continuity from infancy to adolescence in a longitudinal adoption study", *Developmental Psychology*, Vol. 48 No. 5, pp. 1277-82.
- Belsky, J., Bakermans-Kranenburg, M.J. and Van IJzendoorn, M.H. (2007), "For better and for worse differential susceptibility to environmental influences", *Current Directions in Psychological Science*, Vol. 16 No. 6, pp. 300-4.
- Bernard, K., Dozier, M., Bick, J., Lewis-Morrarty, E., Lindhiem, O. and Carlson, E. (2012), "Enhancing attachment organization among maltreated children: results of a randomized clinical trial", *Child Development*, Vol. 83 No. 2, pp. 623-36.
- Bokhorst, C.L., Bakermans-Kranenburg, M.J., Fonagy, P. and Schuengel, C. (2003), "The importance of shared environment in mother-infant attachment security: a behavioral genetic study", *Child Development*, Vol. 74 No. 6, pp. 1769-82.
- Bowlby, J. (1969), *Attachment and Loss. Vol. 1: Attachment*, Basic Books, New York, NY.
- Bowlby, J. (1973), *Attachment and Loss. Vol. 2: Separation*, Basic Books, New York, NY.
- Bretherton, I. (1999), "Updating the 'internal working model' construct: some reflections", *Attachment & Human Development*, Vol. 1 No. 3, pp. 343-57.
- Bretherton, I. and Munholland, K.A. (2008), "Models in attachment relationships: elaborating a central construct in attachment theory", in Cassidy, J. and Shaver, P.R. (Eds), *Handbook of Attachment: Theory, Research, and Clinical Applications*, 2nd ed., Guilford, New York, NY, pp. 102-30.
- Bruce, J., Gunnar, M.R., Pears, K.C. and Fisher, P.A. (2013), "Early adverse care, stress neurobiology, and prevention science: lessons learned", *Prevention Science*, Vol. 14 No. 3, pp. 247-56.
- Cassidy, J. and Marvin, R.S. With the MacArthur Working Group (1992), "Attachment organization in preschool children: procedures and coding manual", unpublished manuscript, University of Virginia, Charlottesville, VA.
- Cyr, C., Euser, E.M., Bakermans-Kranenburg, M.J. and Van IJzendoorn, M.H. (2010), "Attachment security and disorganization in maltreating and high-risk families: a series of meta-analyses", *Development and Psychopathology*, Vol. 22 No. 1, pp. 87-108.
- De Wolff, M.S. and Van IJzendoorn, M.H. (1997), "Sensitivity and attachment: a meta-analysis on parental antecedents of infant attachment", *Child Development*, Vol. 68 No. 4, pp. 571-91.

- Erickson, M.F., Sroufe, L.A. and Egeland, B. (1985), "The relationship between quality of attachment and behavior problems in preschool in a high-risk sample", in Bretherton, I. and Waters, E. (Eds), *Growing Points at Attachment: Theory and Research, Monographs of the Society for Research in Child Development*, Vol. 50 No. 209, pp. 147-66.
- Fearon, R.P., Bakermans-Kranenburg, M.J., Van IJzendoorn, M.H., Lapsley, A.M. and Roisman, G.I. (2010), "The significance of insecure attachment and disorganization in the development of children's externalizing behavior: a meta-analytic study", *Child Development*, Vol. 81 No. 2, pp. 435-56.
- Fonagy, P. and Target, M. (1997), "Attachment and reflective function: their role in self-organization", *Development and psychopathology*, Vol. 9 No. 4, pp. 679-700.
- George, C., Kaplan, N. and Main, M. (1985), "Adult attachment interview", unpublished manuscript, University of California, Berkeley, CA.
- Green, J. and Goldwyn, R. (2002), "Annotation: attachment disorganisation and psychopathology: new findings in attachment research and their potential implications for developmental psychopathology in childhood", *Journal of Child Psychology and Psychiatry*, Vol. 43 No. 7, pp. 835-46.
- Groeneveld, M.G., Vermeer, H.J., Van IJzendoorn, M.H. and Linting, M. (2011), "Enhancing home-based child care quality through video-feedback intervention: a randomized controlled trial", *Journal of Family Psychology*, Vol. 25 No. 1, pp. 86-96.
- Groh, A.M., Fearon, R.P., Bakermans-Kranenburg, M.J., Van IJzendoorn, M.H., Steel, R.D. and Roisman, G.I. (2014), "The significance of attachment security for children's social competence with peers. A meta-analytic study", *Attachment and Human Development*, Vol. 16 No. 2, pp. 103-36.
