

## Attachment over Time

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Continuity in attachment classification from infancy to late adolescence was examined and related to autobiographical memories of childhood, divorce, and maladjustment. Eighty-four White middle-class children (48 girls) were seen in a modified Strange Situation at 12 months and given the Adult Attachment Interview at 18 years. In addition, data were collected on 13-year-olds' childhood recollections as well as adolescent, mother, and teacher ratings of maladjustment at 13 and 18 years of age. Divorce status of parents also was obtained. Results indicated no continuity in attachment classification from 1 to 18 years of age and no relation between infant attachment status and adolescent maladjustment. Divorce was related to 13-year-olds' childhood recollections as well as to insecure attachment status at 18 years. Eighteen-year-olds with insecure attachment classification were more likely to rate themselves as maladjusted. The results support the idea of attachment as an evolving representation dependent upon the nature of the family environment as indexed by divorce.

### INTRODUCTION

Studying development involves the exploration of continuity and discontinuity (Lewis & Starr, 1979; Wohlwill, 1973). The concept of attachment has captured our attention because it seeks to explain, in part, the origins of social and emotional behavior. Attachment theory has generated an enormous amount of theoretical and empirical work. As a construct, attachment has been considered both as a set of overt behaviors (e.g., Ainsworth, Blehar, Waters, & Wall, 1978; Belsky, Rovine, & Taylor, 1984; Waters & Dean, 1982) as well as a representation or model of close relationships (e.g., Bowlby, 1973; Bretherton, 1985). These two ways of viewing attachment necessitate a developmental model that describes how attachment behaviors in infancy lead to attachment representations later in life.

Formulations of attachment have usually emphasized a connection between infants' early overt behaviors and later representations (Bowlby, 1969; Sroufe, 1983). Main (1990), for example, believes that the later models are derived from earlier attachment experiences. The child's model of the attachment relationship is viewed as organized around the history of the caregiver's responses to the infant's actions. Thus, the construct of attachment as measured by mental representations is believed to be formed around early parent–infant experiences. In this view, the Strange Situation is believed to capture overt behaviors that reflect an infant's internal working model of the attachment relationship. According to Main, Kaplan, and Cassidy (1985, p. 77); "by the time the infant is one year of age, individual differences in Strange Situation behavior with a particular parent may be conceived as reflecting individual differences in the infant's internal working model of a particular infant–parent relationship."

The construct of secure attachment is measured by observing sets of behaviors that move the individual toward and maintain proximity with an attachment figure. These behaviors are used because infants' cannot articulate representations due to their limited cognitive capacity. In the Strange Situation procedure, the infant's proximity and responses to the caregiver during reunion are used to categorize the type of attachment relationship (Ainsworth et al., 1978). At older ages, the need to rely on sets of overt behaviors becomes less central because models of attachment can be assessed through individual narratives of attachment history.

Two different strategies for assessing the attachment construct—observing overt behaviors and tapping representations—raise important developmental questions about continuity of the construct. In the study of attachment, continuity would be indicated by a relation between early overt behaviors and later representations. Although attachment theory argues that such a relation exists, little empirical work has examined this continuity. Although we agree that a set of overt behaviors in early life and later mental models can represent the same construct, data as to whether individual differences remain consistent over this developmental transformation are limited. Findings from unpublished proceedings of national meetings are contradictory. One study shows consistency (Waters, Treboux, Crowell, Merrick, & Albersheim, 1995), whereas another shows inconsistency (Zimmerman, Fremmer-Bombik, Spangler, & Grossman, 1997). The question addressed in this study is whether individual differences in attachment are consistent over time.

Some have suggested that individual consistency exists over this developmental transformation from infancy through adolescence. Differences in early mother–infant interactions produce individual differences at 1 year of age in sets of overt behaviors (Ainsworth et al., 1978; Belsky, Rovine, et al., 1984; Lewis & Feiring, 1989). The differences in types (A,B,C,D) reflecting the quality of the attachment relationship are seen as predicting subsequent representations (Bretherton, 1985). Sroufe (1983; p. 74) argued that these early overt behaviors serve as a marker for a prototype that influences the nature of later intimate relationships. “Even when children change rather markedly, the shadows of the earlier adaptation remain, and, in times of stress, the prototype itself may be clear.”

Studies used to support this supposition have linked overt attachment behaviors in infancy to later social competence and psychopathology (e.g., Arend, Gove, & Sroufe, 1979; Elicker, Englund, & Sroufe, 1992; Lewis, Feiring, McGuffog, & Jaskir, 1984; Londerville & Main, 1981; Matas, Arend, & Sroufe, 1978; Pastor, 1981; Sroufe, 1983; Sroufe, Egeland, & Kreutzer, 1990; Sroufe & Fleeson, 1986). The relations between early attachment behaviors and later competencies are assumed to reflect the ongoing impact of a stable attachment construct. Although these studies show associations between early overt attachment behaviors and subsequent competence, they do not examine continuity in attachment behaviors with later representations; therefore, they do not provide support for the idea that infant attachment is a prototype for later attachment. By assuming that attachment remains stable, these studies and their interpretation mistakenly promote the view that infant attachment status is a trait-like attribute of an individual throughout development. As Waters, Posada, Crowell, and Lay (1993, p. 217) have pointed out, “attachment theorists often referred to infant attachment status as if it were a trait-like characteristic that an individual carried throughout life. This has stood both as dogma and doctrine based on empirical research. Indeed, attachment theorists are often criticized for offering an ‘inoculation’ theory of development. Secure attachment in infancy inoculates a child from adverse outcomes throughout development. Conversely, early attachment difficulties place the child at risk or even cause subsequent problems.” The adolescent literature also has treated attachment as a stable individual characteristic related to competence and psychopathology (e.g., Cole-Detke & Kobak, 1996; Kobak & Sceery, 1988; Kobak, Sudler, & Gamble, 1991; Rosenstein & Horowitz, 1996; Sroufe et al., 1990; Sroufe, Schork, Motti, Lawroski, & LaFreniere, 1984). Attachment quality is assumed to

be stable and therefore to continue having a significant impact on intimate relationships and other competencies into adulthood (e.g., Hazan & Shaver, 1987).

