IMPACT OF FATHERS' ALCOHOLISM AND ASSOCIATED RISK FACTORS ON PARENT–INFANT ATTACHMENT STABILITY FROM 12 TO 18 MONTHS

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Abstract

This study examined short-term attachment stability and sought to identify predictors of stability and change within a sample characterized by fathers' alcoholism. Results suggest moderate stability of attachment classifications (60% for mothers, 53% for fathers) from 12 to 18 months. Higher paternal and maternal alcohol symptoms, maternal depression, and maternal antisocial behavior were found in families with stable insecure mother–infant attachment compared to those who were stable secure. Mother–infant stable insecurity was associated with higher levels of maternal negative affect expression during play. Father–infant stable insecurity was associated with lower levels of paternal positive affect expression and decreased sensitivity during play. Stable insecure children also had higher levels of negative affect during parent–infant interactions and higher negative emotionality during other episodes compared to stable secure children. Results indicate that infants who were insecure at both time points had the highest constellation of family risk characteristics.

In the first year of life, an infant's principal task is the development of an attachment to at least one primary caregiver. Attachment security is not a static, traitlike construct, and both stability and change in attachment is anticipated in attachment theory. The majority of earlier studies on attachment stability used the original attachment classifications developed by Ainsworth and Wittig (1969), and included only mother – infant dyads from middle-class, low-risk samples (e.g., Thompson, Lamb, & Estes, 1982; Waters, 1979). Calls for an increased focus on the father – infant relationship have prompted increasing study of paternal attachment relationships (Fitzgerald, Mann, & Barrett, 1999; Lamb, 1975). In addition, more recent research has expanded to include the more recently developed disorganized classification (Main & Solomon, 1990) and examine issues of stability and instability in high-risk samples. These studies have noted that instability is more characteristic of high-risk samples, especially increases in disorganized patterns of insecure attachment with increasing child age (e.g., Lyons-Ruth, Repacholi, McLeod, & Silva, 1991; Vaughn, Egeland, Sroufe, & Waters, 1979; Vondra, Hommerding, & Shaw, 1999); however, stability can be derived from secure patterns as well as insecure patterns. To date, very few studies have distinguished between these two patterns of stability and examined the possibility that infants with stable insecure attachment may display a different constellation of risk characteristics compared to infants with stable secure attachments (see Vondra et al., 1999 for an exception).

Apart from rates of stability, per se, studies also have examined if changes in attachment security are a lawful process that can be explained by theoretically relevant variables. Theoretical models of parenting (Belsky, 1984; Snyder & Huntley, 1991) have emphasized the role of three sets of predictors in explaining variations in parent – child interactions and the

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quality of the parent – child relationship: parent characteristics, infant characteristics, and the context in which parenting takes place. The focus of this study was on explaining attachment stability, instability, or both in a sample characterized by fathers' alcoholism. As such, the theoretical predictors of interest in this study, following the conceptual models of parenting articulated by previous researchers, included fathers' alcoholism and associated risk characteristics in the three domains mentioned earlier.

