

BRIEF REPORT

Remaining or Becoming Secure: Parental Sensitive Support Predicts Attachment Continuity From Infancy to Adolescence in a Longitudinal Adoption Study

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In a longitudinal study with 125 early adopted adolescents, we examined continuity of attachment from infancy to adolescence and the role of parental sensitive support in explaining continuity or discontinuity of attachment. Assessments of maternal sensitive support and infant attachment (Strange Situation Procedure) were completed when infants were 12 months old. When the children were 14 years old, we observed mothers' sensitive support during a conflict discussion. The adolescents' attachment representations were assessed with the Adult Attachment Interview. Mothers of secure adolescents showed significantly more sensitive support during conflicts than did mothers of insecure adolescents. Overall, no continuity of attachment from infancy to adolescence was found. However, maternal sensitive support in early childhood and adolescence predicted continuity of secure attachment from 1 to 14 years, whereas less maternal sensitive support in early childhood but more maternal sensitive support in adolescence predicted children's change from insecurity in infancy to security in adolescence. We conclude that both early and later parental sensitive support are important for continuity of attachment across the first 14 years of life.

Keywords: attachment, sensitivity, continuity, AAI, adoption

Attachment is important from the cradle to the grave (Bowlby, 1988; for overviews, see Allen, 2008; Sroufe, Egeland, Carlson, & Collins, 2005; Thompson, 2008; Weinfield, Sroufe, Egeland, & Carlson, 2008). Central questions are whether there is continuity of attachment from infancy to adolescence and beyond, and how early and later parental sensitive support may contribute to continuity or discontinuity of attachment. In the present study, we extend existing research by investigating attachment continuity and parental sensitive support from infancy to adolescence in a sample of early adopted

children. By using an adoption design, we ensure that any effect of parenting cannot be attributed to genetic transmission from adoptive parent to child.

Continuity of Attachment?

On the basis of their early experiences with attachment figures, children are supposed to develop internal working models of attachment (Bowlby, 1982). These models influence the way children interpret their own behavior and feelings as well as those of others. Attachment working models are suggested to become less open to change over time. However, Bowlby (1982, 1988) also noted that attachment working models may change in the context of real-life experiences, and the importance of early as well as concurrent experiences has been stressed more than once (e.g., Allen, 2008; Lamb, Thompson, Gardner, Charnov, & Connell, 1985; Sroufe, 1997; Sroufe et al., 2005; Thompson, 2008). According to attachment theory, children's early experiences with their primary attachment figures are of paramount importance for their developing working model of attachment, whereas later support from attachment figures may consolidate or change these attachment representations.

Longitudinal attachment studies have not yet provided an unequivocal answer to the empirical question of attachment continuity: Some studies showed continuity but other studies revealed discontinuity of attachment over time. In the Berkeley longitudinal study, infants' Strange Situation Procedure (SSP; Ainsworth, Blehar, Waters, & Wall, 1978) classifications were associated with

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their Adult Attachment Interview (AAI; George, Kaplan, & Main, 1996) classifications at 19 years of age. In cases where security status changed, this change was related to intervening trauma (Main, Hesse, & Kaplan, 2005). Waters, Merrick, Treboux, Crowell, and Albersheim (2000) found similar outcomes in a White middle-class sample, as did Hamilton (2000) in a Californian sample of families with alternative lifestyles. In a sample of German adolescents (Zimmermann, Fremmer-Bombik, Spangler, & Grossmann, 1997), however, no direct relation was found between the SSP and the AAI as rated with Kobak's Q-sort methodology (Kobak, Holland, Ferenz-Gillies, Fleming, & Gamble, 1993). In this study, continuity was found for attachment behavior from infancy to childhood (age 10 years) and at the level of representation from childhood to adolescence.

Three other studies (Lewis, Feiring, & Rosenthal, 2000; Sagi-Schwartz & Aviezer, 2005; Weinfield, Whaley, & Egeland, 2004) reported no continuity between attachment in infancy and attachment in adolescence. Environmental influences such as parental divorce, life stress, family functioning, and child maltreatment were associated with (lawful) discontinuity of attachment. In addition, Weinfield et al. (2004) found that infants' difficult temperament was related to discontinuity of attachment. They suggested that mothers who perceived their infants as difficult may have experienced toddlerhood and later ages of their children as challenging their sensitivity even more than other mothers did.