Few longitudinal studies linking attachment in infancy to attachment in late childhood and adolescence exist. One central explanation for this paucity of data relates to measurement issues. Using overt behaviors to index attachment after early childhood becomes inappropriate. Although some strategies to assess representations in childhood exist, they have not been widely used (e.g., Cassidy, 1988; Fury, Carlson, & Sroufe, 1997; Oppenheim, Emde, & Warren, 1997). Furthermore, in the few studies that exist, consistency from overt behaviors in infancy to behaviors or representations in childhood is not examined (for exception, see Main et al., 1985; Zimmerman et al., 1997). No measure exists to assess representations in early adolescence.

The importance of the social environment is obvious in the formation of infant attachment quality and may play a critical role in change in attachment representation when the child is older. Early mother–infant interactions are related to the subsequent formation of 1-year quality of attachment (e.g., Ainsworth et al., 1978; Benn, 1986; Cox, Owen, Henderson, & Margand, 1992; Lewis & Feiring, 1989; for a review, see De Wolff & van Ijzendoorn, 1997). The question is whether the caregiving environment affects representations as they are formed and as they are remembered; the answer bears directly on the nature of attachment and whether it changes over time. Bowlby (1982) and Sroufe (1983) have argued that the nature of the quality of early attachment will affect the impact of the caregiving environment on subsequent representations. Two effects of the ongoing caregiving environment are possible. In the first, the current representation is solely dependent upon the current environment, with the previous representation having little effect on the current one. Thus, a current secure environment will produce a concurrent secure representation regardless of whether the earlier environment was secure or insecure. In the second type of effect, an interactive one, the current environment interacts with the past representation to produce a current representation.

For either type of effect the nature of the environment must be taken into account. Some data show that in early childhood when the caregiving environment changes, the quality of attachment changes as well (Belsky, Campbell, Cohn, & Moore 1996; Thompson & Lamb, 1983a, 1983b). For example, Vaughn, Egeland, Sroufe, and Waters (1979) found that early attachment classification changes if maternal behaviors change, in this case as a function of stressful life events. To relate early overt behaviors of attachment

to subsequent mental representations, the environment and its change over time must be measured (Bronfenbrenner & Crouter, 1983; Dunn, 1993; Lewis, 1984; Suomi, 1979; Waters et al., 1993).

One way to look at the caregiving environment is to examine the effects of divorce on attachment. Divorce captures many aspects of the caregiving environment because it has a direct impact on parents, children, and the emotional and social experiences in the family (Davies & Cummings, 1994; Fauber, Forehand, Thomas, & Wierson, 1990; Grych & Fincham, 1993). As an index of disruption in family life, economic hardship, and decreased availability of caregivers, divorce provides the type of environment that could have an impact on early childhood attachments as well as effecting change in representation. Moreover, divorce may serve as an event around which autobiographical thoughts, feelings, and experiences with marital conflict are organized in regard to the uncertainty and negative consequences of love relationships (Cummings & Davies, 1994; Cummings, Davies, & Simpson, 1994; Cummings & Smith, 1993; Davies & Cummings, 1994; Grych & Fincham, 1990). Children from divorced families have been found to show more social, emotional, and learning problems than children from nondivorced families (e.g., Allison & Furstenberg, 1989; Bray, 1988; Guidaldi, 1988; Hetherington & Clingempeel, 1992; Hetherington, Cox, & Cox, 1982; Zill, 1988; Zimiles & Lee, 1991). Divorce also has been related to greater likelihood of having an insecure attachment in 16-year-old adolescents (Zimmerman et al., 1997).

Another issue in the examination of attachment consistency is whether current representations of attachment accurately reflect past representations. That is, current attachment representations, based in part on autobiographical memories, may reflect what actually happened or may be a reconstruction of what happened (Loftus, 1981). Main and others use the Adult Attachment Interview (AAI), which relies on an adult's ability to integrate specific memories into a more general understanding of the parent-child relationship (e.g., Adam, Sheldon-Keller, & West, 1996; Fonagy, Steele, & Steele, 1991; Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993; Main & Goldwyn, 1991; Main et al., 1985; van Ijzendoorn, 1995; Ward & Carlson, 1995). Through an analysis of the narrative about attachment-related experiences with parents and other attachment figures, individual differences in strategies for regulating the attachment system are inferred. Although the content and quality of the autobiographical memories are not the only criteria from which attachment representations are inferred, the narratives elicited by the AAI rely on

the adult's ability and willingness to recount personal history.

The literature on the construction of autobiographical memories, although separate from that on attachment, is relevant to understanding the nature of the narratives from which inferences are made about representations. Ample evidence for both adults and children suggests that autobiographical memories, rather than reflecting accurate past events, are constructions based in large part on the individual's current circumstances (Schneider & Bjorklund, 1998). In Ross's (1989) review of research on memory of one's personal attributes, he argues that individuals use their current attributes to construct their personal histories. He suggests that the first step in constructing histories involves people noting their present status; they ask themselves what they are like now and use this information to make a determination about the past. Ross (p. 342) argued that people do this because "the present is generally more salient and available than a person's earlier standing."