The first domain elucidated in various models of parenting is parental characteristics. In a sample characterized by fathers' alcoholism, the primary parental characteristic of interest is fathers' alcohol problems. Previous studies have demonstrated that mothers with alcoholic partners also tend to be heavier drinking and have more alcohol-related problems (Eiden & Leonard, 1996; Roberts & Leonard, 1997). While research on children of alcoholics has generally focused on early school age and adolescent children, infants and toddlers of alcoholics have been shown to experience more negative parenting and higher levels of insecure parent –infant attachment at 12 months (Eiden, Chavez, & Leonard, 1999; Eiden, Edwards, & Leonard, 2002). Other parental risk characteristics commonly associated with fathers' alcohol problems, such as depression and antisocial behavior, also have been theoretically linked to parenting and the quality of the parent – child relationship (Campbell & Cohn, 1997; Eiden, et al., 1999; van den Boom, 1994). Maternal affective disorders in particular have been demonstrated to have a negative impact on the mother – infant relationship. Mothers' depression, particularly when it is chronic or occurring in the context of family dysfunction, has been directly associated with an increased risk for insecure attachment (Carter, Garrity-Rokous, Chazan-Cohen, Little, & Briggs-Gowan, 2001; DeMulder & Radke-Yarrow, 1991; Martins & Gaffan, 2000). Much less is known about the effects of paternal depression on parenting; however, in one of the few studies examining paternal depression, fathers' depression was found to have an indirect effect on the father – infant relationship. Specifically, paternal alcoholism was found to be associated with higher levels of paternal aggravation and decreased sensitivity in interactions with their children, an effect mediated by fathers' depression (Eiden et al., 1999; Eiden & Leonard, 2000). While relatively little is known about the potential of antisocial behavior to influence the parent – infant relationship, Puttler, Zucker, Fitzgerald, and Bingham (1998) found that children of antisocial alcoholics had significantly more behavior problems than children of nonantisocial alcoholics as well as controls, suggesting that parental antisociality exacerbates children's risk of maladaptive behavioral outcomes.

The second domain of interest is the role of infant characteristics. It has been suggested that a biological predisposition for difficult temperament is present in infants with antisocial and alcoholic parents (see Tarter, Alterman, & Edwards, 1985; Windle, 1991), and in fact, young children of alcoholic fathers have been found to have more difficult temperaments than children of nonalcoholic fathers (Fitzgerald et al., 1993; Jansen, Fitzgerald, Ham, & Zucker, 1995). Although no direct relationship between infant temperament and attachment security has been reliably demonstrated in the literature (Bates, 1987; Sroufe, 1985), some studies have shown that the association between temperament and attachment security is mediated or moderated by maternal sensitivity during interactions (Mangelsdorf, Gunnar, Kestenbaum, Lang, & Andreas, 1990; O'Connor, Sigman, & Kasari, 1992; Susman-Stillman, Kalkose, Egeland, & Waldman, 1996; van den Boom & Hoeksma, 1994). Certainly, infant temperament influences the attachment relationship by the very nature of the reciprocity that characterizes parent – child interactions (Olson, O'Connor, & Fitzgerald, 2001). Similarly, observations of infant emotionality, while not directly predictive of attachment security, have been associated with the child's position on the spectrum of attachment classifications, with resistant and highly aroused secure children showing more fear than both avoidant and less aroused secure children (Kochanska, 1998).

The third source of influence in predicting the quality of the parent – infant relationship is the marital context. Indeed, poor marital quality has been found to be directly predictive of insecure infant attachment (Howes & Markman, 1989; Owen & Cox, 1997). Marital quality also is of relevance in studying alcoholic families because of the strong association between parental alcoholism and marital conflict (Leonard, 1993; Leonard & Quigley, 1999; Murphy & O'Farrell, 1996; Quigley & Leonard, 2000; Spaccarelli, Sandler, & Roosa, 1994). The importance of marital satisfaction as a predictor of parenting has been enumerated by models of parenting (e.g., Belsky, 1984) and may be particularly pronounced for fathers (e.g., Belsky, Fish, & Isabella, 1991; Goldberg & Easterbrooks, 1984).

Keys to the development of secure attachment in Ainsworth's (1973) original conception include parental sensitivity, acceptance, cooperation, and psychological accessibility, focusing attention on the contributions of the parent to the development of this relationship. For this reason, much of the research conducted on attachment has focused on parenting behavior, specifically parental sensitivity (Ainsworth, Blehar, Waters, & Wall, 1978; Cox, Owen, Henderson, & Margand, 1992; Eiden et al., 2002; Teti, Gelfand, Messinger, & Isabella, 1995; Volling & Belsky, 1992), and indeed, the theoretical link between parent – infant interactions and attachment security has been well validated (de Wolff & van IJzendoorn, 1997; van IJzendoorn & de Wolff, 1997); however, researchers emphasize that this relationship is complex and the association context dependent (de Wolff & van IJzendoorn, 1997). Similarly, in examining changes in attachment over time, evidence indicates instability may be associated with environmental changes and may be predictable (Egeland & Farber, 1984; Vondra et al., 1999). Thus, current environment as well as previous levels of security may affect current attachment classifications. This is a particularly relevant concept when studying children of alcoholics —a population in which risk aggregates much more highly and has the potential to markedly alter attachment over time.