On the basis of the studies conducted thus far, we conclude that modest continuity of attachment from infancy to adolescence can be found (Fraley, 2002), but it has been demonstrated only in families in which the parent and child were genetically related, thus leaving room for a genetic basis of continuity. Sensitivity has been established as a causal determinant of infant attachment security: A meta-analysis showed that intervention studies with the largest effect sizes for sensitivity ($d > 0.40$) were also the most effective in enhancing children's attachment security (Bakermans-Kranenburg, Van IJzendoorn, & Juffer, 2003). However, not much is known about the contribution of the continuity of parental sensitive support to attachment continuity. In the current longitudinal study, we investigated attachment continuity from infancy to adolescence. In our adoption sample, we expected that continuity or discontinuity of attachment security would be explained by the continuity or discontinuity of parental sensitive support. Difficult temperament (Weinfield et al., 2004) and stressful life events may predict attachment discontinuity.

Method

Participants and Procedure

Participants were 125 internationally adopted adolescents (69 female) studied longitudinally (Beijersbergen, Bakermans-Kranenburg, Van IJzendoorn, & Juffer, 2008; Jaffari-Bimmel, Juffer, Van IJzendoorn, Bakermans-Kranenburg, & Mooijaart, 2006; Stams, Juffer, & Van IJzendoorn, 2002). Mean age of the adolescents was 14.4 years ($SD = 0.52$). They were adopted before the age of 6 months ($M = 10.5$ weeks, $SD = 5.44$; range: 2–23 weeks) from Sri Lanka ($n = 68$), South Korea ($n = 38$), and Colombia ($n = 19$) to the Netherlands, mostly by middle-class

families. At the time of the birth of the children, the adoptive mothers were, on average, 32.7 years old ($SD = 3.26$) and the fathers were 34.9 years old ($SD = 3.33$).

The families were recruited through adoption organizations. When the children were between 6 and 9 months old, a random sample of the families received a short-term attachment-based intervention (Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2005). When the children were 12 months old, the Strange Situation Procedure was administered. Maternal sensitive support was measured at home and in the laboratory. Mothers rated their child's temperament at 12 months and 14 years of age. When the children were 7 and 14 years old, the mothers completed a questionnaire on stressful life events. In a home visit when the children were 14 years old, maternal sensitive support was assessed, and the Adult Attachment Interview was administered when the adolescents were in a separate room from their parents. Informed consent was obtained from all families.

Measures

SSP (12 months of age). Each infant's attachment to his or her mother was assessed with the SSP (Ainsworth et al., 1978). This procedure activates the attachment system as a consequence of the presence of an unfamiliar adult and two brief separations from the mother followed by reunions. On the basis of their behavior in the SSP, infants are classified as secure or insecure (avoidant or ambivalent). Secure infants show a balance between attachment and exploration: When the attachment figure is present, these infants feel free to explore, and, on reunion, they are easily comforted. Insecure infants either focus too strongly on exploration (while avoiding the parent on reunion) or on attachment behavior (remaining distressed). Interrater reliability for secure–insecure attachment, as indicated by Cohen's kappa, ranged from .80 to 1.0 (Juffer et al., 2005). The distribution of infant attachment classification was 95 secure (76%) and 30 insecure (24%).

AAI (14 years of age). The AAI (George et al., 1996; Main, Goldwyn, & Hesse, 2003) is an hour-long, semistructured interview assessing an individual's state of mind with respect to attachment. Respondents are asked about their childhood and current experiences with their parents and how they thought they were affected by them. Interview transcripts were classified as secure or insecure (dismissing or preoccupied). Secure individuals freely describe their experiences and stay objective regardless of the nature of their experiences. Insecure persons are either unable to give evidence for the positive evaluations of their parents or use angry or vague language when talking about their parents. The AAI's were coded by Mariëtte D. Beijersbergen. For interrater reliability, 18 interviews were also classified by Marian J. Bakermans-Kranenburg. Both coders were unaware of the infant attachment classifications and of the maternal sensitive support ratings at 12 months and 14 years. Interrater agreement was 78% ($\kappa = .64$) for three-way classifications (secure, insecure dismissing, and insecure preoccupied).