Research on the construction of adolescents' personal histories indicates that autobiographical memories are strongly inferred by the adolescent's current circumstances and current view of themselves, rather than verified accounts of earlier childhood events (Henry, Moffitt, Caspi, Langley, & Silva, 1994). Moreover, individuals search their memories for events that are consistent with their current view (e.g., Hamilton, 1981; Hastie, 1981; Loftus, Miller, & Burns, 1978; Taylor & Crocker, 1981). When asked about their pasts, individuals are likely to use their current state, circumstances, and beliefs as an interpretive lens for past experiences. Using techniques to evoke autobiographical recollections in children for whom the cognitive demands of the AAI is inappropriate should provide information relevant to the examination of representation consistency across time. In keeping with the literature on adults, children's and adolescents' recollections of their childhoods would more likely reflect their current circumstances than reflect what actually happened (Henry et al. 1994; Yarrow, Campbell, & Burton, 1970).

In the present study, we examine both the consistency of attachment classification from 1 to 18 years of age and relations between attachment and autobiographical recollections at 13 years of age to determine whether such recollections can inform us as to how representations remain consistent or change over time. Because the caregiving environment is likely to be important in attachment consistency, divorce as a measure of the caregiving environment was related to attachment consistency. Finally, we looked at maladjustment in adolescence as a measure of the child's competence as a function of both past and concurrent attachment representations.

## METHOD

### Participants

Participants were 84 one-year-olds recruited for a longitudinal study from White middle- and upper-middle-class suburban families. Fifty-seven percent of the participants were girls. Parents were initially contacted regarding the longitudinal study soon after the birth of their children. The sample was selected to be balanced for gender and to reflect variations in socioeconomic status and birth order. The data considered here were collected at 1, 13, and 18 years of age. At 18 years, there were 113 participants, of whom 84 had all data at 1, 13, and 18 years. These 84, representing a 20% attrition rate since infancy, do not significantly differ from the complete samples within each age point in the distribution of gender, socioeconomic status, divorce status, attachment categories, or maladjustment. Although all families were intact when participants were 1 year old, by the time they were 18 years of age, 14 of the families, or 17%, had experienced divorce. This is comparable to the national rate of 21% during the lifetimes of these children (U.S. Dept. of Health and Human Services, 1995).

### Procedure and Measures

#### Attachment Classification

*One year.* Infants and their mothers were seen in the laboratory in a modified Strange Situation Procedure within 3 weeks of their first birthdays (see Waters, Wippman, & Sroufe, 1979, Study 2). A 3-min free play period, a separation period of 2 min, and a 3-min reunion period were coded according to procedures delineated by Ainsworth et al. (1978). In their study, Waters and colleagues found the distribution of secure and insecure to be 63% versus 37%. Our use of this procedure has been reported previously. In the Lewis et al. study (1984), the distribution of secure (67%) and insecure (33%) infants agrees with that found for other middle-class American samples. In the present study with fewer subjects, the distribution remains about the same: 71% secure, 29% insecure. Moreover, in Lewis and Feiring (1989), we reported that mother–infant interaction at 3 months was significantly related to both the attachment classification and the Ainsworth infant avoidance rating scale obtained at 1 year. Similar to Belsky, Garduque, and Hrnčir (1984), Lewis and Feiring (1989) found that moderate levels of maternal responsiveness were associated with secure attachment whereas high and low levels of responsiveness were associated with insecure attachments. In this study, for purposes of analysis, the avoidant and anx-

ious groups were combined so that attachment was a dichotomous variable coded as insecure or secure.

*Eighteen years.* Participants were interviewed privately at home during their senior year of high school. Interviews lasted approximately 1 hr and followed the protocol developed by George, Kaplan, and Main (1985). A young woman conducted all the interviews. The interviewer asked the adolescents to describe early relationships with parents, generate adjectives describing each parent, and provide memories supporting these adjectives. Adolescents were asked to recall incidents of distress as a child, including being upset, separated from parents, rejected by parents, and threatened by parental separation. They were then asked to consider the effects of their upbringing on their personalities; why their parents behaved as they did; changes in, as well as the current status of, their relationships with their parents; and the most important thing learned from the attachment experiences.

All 84 interviews were transcribed. Two independent raters, blind to all other measures and trained by Roger Kobak and Holland Cole, rated the transcripts by using the Attachment Interview Q-Sort (Kobak et al., 1993). This Q-Sort assesses both working models and the organization of thought. Most of the items were derived from descriptions used in the AAI classification system (Main & Goldwyn, 1991). One hundred items indexing the division of security/anxiety and deactivation/hyperactivation were sorted into nine categories from most characteristic (9) to least characteristic (1). The sort had a forced bell-shaped distribution.<sup>1</sup>

Following Kobak et al. (1993), the composite Q-Sort description for each participant was correlated with the prototype sort for security/anxiety. The security/anxiety dimension measures the extent to which a person can flexibly coordinate attachment with exploration by measuring the parent as a secure base. Participants with a positive correlation with the secure prototype are classified secure and those with negative correlations with the secure prototype are classified insecure. Kobak et al. reported that classifi-

<sup>1</sup> Kobak et al. (1993) used a third rater when the composite reliability of the first two raters fell below .58 (Spearman-Brown prophecy formula). Using a third rater for 26% of the cases, Kobak et al. (1993) reported an average composite reliability of .74. In this study, a third rater was used for only 12% of the cases, and the average composite reliability on these transcripts was .80, with a range of .58 to .93. Although we did not have direct training in the Main and Goldwyn technique, the use of Kobak as a consultant and reliability checks between our raters and his help ensured that our ratings measured the attachment styles the Q-Sort is intended to measure.

cations based on the Q-Sort method, compared with the classifications derived from the Main and Goldwyn method, result in 90% agreement for secure and insecure groups. Research using the Q-Sort technique suggests that this procedure is applicable for older adolescents (Kobak & Sceery, 1988).