The purpose of this study was to examine attachment stability from 12 to 18 months in a sample characterized by paternal alcoholism. A strength of the current study is that it also allows study of fathers' parenting and attachment relationships with their infants — an often overlooked area in a literature that has largely focused its attention on maternal variables. On the basis of results with other high-risk samples, we expected increases in insecurity in general and in disorganized classification in particular from 12 to 18 months within the alcoholic group. We also examined the role of three domains of family functioning in explaining stability or changes in attachment security from 12 to 18 months. These included parental characteristics such as alcohol problems, depression, and antisocial behavior; infant characteristics such as parent reports of infant temperament and observations of infant emotionality; and the marital context (marital aggression and marital adjustment). Finally, attachment theory highlights the proximal role of parent – infant interactions in the development of infant attachment. Thus, we examined the quality of parent and infant behaviors during parent – infant interactions in explaining stability and change in attachment security.

METHOD

Participants

The participants were 217 families with 12-month-old infants (107 girls, 110 boys) who were recruited for an ongoing longitudinal study of parenting and infant development. Of these 217 families, 208 completed the father – infant attachment procedure at 12 and 18 months of infant age. Failure to complete the assessment was due to refusal to participate ($n = 3$), technical difficulties ($n = 2$), separation from the family ($n = 1$), and because the procedure could not be completed due to the level of child distress ($n = 3$). Families were classified on the basis of phone screens as being in one of two major groups: the nonalcoholic group consisting of parents with no or few current alcohol problems ($n = 101$) or the father alcoholic group ($n = 116$).

Within the father alcoholic group, 96 mothers were light drinking or abstaining and 20 mothers were heavy drinking or had current alcohol problems. (Prenatal heavy-drinking mothers were excluded as described later.) The majority of the mothers in the study were Caucasian (94%), about 4% were African American, and 2% were Hispanic or Native American. Similarly, the majority of fathers were Caucasian (90%), a few were African American (7%), and 2% were Hispanic or Native American. The majority of the mothers had a post-high-school education, such as an associate or vocational degree (31%) or were college graduates (27%). Only 2% were not high-school graduates. The educational level of the fathers was similar, with 33% receiving a college degree and 18% receiving some post-high-school education. Only 5% had not graduated from high school. All mothers were cohabiting with the father of the infant in the study. Most parents were married to each other (88%), about 11% had never been married, and 1% had previously been married. Mothers' ages ranged from 19 to 41 ($M = 30.7$, $SD = 4.46$); fathers' ages ranged from 21 to 58 ($M = 32.95$, $SD = 5.94$). About 62% of the mothers and 92% of the fathers were working outside the home at the time of the 12-month assessment, with very similar percentages working at the 18-month assessment (66% of mothers, 92% of fathers). Thus, the majority of the families were middle-income, Caucasian families with one to two children in the household.

Procedure

The names and addresses of these families were obtained from New York State birth records for Erie County. These birth records were preselected to exclude families with premature (gestational age of 35 weeks or lower), or low-birth-weight infants (birth weight of less than 2,500 g), maternal age of less than 19 and greater than 40 at the time of the infant's birth, plural births (e.g., twins), and infants with congenital anomalies, palsies, or drug-withdrawal symptoms. Introductory letters were sent to 9,457 families who met the previously mentioned basic eligibility criteria. Each letter included a form that all families were asked to complete and return. Approximately 25% of these families completed the form, and of these, 2,285 replies (96%) indicated an interest in the study. Respondents were compared to the overall population with respect to information collected on the birth records. These analyses indicated a slight tendency for infants of responders to have higher Apgar scores ($M = 8.97$ vs. 8.94 on a scale ranging from 1 – 10), higher birth weight ($M = 3,516$ vs. 3,460 g), and a higher number of prenatal visits ($M = 10.50$ vs. 10.31). Responders also were more likely to be Caucasian (88% of total births vs. 91% of responders), have higher educational levels, and have a female infant. These differences were significant given the very large sample size, even though the size of the differences was minimal.