- Groh, A.M., Roisman, G.I., van IJzendoorn, M.H., Bakermans-Kranenburg, M.J. and Fearon, R. (2012), "The significance of insecure and disorganized attachment for children's internalizing symptoms: a meta-analytic study", *Child Development*, Vol. 83 No. 2, pp. 591-610.
- Gunnar, M.R. and Vasquez, D.M. (2001), "Low cortisol and a flattening of expected daytime rhythm: indices of risk in human development", *Development and Psychopathology*, Vol. 13 No. 2, pp. 515-38.
- Heim, C., Ehler, U. and Hellhammer, D.H. (2000), "The potential role of hypocortisolism in the pathophysiology of stress-related bodily disorders", *Psychoneuroendocrinology*, Vol. 25 No. 1, pp. 1-35.
- Hesse, E. (2008), "The adult attachment interview: protocol, method of analysis, and empirical studies", in Cassidy, J. and Shaver, P.R. (Eds), *Handbook of Attachment: Theory, Research, and Clinical Applications*, 2nd ed., Guilford, New York, NY, pp. 552-98.
- Hesse, E. and Main, M. (2006), "Frightened, threatening, and dissociative parental behavior in low-risk samples: description, discussion, and interpretations", *Development and Psychopathology*, Vol. 18 No. 2, pp. 309-43.
- Jaffari-Bimmel, N., Juffer, F., Van IJzendoorn, M.H., Bakermans-Kranenburg, M.J. and Mooijaart, A. (2006), "Social development from infancy to adolescence: longitudinal and concurrent factors in an adoption sample", *Developmental Psychology*, Vol. 42 No. 6, pp. 1143-53.
- Juffer, F., Bakermans-Kranenburg, M.J. and 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*, Vol. 46 No. 3, pp. 263-74.
- Juffer, F., Bakermans-Kranenburg, M.J. and Van IJzendoorn, M.H. (2008), *Promoting Positive Parenting: An Attachment Based Intervention*, Taylor & Francis, New York, NY.
- Juffer, F., Bakermans-Kranenburg, M.J. and Van IJzendoorn, M.H. (2014), "Attachment-based interventions: sensitive parenting is the key to positive parent-child relationships", in Holmes, P. and Farnfield, S. (Eds), *The Routledge Handbook of Attachment: Implications and Interventions*, Routledge, London.

- Kalinauskiene, L., Cekuoliene, D., Van IJzendoorn, M.H., Bakermans-Kranenburg, M.J., Juffer, F. and Kusakovskaja, I. (2009), "Supporting insensitive mothers: the Vilnius randomized control trial of video feedback intervention to promote maternal sensitivity and infant attachment", *Child: Care, Health & Development*, Vol. 35 No. 5, pp. 613-23.
- Klein Velderman, M., Bakermans-Kranenburg, M.J., Juffer, F. and Van IJzendoorn, M.H. (2006), "Effects of attachment-based interventions on maternal sensitivity and infant attachment: differential susceptibility of highly reactive infants", *Journal of Family Psychology*, Vol. 20 No. 2, pp. 266-74.
- Lamb, M.E., Thompson, R.A., Gardner, W., Charnov, E.L. and Connell, J.P. (1985), *Infant Mother Attachment: The Origins and Developmental Significance of Individual Differences in Strange Situation behavior*, Lawrence Erlbaum, Hillsdale, NJ.
- Luijk, M.P., Roisman, G.I., Haltigan, J.D., Tiemeier, H., Booth-LaForce, C., van IJzendoorn, M.H., Belsky, J., Uitterlinden, A.G., Jaddoe, V.W., Hofman, A., Verhulst, F.C., Tharner, A. and Bakermans-Kranenburg, M.J. (2011), "Dopaminergic, serotonergic, and oxytonergic candidate genes associated with infant attachment security and disorganization? In search of main and interaction effects", *Journal of Child Psychology and Psychiatry*, Vol. 52 No. 12, pp. 1295-307.
- Luijk, M.P., Saridjan, N., Tharner, A., van IJzendoorn, M.H., Bakermans-Kranenburg, M.J., Jaddoe, V.W., Hofman, A., Verhulst, F.C. and Tiemeier, H. (2010), "Attachment, depression, and cortisol: deviant patterns in insecure-resistant and disorganized infants", *Developmental Psychobiology*, Vol. 52 No. 5, pp. 441-52.
- Madigan, S., Bakermans-Kranenburg, M.J., Van IJzendoorn, M.H., Moran, G., Pederson, D.R. and Benoit, D. (2006), "Unresolved states of mind, anomalous parental behavior, and disorganized attachment: a review and meta-analysis of a transmission gap", *Attachment & Human Development*, Vol. 8 No. 2, pp. 89-111.