*Autobiographical recollections of childhood.* Obtaining recollections involves asking participants to think about themselves at earlier ages. For example, Henry et al. (1994) asked the general question, "Think about X (. . .) when you were (so many) years old." At 13 years of age, participants were asked "to think about and describe their early childhoods." Before the question, participants were shown a 1-min videotape of themselves and their mothers in a positive interaction in a free-play situation when they were 2 years old, to prompt memories of their childhoods. Prompting is a technique that has been found to be useful in directing a child's attention toward the past and producing and sequencing memories (Hudson, 1990). The 13-year-olds viewed this segment alone while their mothers were busy in another room. Following this viewing, the experimenter asked them to describe their early childhoods. After the first statements, the 13-year-olds were given one more opportunity to add to their initial comments. Each participant's responses were video recorded and transcribed.

To score the recollection, a participant's response was placed into one of four categories: positive, negative, mixed, and don't know. The positive category reflected a predominance of positive statements but also could contain some neutral statements ( $N = 57$ ; for example, a positive statement was, "My mom and dad were great. I had a happy childhood"; a neutral statement, for example, was, "We lived in a big house."). The negative category was one where there were no positive but only negative or neutral statements; for example, "Got in trouble a lot" or "Confusing, frightening sort of" ( $N = 10$ ). The mixed category contained negative as well as positive and neutral statements ( $N = 11$ ). Finally, a don't know category was scored for the small number of adolescents who said "don't know" or "don't remember" ( $N = 6$ ). Two raters independently scored each teenager's transcript, and initial agreement for category membership was 83%. Disagreements were discussed until a 100% consensus was reached.

*Thirteen- and eighteen-year maladjustment.* Three raters—mother, adolescent, and teacher—were used. Mothers and adolescents completed their ratings of maladjustment during a laboratory visit. Teacher ratings were mailed to the school and completed by participants' English teachers. Comparable forms of the maladjustment measure were used with mothers, ad-

olescents, and teachers. Mothers completed the Child Behavior Checklist (CBCL; Achenbach, 1991a), a standardized rating scale designed to obtain parents' reports of their child's competencies and behavioral/emotional problems. Teachers completed the Teacher Report Form (TRF; Achenbach, 1991b), and the adolescents completed the Youth Self-Report (YSR; Achenbach, 1991c). All three instruments are self-administered checklists and 89 problem items are common to all three instruments. Following Achenbach, maladjustment was defined as a score above the borderline clinical cutoff points of each instrument ( $T \geq 60$ ;  $\geq 85$ th percentile; Achenbach, 1991a, 1991b, 1991c). In a nonclinical sample, Achenbach (1991a, 1991b, 1991c) reports that one should expect to find that approximately 15% of the sample should fall into a maladjusted category, a similar finding seen in this sample.

## RESULTS

Because of our interest in the trajectories of individual children, we followed an analytic strategy that allowed us to examine individual children over time. We used  $\chi^2$  analyses because they allowed us to determine whether there is continuity between attachment, autobiographical recollections, divorce, and maladjustment.<sup>2</sup>

### Attachment Consistency

One-year attachment is not related to 18-year attachment  $\chi^2(1, N = 84) = 0.24, ns$ . Of the insecure 1-year-olds, only 38% (9/24) are insecurely attached at 18 years of age, whereas for the secure 1-year-olds, 43% (26/60) are insecurely attached. Attachment at 1 year bears no relation to recollections at 13 years,  $\chi^2(3, N = 84) = 0.76, ns$ . There is a suggestion that recollections at 13 years are related to attachment classification at 18 years,  $\chi^2(3, N = 84) = 6.33, p < .10$ . Because individuals who report only negative recollections clearly view their childhoods as unhappy periods, we compared this category with the others. Seventy percent (7/10) of the adolescents with negative recollections are insecurely attached at 18 whereas only 37% (21/57) with positive recall are insecurely attached. This difference is marginally significant,  $\chi^2(1, N = 67) = 3.84, p < .08$ , as is the difference between adolescents with negative versus mixed recollections,  $\chi^2(1,$

<sup>2</sup> Because earlier work on this sample has shown gender differences in the relation between 1-year attachment and 6-year maladjustment (Lewis et al., 1984), gender differences were examined in the relations between attachment at 1 and 18 years and autobiographical recollections, divorce, and maladjustment. No gender differences were observed.

$N = 21) = 3.83, p < .06$ . Only the negative versus don't know groups are not significantly different. Thus, negative recollections at 13 years appear to be related to insecure attachment classification at 18 years.

### Divorce as an Intervening Variable

#### Divorce and Attachment

Out of 84 participants, 14 had experienced a family divorce by the time they were 18 years of age. There was no relation between attachment at 1 year and subsequent divorce,  $\chi^2(1, N = 84) = 0.42, ns$ . No relation was expected because early attachment status should not affect later divorce. At 18 years, attachment classification and divorce are significantly related,  $\chi^2(1, N = 84) = 9.41, p < .01$ . Those adolescents whose parents were divorced are more likely to be classified as insecure (11/14, or 79%, binomial  $p < .06$ ), whereas those classified as secure are more likely to be from intact families (46/70, or 66%, binomial  $p < .05$ ).