Parents who indicated an interest in the study were screened by telephone with regard to sociodemographic factors and further eligibility criteria. A maternal screen was done first to determine provisional group status. Initial inclusion criteria consisted of both parents cohabiting since the infants' birth, the target infant being the youngest child in the family, mother was not pregnant at recruitment, no mother – infant separations for over a week, parents were the primary caregivers, and the infant did not have any major medical problems. These criteria were important to control because each has the potential to markedly alter parent – infant interactions. Additional inclusion criteria were utilized to minimize the possibility that any observed infant behaviors could be the result of prenatal exposure to drugs or heavy alcohol use. These additional criteria were that there could be no maternal drug use during pregnancy or the past year except for mild marijuana use (no more than twice during pregnancy), the infant was not premature or low birth weight (one of the most consistent effects of prenatal alcohol and drug exposure), mothers' average daily ethanol consumption was .5 ounces or less, and she did not engage in binge drinking (five or more drinks per occasion) during pregnancy. Families meeting these basic inclusion criteria were provisionally assigned to one of three groups on the basis of parental screens (control, father alcoholic/mother light drinker, father

alcoholic/mother heavy drinker), with final group status assigned on the basis of both screen and questionnaire. A father was considered alcoholic if he met any one of the following three criteria: (a) He met Family History Research Diagnostic Criteria for Alcoholism (FH-RDC; Andreason, Endicott, Spitzer, & Winokur, 1977; Andreason, Rice, Endicott, Reich, & Coryell, 1986) according to maternal report; (b) he acknowledged having a problem with alcohol or having been in treatment for alcoholism, was currently drinking, and had at least one alcohol-related problem in the past year; (c) he indicated having alcohol-related problems in three or more areas in the past year according to responses on a screening interview based on the University of Michigan-Composite International Diagnostic Interview (UM-CIDI; Anthony, Warner, & Kessler, 1994; Kessler et al., 1994) screen; or (d) he met *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition (*DSM-IV*; American Psychiatric Association, 1994) criteria for abuse or dependence in the past year based on his responses to a questionnaire based on the UM-CIDI. A mother was considered a heavy drinker if she met any of the following criteria: (a) average daily ethanol consumption of 1.0 ounces or higher; (b) she acknowledged drinking five or more drinks per occasion at least once/month; or (c) she met *DSM-IV* diagnosis for abuse or dependence based on the UM-CIDI. Families were classified as control if neither father nor mother met the criteria for alcoholism or heavy drinking, respectively. Families were classified as father alcoholic/mother light drinker if the father met criteria for alcoholism and the mother did not meet heavy drinking criteria, and they were classified as father alcoholic/mother heavy drinker if both parents met criteria for alcoholism or heavy drinking, respectively. Note that women who reported drinking moderate to heavy amounts of alcohol during pregnancy (see criteria mentioned previously) were excluded from the study. Because we had a large pool of families potentially eligible for the control group, control families were matched to the two other groups with respect to race/ethnicity, maternal education, child gender, parity, and marital status.[1]

To date, families have been asked to visit the Institute at five different infant ages (12, 18, 24, 36, and 60 months), with three visits at each age. Two weeks before each visit, parents were sent a packet of questionnaires, one for each parent. Both parents were asked to complete the questionnaires independently and return them in sealed envelopes at the first visit. A variety of observational procedures and developmental assessments were conducted at each visit, and families were paid for participation. This article focuses on the 12- and 18-month questionnaire and observational assessments.