Several indices of convergent and discriminant validity of the AAI at this age were examined. As expected, secure adolescents reported more relational support than did insecure adolescents on the Relational Support Inventory (26 items, $\alpha = .91$; Scholte, Van Lieshout, & Van Aken, 2001), $t(139) = -2.42$, $p < .05$. Secure adolescents also showed more autonomy in a discussion task than

did insecure adolescents (Family Interaction Task; Allen et al., 2003, see below). Intelligence (Groningen Intelligence Test; Luteijn & Van der Ploeg, 1983) and temperament at age 14 years (adaptation of the Infant Characteristics Questionnaire; Bates, Freeland, & Lounsbury, 1979, see below) were not related to AAI classifications.

Maternal sensitive support (12 months). When the child was 12 months old, maternal sensitivity was assessed in a free-play session in the home using Ainsworth's sensitivity and cooperation scales (Ainsworth, Bell, & Stayton, 1974). The Erickson sensitivity scales (Egeland, Erickson, Clemenhagen-Moon, Hiester, & Korfmacher, 1990; Erickson, Sroufe, & Egeland, 1985) for emotional support, respect for the child's autonomy, structure and limit setting, hostility (reversed), and quality of instruction were applied to task situations in the lab (e.g., solving puzzles). The averaged Cohen's kappa for interrater agreement was .91. Principal-components analysis revealed a one-dimensional solution explaining 44% of the variance. The score for maternal sensitive support at 12 months was calculated by averaging the standardized scale scores (Cronbach's $\alpha = .77$; Stams et al., 2002). Maternal sensitivity at 12 months was significantly related to infant attachment security at 12 months (Juffer et al., 2005).

Maternal sensitive support (14 years). In a revealed differences task (Family Interaction Task; Allen et al., 2003), mothers and adolescents were asked to discuss and try to reach consensus on an issue on which they disagreed (e.g., money). Using the coding system of Allen et al. (1994), mothers and adolescents each received scores on autonomy and relatedness scales. The mean interrater reliability between an expert and two coders was .75 (range: .52–.90, $p < .01$, $n = 30$; for more information, see Beijersbergen et al., 2008). Here we included the mother scale of relatedness (Cronbach's $\alpha = .56$) as an index of maternal sensitive support in adolescence. *Relatedness* refers to how the mother validates or positively responds to her adolescent child and whether she shows empathy and engaged interaction (Allen et al., 2003). Maternal sensitive support at 12 months and 14 years were significantly correlated, $r = .26$, $p < .01$.

Temperament. When the children were 12 months old and 14 years old, mothers rated their children with the Dutch Temperament Questionnaire (Kohnstamm, 1984), an adaptation of the Infant Characteristics Questionnaire (Bates et al., 1979). For an age-adequate adaptation in adolescence, a few words were rephrased for the current study (Jaffari-Bimmel et al., 2006). An overall score for the child's difficult temperament was calculated by averaging the standardized item scores ($\alpha = .86$ at 12 months and $\alpha = .91$ at 14 years). We found moderate stability of temperament from 12 months to 14 years, $r = .30$, $p < .01$.

Stressful life events. When the children were ages 7 and 14 years, mothers completed a questionnaire on stressful life events, consisting of nine 4-point scales indicating the perceived impact of physical health problems of relatives, mental health problems of relatives, bereavement, unemployment, divorce, financial problems, marital problems, problems at work, and conflicts with relatives or neighbors. One overall score was calculated for each assessment (Jaffari-Bimmel et al., 2006), and internal consistencies were .68 and .69 for 7 and 14 years, respectively.

Data Analyses

First, we investigated whether AAI classifications were associated with background variables. Next, we examined continuity of attachment classifications from infancy to adolescence. Using sequential logistic regression analyses, we then tested whether continuity or discontinuity of attachment could be predicted by taking into account early and concurrent maternal sensitive support. Following Weinfield et al. (2004), participants were divided into four groups according to their stability of attachment: (a) secure in infancy and secure in adolescence; (b) secure in infancy and insecure in adolescence; (c) insecure in infancy and insecure in adolescence; and (d) insecure in infancy and secure in adolescence. Because we were interested in diverging pathways, comparing those participants who started with the same infant attachment but diverged in attachment classification in adolescence, two a priori comparisons were conducted (see Weinfield et al., 2004): secure–secure versus secure–insecure (Groups a and b) and insecure–insecure versus insecure–secure (Groups c and d). When we compared Groups a and b with Groups c and d, no significant effects were found for any of the background variables.