Because the time of divorce varied, early or later divorce and 18-year attachment might be related. Time of divorce was divided into three groups: 2–4 years ( $N = 5$ ); 5–13 years ( $N = 4$ ); and 13–18 years ( $N = 5$ ). When the time of divorce was compared with the 18-year-old attachment classification, no relation was found,  $\chi^2(2, N = 14) = 2.12, ns$ . How long participants were in a divorced family was not related to any of the other measures, so only divorced/not divorced status is reported.

#### Divorce and Autobiographical Recollections

Although infant attachment and divorce are unrelated, there is a significant relation between divorce

and recollection of early childhood,  $\chi^2(3, N = 84) = 11.23, p < .05$ . Forty percent (4/10) of the adolescents in the negative recollections group are from divorced families, compared with 9% (5/57) for the positive group and 0% for the mixed (0/11) and don't know groups (0/6). Thirteen-year-old adolescents with negative recollections are significantly more likely to come from families that are divorced than all other 13-year-olds,  $\chi^2(1, N = 84) = 10.18, p < .05$ .

#### Divorce as a Moderator between Early and Later Attachment

Bowlby (1973) conceived of developmental pathways to adjustment or problems as the continuous branching of railroad tracks. Because of our interest in individual trajectories of attachment coherence and relations with autobiographical recollections and divorce, we followed an analytic strategy that allows us to examine individual children's paths over time. We determined the path each individual followed in terms of attachment and divorce. Table 1 presents the distribution of attachment classification at 18 years as a function of divorce and attachment at 1 year. Presentation of the data in this form allows for consideration of individuals and, at the same time, allows the interaction of early attachment and divorce on later attachment. At the bottom of Table 1, eight attachment groups at 18 years are presented as a function of both earlier attachment and divorce status. For example, three adolescents who are insecurely attached at 18 years were from divorced families and were insecurely attached at 1 year (Group 1). Likewise, 33 adolescents who are securely attached at 18 years are from intact families and were securely attached at 1 year (Group 8). As already shown, attachment at 18 years is related to divorce status but not to attachment

**Table 1** Attachment at 18 Years as a Function of Attachment at 1 Year and Family Divorce Status

Attachment at 1 Year							
Insecure				Secure			
24				60			
Divorce Status at 18 Years							
Divorced		Not Divorced		Divorced		Not Divorced	
5		19		9		51	
Attachment at 18 Years							
Insecure	Secure	Insecure	Secure	Insecure	Secure	Insecure	Secure
3	2	6	13	8	1	18	33
Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8

in infancy. The question now posed is whether there are any interactions between attachment in infancy and family divorce as they affect attachment at 18 years. First consider the results for those individuals who were securely attached at 1 year ( $N = 60$ ). Securely attached 1-year-olds of divorced families show significantly more insecure attachment at 18 years than securely attached 1-year-olds of intact families, Groups 5 and 6 versus Groups 7 and 8;  $\chi^2(1, N = 60) = 8.95, p < .05$  with Bonferroni adjustment. Eight out of 9, or 89%, of the securely attached 1-year-olds from divorced families show insecure attachment at 18 years of age (binomial  $p < .05$ ). In contrast, only 18 of 51, or 35%, of securely attached 1-year-olds who come from intact families show insecure 18-year attachment. Thus, secure attachment at one year does not buffer children from developing insecure attachments at 18 years if they are from divorced families.

Looking at the 24 insecurely attached 1-year-olds, a similar pattern emerges. Although not significant, insecure 1-year-olds from families who divorce (Groups 1 and 2) are more likely to be insecurely attached at 18 years (3/5, or 60%), whereas insecure 1-year-olds whose families did not divorce (Groups 3 and 4) are less likely to be insecurely than securely attached at 18 years of age (6/19, or 32%).

Of particular interest is the comparison between insecure and secure 1-year-olds whose families divorced. If attachment at 1 year and divorce interact in their contribution to attachment at 18 years, one would expect that adolescents who were insecure at 1 year and come from divorced families (Groups 1 and 2) should be more likely to be insecure at 18 than adolescents who were secure at 1 year and come from divorced families (Groups 5 and 6). This is not the case,  $\chi^2(1, N = 14) = 1.59, ns$ . Sixty percent of adolescents who were insecure at 1 year and from divorced families are insecure at 18 years, whereas 90% of adolescents who were secure at 1 year and from divorced families are insecure at 18 years.

It also would be expected that the adolescents who were secure at 1 year and from intact families (Groups 7 and 8) should be more likely to be secure at 18 years than the adolescents who were insecure at 1 year and from intact families (Groups 3 and 4). Again, this is not the case,  $\chi^2(1, N = 70) = 0.08, ns$ . Sixty percent of adolescents who were secure and from intact families are secure at 18 years, whereas 68% of adolescents who were insecure at 1 year and from intact families are secure at 18. Thus, there appears to be little interaction between 1-year attachment and divorce as it impacts on the 18-year attachment classification.

Although 1-year attachment and autobiographical recollections of childhood were unrelated, divorce

status at 13 years could interact with 1-year attachment to affect recollections at 13 years of age. However, analyses of the interactions showed no effects.

### Adjustment and Attachment

Although earlier attachment is unrelated to later attachment, earlier attachment may be related to later maladjustment. As expected, there was little agreement between adolescents, mothers, and teachers in regard to which 13- or 18-year-olds are maladjusted.<sup>3</sup> Because of this lack of agreement between raters, the relation between attachment and subsequent maladjustment is considered for each rater and across all raters.