Measures

Parental alcohol use—Although parental alcohol abuse and dependence problems were partially assessed from the screening interview, self-report versions with more detailed questions were used to enhance the alcohol data and check for consistent reporting. A self-report instrument based on the UM-CIDI interview (Anthony et al., 1994; Kessler et al., 1994) was used to assess alcohol abuse and dependence. Several questions of the instrument were reworded to inquire as to "how many times" a problem had been experienced as opposed to whether it happened "very often." This instrument was used to derive continuous measures of the total number of alcohol-related abuse and dependence symptoms in the past year. These scores for both fathers and mothers were skewed and were transformed using square-root transformations. It should be noted that the continuous measure of alcohol-related abuse and dependence symptoms was used in the current analyses rather than the alcohol grouping status described earlier.

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[1]In several instances in which unusual families were recruited, it was not possible to match controls to cases on all five variables, and they were matched on three or four of the variables.

Parents' antisocial behavior—A modified version of the Antisocial Behavior Checklist (ASB; Ham, Zucker, & Fitzgerald, 1993; Zucker & Noll, 1980) was used in this study. Because of concerns about causing family conflict as a result of parents reading each others' responses, items related to sexual antisociality and those with low population base rates (R.A. Zucker, personal communication, 1995) were dropped. This resulted in a 28-item measure of antisocial behavior. Parents were asked to rate their frequency of participation in a variety of aggressive and antisocial activities along a 4-point scale ranging from 1 (*never*) to 4 (*often*). The measure has been found to discriminate among groups with major histories of antisocial behavior (e.g., prison inmates, individuals with minor offenses in district court, and university students, Zucker & Noll, 1980), and between alcoholic and nonalcoholic adult males (Fitzgerald, Jones, Maguin, Zucker, & Noll, 1991). Parents' scores on this measure also were associated with maternal reports of child behavior problems among preschool children of alcoholics (Jansen et al., 1995). The original measure has adequate test-retest reliability (.91 over 4 weeks) and internal consistency (coefficient alpha = .93). The antisocial-behavior scores for both fathers and mothers were skewed and were transformed using square-root transformations. The internal consistency of the 28-item measure in the current sample was quite high for both parents (α =.90 for fathers, .82 for mothers).

Parents' depression—Parents' depression was assessed with the Center for Epidemiological Studies Depression Inventory (CESD; Radloff, 1977), a scale designed to measure depressive symptoms in community populations. The CESD is a widely used, self-report, 4-point Likert-type measure. Parents were asked to report how often they experienced 20 depressive symptoms (e.g., poor appetite, feeling sad, inability to concentrate) during the past week with responses including *rarely or none, some or a little of the time* (1 – 2 days), *occasionally or a moderate amount of time* (3 – 4 days), or *most or all of the time* (5 – 7 days). The scale has high internal consistency (Radloff, 1977) and strong test-retest reliability (Boyd, Weissman, Thompson, & Myers, 1982; Ensel, 1982). In the present study, the depression scores for both parents were skewed and were transformed using square-root transformations. The internal consistency of this scale for the current sample ranged from .87 for fathers to .90 for mothers.

Marital aggression—Mother and father reports of physical aggression were obtained from a modified version of the Conflict Tactics Scale (Straus, 1979). The items focusing on moderate (e.g., push, grab, or shove) to severe (e.g., hit with a fist) physical aggression, but not the very severe items (e.g., burnt or scalded, use of weapons), were used in this study. Parents were asked to report on the frequency of their own and their partners' aggression toward each other on a seven-item scale. Two composite physical-aggression scores, one for each parent, were created by taking the maximum of each parent and the partners' reports of aggression. The resulting scores were highly skewed and were transformed using square-root transformations.

Marital adjustment—The Marital Adjustment Test (MAT; Locke & Wallace, 1959) is a widely used measure of marital satisfaction. The MAT has been found to discriminate distressed from nondistressed marriages in numerous studies and has well-established concurrent and predictive validities (O'Leary & Turkewitz, 1978). The MAT also has been found to be predictive of children's behavior problems (Emery & O'Leary, 1984). The internal consistency of this scale for both parents was α = .77.