- Main, M. and Cassidy, J. (1988), "Categories of response to reunion with the parent at age 6: predictable from infant attachment classifications and stable over a 1-month period", *Developmental Psychology*, Vol. 24 No. 3, pp. 415-26.
- Main, M. and Hesse, E. (1990), "Parents' unresolved traumatic experiences are related to infant disorganized attachment status: is frightened and/or frightening parental behaviour the linking mechanism?", in Greenberg, M.T., Cicchetti, D. and Cummings, E.M. (Eds), *Attachment in the Preschool Years: Theory, Research, and Intervention*, The University of Chicago Press, Chicago, IL, pp. 161-82.
- Main, M. and Solomon, J. (1986), "Discovery of an insecure-disorganized/disoriented attachment pattern", in Yogman, M. and Brazelton, T.B. (Eds), *Affective Development in Infancy*, Ablex, Norwood, NJ, pp. 95-124.
- Main, M. and Solomon, J. (1990), "Procedures for identifying infants as disorganized/disoriented during the Ainsworth strange situation", in Greenberg, M.T., Cicchetti, D. and Cummings, E.M. (Eds), *Attachment in the Preschool Years: Theory, Research, and Intervention*, The University of Chicago Press, Chicago, IL, pp. 121-82.
- Mesman, J. and Emmen, R.A.G. (2013), "Mary Ainsworth's legacy: a systematic review of observational instruments measuring parental sensitivity", *Attachment & Human Development*, Vol. 15 Nos 5-6, pp. 485-506.
- Mesman, J., van IJzendoorn, M.H. and Bakermans-Kranenburg, M.J. (2012), "Unequal in opportunity, equal in process: parental sensitivity promotes positive child development in ethnic minority families", *Child Development Perspectives*, Vol. 6 No. 3, pp. 239-50.
- Moss, E., Dubois-Comtois, K., Cyr, C., Tarabulsky, G.M., St-Laurent, D. and Bernier, A. (2011), "Efficacy of a home-visiting intervention aimed at improving maternal sensitivity, child attachment, and behavioral outcomes for maltreated children: a randomized control trial", *Development and Psychopathology*, Vol. 23 No. 1, pp. 195-210.

- Posada, G., Gao, Y., Wu, F., Posada, R., Tascon, M., Schoelmerich, A., Sagi, A., Kondo-Ikemura, K., Haaland, W. and Synnevaag, B. (1995), "The secure-base phenomenon across cultures: children's behavior mothers' preferences, and experts' concepts", *Monographs of the Society for Research in Child Development*, Vol. 60 Nos 2-3, pp. 27-48.
- Posada, G., Lu, T., Trumbell, J., Kaloustian, G., Trudel, M., Plata, S.J., Pen˜ a, P.P., Perez, J., Tereno, S., Dugravier, R., Coppola, G., Constantini, A., Cassibba, R., Kondo-Ikemura, K., Nobilega, M., Haya, I.M., Pedraglio, C., Verissimo, M., Santos, A.J., Monteiro, L. and Lay, K.L. (2013), "Is the secure base phenomenon evident here, there, and anywhere? A cross-cultural study of child behavior and experts' definitions", *Child Development*, Vol. 84 No. 6, pp. 1896-1905.
- Roisman, G.I., Susman, E., Barnett-Walker, K., Booth-LaForce, C., Owen, M.T., Belsky, J., Bradley, R.H., Houts, R. and Steinberg, L. (2009), "Early family and child-care antecedents of awakening cortisol levels in adolescence", *Child Development*, Vol. 80 No. 3, pp. 907-20.
- Schuengel, C., Bakermans-Kranenburg, M.J. and Van IJzendoorn, M.H. (1999), "Frightening maternal behavior linking unresolved loss and disorganized infant attachment", *Journal of Consulting and Clinical Psychology*, Vol. 67 No. 1, pp. 54-63.
- Smyke, A.T., Zeanah, C.H., Fox, N.A., Nelson, C.A. and Guthrie, D. (2010), "Placement in foster care enhances quality of attachment among young institutionalized children", *Child Development*, Vol. 81 No. 1, pp. 212-23.
- Spangler, G., Johann, M., Ronai, Z. and Zimmermann, P. (2009), "Genetic and environmental influence on attachment disorganization", *Journal of Child Psychology and Psychiatry*, Vol. 50 No. 8, pp. 952-61.