Adolescents were scored as maladjusted if they had a rating above clinical cutoff scores. Relations between early attachment and later ratings of maladjustment were tested by using  $\chi^2$  analyses. The results show that insecure attachment at 1 year is not related to adjustment at 13 years as rated either by the adolescents themselves or their mothers. For those adolescents who rated themselves as having problems at 13 years, only 14% (2/14) were insecure at 1 year with the majority of maladjusted adolescents coming from the secure group (86%). Similarly, for those adolescents whose mothers rated them as being maladjusted, only 25% (2/8) were from the insecure group at 1 year with 75% of the maladjusted adolescents coming from the secure group. For teachers, there is a significant association between attachment at 1 year and ratings of child maladjustment at 13 years,  $\chi^2(1, N = 81) = 6.14, p < .01$ . Contrary to expectation, all of the 13-year-olds rated as maladjusted by their teachers were secure 1-year-olds (13/13). Rather than looking at the ratings of any particular individual, asking whether *any* one or more raters rated the child as maladjusted may be more useful (Fendrich, Weissman, & Warner, 1991). Attachment at one year was compared with whether at least one person rated the adolescent as maladjusted. Analyses indicated a significant relation, such that securely attached infants are more likely to be rated as maladjusted at 13 years of age,  $\chi^2(1, N = 84) = 5.31, p < .05$ .

There are no significant relations between insecure attachment at 1 year and ratings of 18-year-old maladjustment. Only 18% (5/28) of 18-year-olds who rated themselves as maladjusted were insecurely attached at 1 year. For mothers' ratings it was 57% (4/7),

<sup>3</sup> At 13 years, mother and adolescent agreement on maladjustment was  $\kappa = .00$ ; teacher and adolescent,  $\kappa = .00$ ; mother and teacher,  $\kappa = .07$ . At 18 years, mother and adolescent agreement was  $\kappa = .11$ ; teacher and adolescent,  $\kappa = .14$ ; mother and teacher,  $\kappa = .27$ .

**Table 2** Relations between Attachment at 18 and Maladjustment at 18 Years

	Raters						Number of Raters	
	Adolescents		Mothers		Teachers			
	Adjusted	Maladjusted	Adjusted	Maladjusted	Adjusted	Maladjusted	0	1 or More
Secure	39	10	47	2	42	1	37	12
Insecure	17	18	30	5	26	5	14	21
$\chi^2$	$\chi^2(1, N = 84) = 8.84^*$		$\chi^2(1, N = 84) = 2.78$		$\chi^2(1, N = 81) = 4.61^+$		$\chi^2(1, N = 84) = 10.79^{**}$	

\*  $p < .05$ ; \*\*  $p < .01$ ; +  $p < .10$ .

a marginally significant finding,  $\chi^2(1, N = 84) = 3.05$ ,  $p < .10$ . For the teachers' ratings, only 33% (2/6) of maladjusted adolescents had been insecure at one year. There is no significant relation between attachment at 1 year and whether at least one person rated the 18-year-old as maladjusted.

Although attachment at 1 year may not be related to later maladjustment, concurrent attachment might be related to concurrent maladjustment. Table 2 shows the results for the relations between concurrent attachment and maladjustment ratings at 18 years. For adolescents' ratings, maladjustment is associated with an insecure classification,  $p < .01$ . Sixty-four percent of the adolescents who rated themselves as maladjusted are from the insecurely attached group, binomial  $p < .05$ . Teachers' ratings of maladjustment are marginally associated with insecure attachment,  $p < .08$ . Eighty-three percent of the adolescents who are rated by their teachers as maladjusted are from the insecurely attached group. For mothers' ratings of maladjustment, there is no significant effect, although 71% of the adolescents rated by their mothers as maladjusted are from the insecurely attached group. When the criterion of at least one person rating maladjustment is used, the findings are consistent with results using individual raters. Adolescents who are rated by at least one person as maladjusted are currently more likely to have an insecure attachment classification,  $p < .01$ .

#### Adjustment and Autobiographical Recollections

Recollections at 13 years may be related to maladjustment. Results of  $\chi^2$  analyses indicate no concurrent relations between the recollections of childhood and any of the raters' judgments of maladjustment at 13 years. The relation between recollection at 13 years and maladjustment ratings at 18 yields some results of interest. Those 13-year-olds who recall their childhoods negatively are more likely to rate themselves as maladjusted (60%, 6/10) than those who do not recall

their childhoods as negative (30%, 22/74), a marginal trend,  $\chi^2(1, N = 84) = 3.63$ ,  $p < .07$ . This pattern shows a significant effect when at least one person rated the adolescent as maladjusted,  $\chi^2(1, N = 84) = 4.49$ ,  $p < .05$ . Seventy percent (7/10) of adolescents who reported negative recollections are rated as maladjusted by at least one of the raters, whereas only 35% (26/74) who are in the positive, mixed, or don't know groups are rated as maladjusted.

#### Divorce and Adjustment

Eighteen-year-old adolescents' ratings of their maladjustment are significantly related to divorce,  $\chi^2(1, N = 84) = 7.24$ ,  $p < .05$ . Nine out of 14, or 64%, adolescents from divorced families rate themselves as maladjusted, whereas only 19 out of 70, or 27%, adolescents from intact families rate themselves as maladjusted. For mothers' ratings of their adolescents, 29% (4/14) of those who have divorced rate their adolescents as maladjusted, whereas only 4% (3/70) of those from intact families rate their adolescents as maladjusted,  $\chi^2(1, N = 84) = 9.01$ ,  $p < .05$ . Teachers' ratings show no relation to divorce status. Having at least one person rating the 18-year-olds as maladjusted is related to divorce status,  $\chi^2(1, N = 84) = 7.28$ ,  $p < .05$ . Of the adolescents from divorced families, 71% (10/14) are rated as maladjusted by at least one rater, whereas only 33% (23/70) of adolescents from intact families are rated as maladjusted.