Infant temperament—Infant temperament was assessed with the 13-month version of the Infant Characteristics Questionnaire (ICQ; Bates, Freeland, & Lounsbury, 1979), a self-report measure with 32 items rated on a 7-point scale. The ICQ was completed by both mothers and fathers. The ICQ consists of four subscales: infant fussy/difficult (α =.82 for mother report, .77 for father report), persistent (α =.71 for mother report, .77 for father report), unadaptable

(α =.74 for mother report, .76 for father report), and unsociable (α =.42 for mother report, .52 for father report). Because of its unacceptably low alpha, infant unsociability was excluded from all further analyses. Higher scores indicate more problematic infant temperaments.

Infant emotionality—Infants' positive and negative emotionality were coded along a 4-point scale ranging from 0 (*no affect*) to 4 (*high positive or negative affect*) during three separate paradigms: (a) Strange Situation, (b) Approach, and (c) Puppet Show. Positive and negative emotionality were coded separately for each 10-s interval for all eight episodes of the Strange Situation in a fashion similar to procedures in previous studies (Belsky, Friedman, & Hsieh, 2001; Belsky, Hsieh, & Crnic, 1996). The approach paradigm consisted of four episodes over two separate visits: mother approach followed by a stranger approach, and on a separate visit, father approach followed by a stranger approach. For the approach situations, the infant was seated in a high chair, and the mother or father was instructed to approach the baby from across the room slowly, one step at a time, and to try to elicit smiling or laughter from the infant. For the stranger approach, the infant was seated on the parent's lap. Strangers were told to approach the infant from across the room and try to elicit positive affect by using variations of following a "peek-a-boo" script that ended with blowing bubbles. Each approach episode lasted for 60 s. Positive and negative emotionality during the approach episodes were coded for each 10-s interval. The final emotionality episode consisted of a puppet show taken from the Laboratory Temperament Assessment Battery (Goldsmith & Rothbart, 1994) with a standard script. Positive and negative emotionality during the puppet show was coded using the same 4-point rating scale for each 10-s interval. Separate scores for positive and negative emotionality within episodes were computed by taking the sum of emotionality ratings across all 10-s intervals within each episode (Strange Situation, Approach, and Puppet), and dividing by total number of intervals. Two final scores, one reflecting positive emotionality and one reflecting negative emotionality, were computed by taking the sum across all episodes. The Pearson correlations between ratings of two coders ranged from .78 to .92 for positive emotionality and from .89 to .96 for negative emotionality.

Parent and infant behavior during free play—Parents were asked to interact with their infants as they normally would at home for 5 min in a room filled with toys. These interactions were coded using a collection of global 5-point rating scales developed by Clark, Musick, Scott, and Klehr (1980), with higher scores indicating more positive affect or behavior. These scales have been found to be applicable for children ranging in age from 2 months to 5 years (Clark, 1999; Clark et al., 1980).

In a factorial validity study, Clark (1999) found that all subscale scores demonstrated high levels of internal consistency, with coefficients ranging from .75 to .96. All scale points were clearly defined and appear to be directly related to the underlying construct. Clark (1986) found these scales to differentiate between psychiatrically ill and well mothers in terms of affective involvement, responsivity, and predictability in interactions with children, with psychiatrically ill mothers obtaining lower ratings on all these scales. In addition, Eiden and Leonard (1996) found maternal sensitivity as coded by a portion of these scales to be associated with fathers' heavy drinking. Further, these scales have been found to differentiate more secure from less secure infants and preschoolers (Teti, Nakagawa, Das, & Wirth, 1991) and to be associated with maternal working models of attachment (using the Adult Attachment Interview) and child security (Eiden, Teti, & Corns, 1995).