Results

Of the 125 adopted adolescents, 49 (39.2%) showed secure and 76 (60.8%; 41.6% dismissing and 19.2% preoccupied) showed insecure attachment representations. Attachment classifications were not associated with gender, country of birth, health condition or age at adoptive placement, or stressful life events (ages 7 and 14 years). Mothers of secure adolescents showed significantly more sensitive support at age 14 years ($M = 2.18$, $SD = 0.49$) than did mothers of insecure adolescents ($M = 1.95$, $SD = 0.49$), $F(1, 121) = 4.82$, $p = .03$, $\eta^2 = .04$.

Using secure versus insecure classifications at both ages, we found that 45.6% of the children had corresponding classifications in infancy and adolescence: 38 adoptees (30.4%) were secure at both assessments and 19 adoptees (15.2%) were insecure in infancy and adolescence. The continuity of attachment from infancy to adolescence was not significant, $\chi^2(1, N = 125) = 0.11$, $p = .74$. To examine possible correlates of attachment discontinuity, particularly maternal sensitive support, we divided participants into four groups (see above): (a) continuously secure ($n = 38$), (b) changed from secure to insecure ($n = 57$), (c) continuously insecure ($n = 19$), and (d) changed from insecure to secure ($n = 11$). We conducted two planned comparisons to examine divergent pathways.

The first sequential logistic regression analysis was conducted to predict secure–secure versus secure–insecure adolescents (total $n = 95$). Because family type (families with or without birth children) and participation in the video-feedback intervention were associated with sensitive support and attachment at 12 months (Juffer et al., 2005), these variables were entered first in the regression analysis (Step 1). Using analyses of variance, we examined which of the following predictors should be added to the regression analysis ($\alpha < .10$): stressful life events at ages 7 and 14 years, maternal sensitive support at 12 months and 14 years, and child temperament at 12 months and 14 years (for descriptive data and bivariate correlations, see Table 1). Two predictors could be added to the model: maternal sensitive support at 14 years (in Step

Table 1
Descriptive Data and Bivariate Correlations of the Predictors in the Regression Analyses

| Predictor | Secure-secure (<i>n</i> = 38) | | Secure-insecure (<i>n</i> = 57) | | Insecure- insecure (<i>n</i> = 19) | | Insecure-secure (<i>n</i> = 11) | | 1 | 2 | 3 | 4 | 5 | 6 |
|-----------------------------------|-----------------------------------|-----------|-------------------------------------|-------------------|---|-----------|-------------------------------------|-----------|-------|-------|------|------|---|---|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | | | | | | |
| 1. Temperament at 12 months | 3.24 | 0.50 | 3.28 | 0.66 | 3.07 | 0.62 | 3.14 | .45 | — | | | | | |
| 2. Temperament at 14 years | 2.96 | 1.13 | 3.04 | 1.20 | 2.52 | 1.18 | 2.15 | .64 | .30** | | | | | |
| 3. Stress at 7 years | 0.19 | 0.20 | 0.24 | 0.21 | 0.17 | 0.18 | 0.21 | .22 | .13 | — | | | | |
| 4. Stress at 14 years | 0.48 | 0.43 | 0.50 | 0.51 | 0.52 | 0.47 | 0.36 | .36 | .10 | .38** | | | | |
| 5. Sensitive support at 12 months | 0.17 | 0.73 | −0.12 | 0.61 ^a | 0.13 | 0.64 | −0.30 | .76 | −.22* | −.01 | .01 | — | | |
| 6. Sensitive support at 14 years | 2.18 | 0.50 | 1.93 | 0.65 ^a | 1.89 | 0.73 | 2.20 | .50 | −.16 | −.11 | −.16 | −.03 | — | |

^a Secure-secure versus secure-insecure, $p \leq .05$.

* $p < .05$. ** $p < .01$.

2) and maternal sensitive support at 12 months (in Step 3). The regression model was significant ($p = .02$) with nonsignificant covariates ($ps > .05$). Continuously secure participants had more sensitive mothers at 12 months than did participants who were secure in infancy but insecure in adolescence (Wald = 3.71, $p = .05$), and they tended to have mothers who showed more sensitive support at 14 years than did participants who changed from secure to insecure (Wald = 2.81, $p = .09$).