#### DISCUSSION

The results of this study bear on several important issues: (1) the continuity between attachment behaviors and attachment representations in adolescents, (2) the relation between autobiographical recollections of childhood and attachment representations, (3) the impact of divorce on attachment representations and autobiographical recollections, and (4) at-



tachment and maladjustment. The limitations of this longitudinal study and a conceptualization of changes in attachment follow.

Our findings reveal a lack of continuity between overt attachment behaviors at 1 year of age and representations in adolescence. Others also have found a lack of continuity from infancy, both for predicting attachment behaviors in childhood (Belsky, Spritz, & Crnic, 1996; Thompson & Lamb, 1983a, 1983b) and for predicting representations in adolescence (Zimmerman et al., 1997). Even when consistency is found, significant numbers change their attachment status over time (Main et al., 1985; Waters et al., 1995). This suggests that continuity in attachment may be influenced by factors such as family stress and environmental risk.

Although there are few published studies on continuity, the belief that attachment classification should be stable remains strong (Ainsworth & Marvin, 1995). The belief rests on the idea that attachment representation is outside of consciousness and resistant to change (Bowlby, 1980; Bretherton, 1985). A recent view of attachment emphasizes the importance of ongoing experiences for the continuity of attachment representations (Sroufe, 1997). This is consistent with longitudinal research showing that environments play a central role in the continuity of individual adaptation (Sameroff, Bartko, Baldwin, Baldwin, & Seifer, 1988).

It is recognized that the caregiving environment, particularly maternal behavior and characteristics, is related to continuity of the attachment classification (Egeland & Farber, 1984; Egeland & Sroufe, 1981; Lamb, Thompson, Gardner, & Charnov, 1985). Looking at the continuity of early overt behaviors in infancy to representations in adulthood, Waters et al. (1995) found that individuals who experienced major negative life events such as severe illness, loss of a parent, or parental divorce were more likely to show discontinuity. Thus data showing that environment has impacts on continuity of attachment do exist. We also found that divorce is related to discontinuity between attachment behaviors in infancy and representations in adolescence; adolescents experiencing parental divorce were more likely to show insecure attachment when they were 18 years of age, regardless of their attachment status at 1 year.

Similar to others examining the continuity of attachment into adolescence (Zimmerman et al., 1997), we found that divorce relates to an insecure representation of attachment. Our findings on divorce are consistent with studies showing that marital conflict is related to insecure attachments (Cox & Owen, 1993; Howes & Markman, 1989; Waters et al., 1993). Divorce represents a lack of parental availability and an increase in negative interactions between parent and

child, thus increasing the likelihood of an insecure attachment. In addition, divorce may provide the child with a model for showing that close relationships are not to be counted on (Cummings & Davies, 1994; Fiese, Wilder, & Bickham, *in press*; Harold & Conger, 1997; Hetherington et al., 1982). The negative impact on attachment relationships of a disruption in the availability of attachment figures has long been argued (Bowlby, 1973).

The environment appears to influence the changing representation of attachment. The influence of the environment can itself affect the new representation, or the environment in interaction with the old representation can affect the new representation. When we examined the interaction of 1-year attachment classification and divorce on 18-year attachment, there was no evidence that divorce moderates lawful changes. For example, secure infants who experienced divorce were just as likely to be insecure as adolescents as were insecure infants who experienced divorce. Thus, early secure attachment status did not buffer the negative effect of divorce on adolescent attachment.

In this study, representations were obtained through the observation of attachment behaviors and through interview procedures. The literature shows that representations and memories are based in part on current status (Ross, 1989). This suggests that the recall of past relationships, when the standard attachment interview is unavailable, may be useful. Bretherton (1985) has argued that the evaluation of childhood should be related to attachment representations. In addition, Main et al. (1985) have argued that the AAI uses recollections of memories, although it is not solely dependent on them. Thus, observing the relation between childhood recollection at 13 and attachment at 1 and 18 years was useful. Although no relation was found between recollections at 13 years and attachment at 1 year, recollections were related to attachment representations at 18 years. Thirteen-year-old adolescents with negative recollections of their childhoods were more likely to have insecure attachment representations at 18 years of age. Thus, continuity from early adolescent autobiographical memories of childhood to attachment representations in late adolescence has some support. Similarly, other work has shown continuity in children's representations of mothers as unavailable and subsequent insecure attachment representations in adolescence (Zimmerman et al., 1997).

The change in attachment, as referenced by overt behavior at 1 year and representation at 18 years, is influenced by divorce, a marker variable for a range of processes and events. Divorce can be considered as an event or as a status variable. For example, emotional and social disruptions associated with parental

conflict and fathers leaving may be viewed as an event like any other trauma. Alternatively, divorce can be considered both as an event and as a status variable. The status of being from a divorced family continues over time; that is, living in a family of only a mother and interacting with the nonpresent father. (In our study, with a cohort that was born 1971–1972, mothers maintained primary custody of the children.) Our data show no effects of when the divorce took place. This suggests that being in a divorced family is an important ongoing status variable. Thus, while divorce took place earlier than 18 years, its impact on the nature of the family environment continues. Children's recollections at 13 years bear no relation to their early attachment classification nor to the interaction between earlier attachment and divorce but are influenced by divorce status. Thirteen-year-olds who are from divorced families are significantly more likely to have negative recollections of childhood. This may be a function of several factors. There are the ongoing disruptions in family life related to divorce such as living in the separate households of each parent and dealing with step parents and siblings. In addition, negative emotions aroused by divorce and subsequent changes in the family can predispose children to evaluate their childhoods negatively and recall negative experiences (Grych & Fincham, 1990).