The original collection of scales consisted of 29 scales measuring parental behavior and 27 scales measuring child behavior. One parent scale (structures and mediates environment) and two child behavior scales (compliance and motoric competence) were dropped from coding on an a priori basis because we anticipated these behaviors to be less relevant during free play and because motoric competence was being measured in a separate paradigm. Initial analyses

of the remaining items indicated that several had low variability. These consisted of six parent scales (anxious mood, hypomanic mood, contingent responsivity to child negative behavior, evidence for behavioral disturbances, mirroring, and creativity) and nine child scales (attentional abilities, persistence, consolability, focus on parents' emotional state, visual contact, child initiations, quality of exploratory play, hyperactivity, and communicative competence). These scales were dropped from further analyses. The resulting 22 items for parent behavior and 16 items for child behavior were used in two separate factor analyses. These analyses yielded three scales for parenting behavior (negative affect, positive affect/involvement, sensitivity) and three scales for child behavior (negative affect, positive affect, responsiveness; see Eiden et al., 1999 for factor loadings). The internal consistencies for these composite scales were quite high, ranging from .83 to .94 for mother – infant interaction scales and .77 to .90 for fathers.

Two female coders rated parental behavior. The coding of maternal and paternal behavior was alternated between the two coders so that the coder who coded one parent did not code the other parent. Both coders were trained on the Clark scales by the second author and were unaware of group membership and of all other data. The interrater reliability was conducted on a random selection of 10% of the tapes and was fairly high, ranging from $r = .89$ to $r = .95$ (Pearson correlations) for each of these seven composite scales.

Parent – infant attachment—The Ainsworth Strange Situation paradigm (Ainsworth & Wittig, 1969), a 21-min videotaped, structured laboratory separation – reunion procedure, was used to examine mother – infant attachment. The procedure consists of eight 3-min episodes that occur in a fixed order and are designed to induce increasing levels of stress in the infant to activate the attachment system. In each episode, the infant's behavior is rated along six dimensions using 7-point scales. The ratings are used to classify the infants into three major categories: secure, insecure-avoidant, and insecure-resistant. In addition to these three classifications, the coding scheme has been extended to include an additional pattern that is especially prevalent in high-risk infants, the disorganized (D) pattern (Main & Solomon, 1990). The D classification is considered to be an insecure pattern, with behaviors representing a collapse of organized behavior in response to stress of separation, resulting from fear or apprehension in the parent's presence. This may be exhibited in a variety of ways. Two major behavioral themes are contradictory behavior patterns or direct indices of fear or apprehension in the parent's presence. Because the D classification does not represent an organized strategy for maintaining access to the caregiver, an alternative, best-fitting classification of secure, avoidant, or resistant is assigned as well, although in several cases coding of this alternative classification was extremely difficult.

Two research assistants who were blind to group status were responsible for coding all the Strange Situations, with consultation on difficult-to-code tapes provided by the first and second authors. The first author was trained by Alan Sroufe and Elizabeth Carlson. The second author was originally trained in coding Strange Situations by Douglas Teti, with training on D coding provided by Dante Cicchetti and with follow-up training by Alan Sroufe and Elizabeth Carlson. Interrater reliability was established on 15% of the tapes. Individual dyads used for reliability were selected randomly and included all four classifications. The mean interrater reliability using Pearson's r was .76 on the Strange Situation rating scales and .81 for the Disorganization scale score. Interrater agreement on the four attachment classifications was 89% (Cohen's κ = .78, $z = 2.40$, $p = .01$). Coders were blind to all other observational data.

RESULTS

There were no marked changes in attachment-classification distributions for either mothers or fathers. Attachment-stability data are presented in Table 1. Overall rates of stability were 60%

for infant – mother ($\kappa = .24$, $p < .001$) and 53% ($\kappa = .18$, $p < .001$) for infant – father relationships — a modest, but with a sample of over 200 children, statistically significant pattern. Stability was concentrated among secure children, with 48% of mother – infant and 43% of father – infant relationships remaining secure. Contrary to expectations, there were no increases in insecurity over time or specific increases in disorganization with mother or father over time.