- St. Petersburg-USA Orphanage Research Team (2008), "The effects of early social-emotional and relationship experience on the development of young orphanage children", *Monographs of the Society for Research in Child Development*, Vol. 73 No. 3, pp. 1-262, 294-95.
- Stams, G.J.J., Juffer, F. and van IJzendoorn, M.H. (2002), "Maternal sensitivity, infant attachment, and temperament in early childhood predict adjustment in middle childhood: the case of adopted children and their biologically unrelated parents", *Developmental Psychology*, Vol. 38 No. 5, pp. 806-21.
- Thompson, R.A. (2008), "Early attachment and later development. Familiar questions, new answers", in Cassidy, J. and Shaver, P.R. (Eds), *Handbook of Attachment: Theory, Research, and Clinical Applications*, 2nd ed., Guilford, New York, NY, pp. 348-65.
- Van den Dries, L., Juffer, F., Van IJzendoorn, M.H. and Bakermans-Kranenburg, M.J. (2009), "Fostering security? A meta-analysis of attachment in adopted children", *Children and Youth Services Review*, Vol. 31 No. 3, pp. 410-21.
- Van der Voort, A., Linting, M., Juffer, F., Bakermans-Kranenburg, M.J. and Van IJzendoorn, M.H. (2013), "Delinquent and aggressive behaviors in early-adopted adolescents: longitudinal predictions from child temperament and maternal sensitivity", *Children and Youth Services Review*, Vol. 35 No. 3, pp. 439-46.
- Van der Voort, A., Linting, M., Juffer, F., Bakermans-Kranenburg, M.J., Schoenmaker, C. and Van IJzendoorn, M.H. (2014), "The development of adolescents' internalizing behavior: longitudinal effects of maternal sensitivity and child inhibition", *Journal of Youth and Adolescence*, Vol. 43 No. 4, pp. 528-40.
- Van IJzendoorn, M. (1995), "Adult attachment representations, parental responsiveness, and infant attachment: a meta-analysis on the predictive validity of the Adult Attachment Interview", *Psychological Bulletin*, Vol. 117 No. 3, pp. 387-403.
- Van IJzendoorn, M.H. and Bakermans-Kranenburg, M.J. (2006), "DRD4 7-repeat polymorphism moderates the association between maternal unresolved loss or trauma and infant disorganization", *Attachment & Human Development*, Vol. 8 No. 4, pp. 291-307.
- Van IJzendoorn, M.H. and Juffer, F. (2006), "The emanuel miller memorial lecture 2006: adoption as intervention. meta-analytic evidence for massive catch-up and plasticity in physical, socio-emotional, and cognitive development", *Journal of Child Psychology and Psychiatry*, Vol. 47 No. 12, pp. 1228-45.

- Van IJzendoorn, M.H., Palacios, J., Sonuga-Barke, E.J., Gunnar, M.R., Vorria, P., McCall, R.B., Le Mare, L., Bakermans-Kranenburg, M.J., Debrova-Krol, N.A. and Juffer, F. (2011), "Children in institutional care: delayed development and resilience", *Monographs of the Society for Research in Child Development*, Vol. 76 No. 4, pp. 8-30.
- Van IJzendoorn, M.H. and Sagi-Schwartz, A. (2008), "Crosscultural patterns of attachment: universal and contextual dimensions", in Cassidy, J. and Shaver, P.R. (Eds), *Handbook of Attachment: Theory, Research, and Clinical Applications*, Guilford, New York, NY, 2nd ed., pp. 880-905.
- Van IJzendoorn, M.H., Schuengel, C. and Bakermans-Kranenburg, M.J. (1999), "Disorganized attachment in early childhood: meta-analysis of precursors, concomitants, and sequelae", *Development and Psychopathology*, Vol. 11 No. 2, pp. 225-50.
- Van Zeijl, J., Mesman, J., Van IJzendoorn, M.H., Bakermans-Kranenburg, M.J., Juffer, F., Stolk, M.N. and Alink, L.R.A. (2006), "Attachment-based intervention for enhancing sensitive discipline in mothers of 1- to 3-year-old children at risk for externalizing behavior problems: a randomized controlled trial", *Journal of Consulting and Clinical Psychology*, Vol. 74 No. 6, pp. 994-1005.
- Yarrow, L.J. (1964), "Separation from parents during early childhood", in Hoffman, M. and Hoffman, L. (Eds), *Review of Child Development Research*, Sage Foundation, New York, NY, Vol. 1, pp. 89-136.
- Zeanah, C.H., Smyke, A.T., Koga, S.F. and Carlson, E. (2005), "Attachment in institutionalized and community children in Romania", *Child Development*, Vol. 76 No. 5, pp. 1015-28.