A history of linking early attachment to later competence has grown out of Bowlby's (1973) belief that insecure attachment is a risk factor for psychopathology (e.g., Bowlby, 1973; Cassidy & Kobak, 1988; Sroufe, 1983, 1997). In this study, we found that attachment at 1 year did not predict maladjustment in adolescence. Rather, it is divorce that is related to later maladjustment. Children from divorced families show greater maladjustment than do children from intact families. As was true for the relation between early attachment and later attachment, we failed to find the expected relation between early attachment behaviors and subsequent functioning. Furthermore, we found no evidence for an interaction between attachment at 1 year and divorce status on maladjustment in adolescence.

Although there is no predictive relation of early attachment to maladjustment, there is evidence for a concurrent association. Children with negative recollections at 13 years are more likely to show maladjustment at 18 years. Likewise, adolescents who are insecure at 18 years are more likely to show maladjustment at 13 years. These findings are consistent with other work showing that individuals classified as insecurely attached are more likely to show symptoms of maladjustment (Cole-Detke & Kobak, 1996; Fonagy et al., 1996; Kobak & Sceery, 1988; Kobak et al., 1991; Rosenstein & Horowitz, 1996).

Limitations of this study must be considered, especially the measurement of attachment. Given a study of 18 years in length, changes in methodologies used to measure constructs are inevitable. For example, the modified procedure to assess attachment at 1 year differs from the standard Strange Situation. A number of factors, however, support the validity of the modified procedure. First, Waters et al. (1979) used and validated an identical procedure. Second, as described by Lewis et al. (1984), the distribution of secure, insecure-avoidant, and insecure-ambiguous middle-class infants is similar to distributions found in studies using the unmodified procedure. Moreover, infants' classifications derived from the modified procedure predict later sociability and childhood maladjustment in ways that are consistent with attachment theory (Lewis & Feiring, 1989, 1991; Lewis et al., 1984).

Our rating of attachment classification for the 18-year-olds uses the Kobak et al. (1993) Q-sort method. Kobak et al. reported that the percentages of secure and insecure 18-year-olds are consistent with those found by using Main and Goldwyn's (1991) procedure for analyzing the Adult Attachment Interview. Even though we were not trained in the Main and Goldwyn system, our ratings are consistent with Kobak's. Thus, using the Q-sort coding system for the adult attachment interview is unlikely to be the major source of difficulty in failing to find continuity from overt behaviors in infancy to representations in adolescence. The data on divorce and maladjustment indicate that the attachment classification at 18 is coherent with maladjustment as rated by child, teacher, or mother and also is related to divorce.

The measure of 13-year-old autobiographical recollections was obtained over 12 years ago, before the existence of any standardized measure of attachment for this age group. Furthermore, the cognitive demands of the adult attachment interview and the nature of the coding system are inappropriate for young adolescents. Therefore, we did not have a measure of attachment representation in early adolescence. Instead, we used a procedure that is designed to elicit an evaluative representation of childhood by prompting for memories (Hudson, Fivush, & Kuebli, 1992). Although such a procedure is not a direct measure of attachment representation, it does use memories in common with the more standard procedures. Support for the idea that the method is a useful one comes from some evidence of consistency of these autobiographical recollections with attachment representations at 18 years of age.

Although measurement issues cannot be dismissed, the data as reported here are coherent. Attachment at 1 year of age as measured by overt behaviors does not

show continuity with attachment at 18 years of age as measured by representations. However, concurrent attachment, regardless of the age or type of assessment, is related to the nature of the caregiving environment. Previous work has shown that there is a relation between overt attachment behaviors and mother-child interactions (DeWolff & van Ijzendoorn, 1997). At 18 years, attachment classification is related to concurrent familial environment; that is, it is related to whether the parents are or are not divorced when the child is 18 years old. In addition, attachment is related to concurrent maladjustment. Moreover, adult attachment is related to concurrent parenting behaviors (Ainsworth & Eichberg, 1991; Main et al., 1985; Posada, Waters, Crowell, & Lay, 1995; van Ijzendoorn, 1995; van Ijzendoorn, Kranenburg, Zwart-Woudstra, von Busschbach, & Lambermon, 1991). Together, these findings suggest that although the attachment representation is not stable over time, current representations are related to important indicators of current functioning.

The early studies of attachment did not present any data on the environment in relation to the outcome measures. Without such data, we cannot address whether the consistency of the environment or characteristics of the child accounts for continuity. The few studies that include some indicators of the caregiving environment (Vaughan, Egeland, Sroufe, & Waters, 1979; Waters et al., 1995) reveal that continuity in attachment is affected by environmental factors. Although attachment theory has long emphasized the importance of the attachment construct as a continuous developmental force throughout the lifespan, recently Sroufe (1997) has argued that ongoing experiences interact with attachment relation history. As Waters et al. (1993) have argued, emphasizing the continuity of the caregiving environment should provide a better foundation for attachment theory than emphasizing transcendent effects of early experience. Whereas early insecure attachment may potentiate short term deviant development (Lewis et al., 1984; Main et al., 1985; Sroufe et al., 1990), there is no evidence for an enduring effect. The data presented in this study support and further this conceptualization of attachment theory. Stated simply, what is happening concurrently in the child's environment (the divorce status of the family) at least through adolescence, exerts powerful effects on the child's attachment behaviors and representations. The degree to which environmental factors remain consistent represents the degree to which the individual's attachment remains consistent. Our findings fit with contextual models of development (James, 1895/1975; Pepper, 1942). A contextual model emphasizing concurrent adaptation, in this case to a divorced family life, is a central premise

for understanding children's emotional and social development. Such a view is supported by the developmental literature (Lerner, 1986; Lewis, 1997).

## ACKNOWLEDGMENT

This work was supported by a grant from the William T. Grant Foundation.

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