We replicated the regression analysis for the insecure-insecure versus insecure-secure participants (total $n = 30$). The regression model was significant ($p = .046$) with nonsignificant covariates ($ps > .05$). Maternal sensitive support at 12 months (Wald = 5.32, $p = .02$) and maternal sensitive support at 14 years (Wald = 4.14, $p = .04$) were significant predictors. Participants who were insecure in infancy but secure in adolescence had less supportive mothers at 12 months, but their mothers showed significantly more sensitive support at age 14 years compared with mothers of continuously insecure adoptees.

Discussion

Examining continuity of attachment from 1 to 14 years, we found that high levels of maternal sensitive support in early childhood as well as in adolescence predicted continuity of secure attachment, whereas a relative increase in maternal sensitive support from early childhood to adolescence predicted children's change from insecurity in infancy to security in adolescence. Without taking parental sensitive support into account, we found no continuity of secure or insecure attachment from 1 to 14 years. Thus, continuity of attachment across the first 14 years of life seems dependent on the continuity of the child rearing context, in particular, maternal sensitive support.

In highly stable family environments, infant attachment may predict attachment in adolescence without taking into account parental sensitive support (Lamb et al., 1985), and genetic relatedness between parent and child may add to this continuity. In less stable environments (Sagi-Schwartz & Aviezer, 2005; Weinfield et al., 2004) or in families without genetic transmission, continuity of context might be crucial for continuity of attachment. In the current longitudinal adoption study, we failed to find continuity using only infant attachment for predictions, but adding early and later maternal sensitive support to the equation did predict adolescents' attachment security. These findings suggest that measures of the child rearing context in infancy may yield more predictive power for adolescent states of mind than when only the SSP is used. Our outcomes underscore the value of using multiple indicators of the parent-child relationship, including infant attachment and parental sensitive support, when testing longitudinal predictions in child development (NICHD Early Child Care Research Network, 2006; Stams et al., 2002; Sroufe et al., 2005). Although in the current sample, the SSP did not predict adolescent attachment security, it did predict children's social development (Jaffari-Bimmel et al., 2006). At a more general level, in a series of meta-analyses, attachment insecurity measured with the SSP proved to be a significant predictor of children's later externalizing (Fearon, Bakermans-Kranenburg, Van IJzendoorn, Lapsley, & Roisman, 2010) and internalizing (Groh, Roisman, Van IJzendoorn, Bakermans-Kranenburg, & Fearon, 2012) behavior problems.

The lack of an attachment measure at 7 years, reflecting the fact that valid measures for this age were not available at that time, is a potential limitation of the current study, leaving continuity and change of attachment in the period between infancy and adolescence unknown. The first assessment of attachment after infancy was in adolescence. Secondary analyses of AAI studies show an overrepresentation of insecure (dismissing) attachment relationships in adolescents (Bakermans-Kranenburg & Van IJzendoorn, 2009). A temporary overrepresentation of insecure attachment in adolescence may obscure attachment continuity from infancy to adulthood. Therefore, replication of our results and additional attachment assessments in adulthood are needed.

In contrast to expectations, stressful life events did not predict attachment continuity or discontinuity, and the same was true for difficult temperament. The influence of stressful life events may be reduced in our study because the adolescents all lived in relatively favorable circumstances in middle-class families. In multirisk families, the influence of stressful life events may be more pronounced. We speculate that temperament was not a predictor of attachment continuity because of the absence of a genetic link between the adoptive parents and the child. In genetically related families, parents who perceive their child as difficult may be more temperamentally reactive themselves (as temperament has a substantial genetic basis; Van IJzendoorn & Bakermans-Kranenburg, in press), and this may challenge their sensitivity and consequently their child's attachment security. In adoptive families, parental behavior may be more independent of the child's difficult temperament.

In conclusion, the use of a longitudinal adoption sample in which parents and children do not share genes provided a unique chance to get more insight in the continuity and discontinuity of attachment development and the influence of the family environment on this process. We found that continuity of attachment across the first 14 years of life is dependent on the continuity of the child rearing context, in particular, maternal sensitive support. Across childhood and adolescence, attachment processes remain interwoven with the quality of parental sensitive support. We therefore submit that attachment theory should be a theory of sensitive parenting as much as it is a theory of attachment.

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