The next step was to examine the associations between attachment stability and various risk indices. Three attachment groups reflecting stability/instability were computed: stable secure [secure at both 12 and 18 months, $n = 105$ (48%) mothers, $n = 89$ (43%) fathers], stable insecure [insecure at both 12 and 18 months, $n = 39$ (18%) mothers, $n = 40$ (19%) fathers], and unstable [secure at one age and insecure at another, $n = 73$ (34%) mothers, $n = 79$ (38%) fathers] parent – infant attachment.[2] The following sets of risk indices were considered: (a) background variables — number of work hours, hours in child care, number of changes in child care, parental education, and parity; (b) parental characteristics — maternal and paternal alcohol variables, antisocial behavior, and depression; (c) child characteristics — maternal and paternal reports of infant temperament, observations of positive and negative emotionality during 12-month visits, and observations of child behavior during play sessions; (d) marital context — maternal and paternal marital adjustment and aggression; and (e) parenting behavior — negative affect expression, positive involvement, and sensitivity during a free-play activity. With the exception of demographic variables, antisocial behavior, and infant emotionality, which were assessed only at 12 months of infant age, all remaining variables were assessed at both 12 and 18 months of infant age.

Repeated measures MANOVA were used to examine changes in risk indices over time as a function of mother – infant and father – infant attachment stability. Child age was the within-subjects factor, and the attachment stability grouping was the between-subjects factor. Separate MANOVAs were conducted for parent characteristics, infant characteristics, marital context, and parenting behavior for both mother – infant and father – infant attachment stability. The first section of results summarizes findings in relation to demographic variables, and the second and third sections summarize predictors of mother – infant attachment stability and predictors of father – infant attachment stability, respectively.

Background Variables

Multivariate age effects were found for demographic variables, $F(3, 203) = 23.36$, $p < .001$. Univariate analyses indicated that the number of child-care changes decreased over time whereas fathers' work hours increased. No demographic variables significantly discriminated among attachment groups.

Predictors of Mother–Infant Attachment

Means and *SD*s of significant predictors of mother – infant attachment can be seen in Table 2.

Maternal characteristics—Multivariate age effects were found for maternal characteristics, $F(4, 211) = 9.49$, $p < .001$. In univariate analyses, it was shown that mothers' depression and binge drinking decreased over time.

A significant multivariate group effect was found for maternal characteristics as well, $F(8, 211) = 2.59$, $p < .01$. Univariate analyses indicated that infants who had stable insecure mother – infant relationships had mothers with significantly more depression than those with stable

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[2]The unstable group consisted of 36 mother– infant and 34 father– infant dyads that moved from insecure to secure attachment, and 37 mother– infant and 45 father– infant dyads that moved from secure to insecure attachment. Because no significant differences were found between these groups on the variables analyzed, they were combined into one group to increase power for analyses.

secure relationships. These mothers also had significantly more alcohol symptoms and marginally higher levels of antisocial behavior than both the unstable and stable secure attachment groups.

Finally, we explored the relationship between fathers' alcohol use and mother – infant attachment, as previous research has found this link to be significant (Eiden & Leonard, 1996; Eiden et al., 2002). A multivariate group effect was found for fathers' alcohol use and mother –infant attachment, $F(2, 214) = 4.61, p < .05$. Univariate analyses indicated that families with both stable secure and unstable mother – infant attachment had lower levels of paternal alcohol use than the stable insecure attachment group.

Infant characteristics—No significant multivariate age or group effects were found for mothers' reports of infant temperament or emotionality; however, multivariate age effects of child behavior during play were found, $F(3, 213) = 4.83, p < .01$. Univariate analyses indicated that there was a marked increase in child negative affect in the stable insecure attachment group which accounted for this effect.

Multivariate group effects also were found for child behavior with mothers, $F(6, 213) = 2.39$, $p < .05$. Univariate analyses indicated that children with stable secure relationships with their mothers had significantly higher levels of positive affect than children with unstable and stable insecure relationships. In addition, children with both stable secure and unstable attachment relationships had significantly lower levels of negative affect and higher levels of responsivity with their mothers than children with stable insecure attachment relationships.

Finally, significant multivariate group effects were found for child emotionality and mother – infant attachment, $F(4, 214) = 2.42, p < .05$. Marginal univariate group differences were found for mothers in negative emotionality, with children with stable secure attachment relationships displaying lower levels than children with stable insecure attachment relationships. Children with stable secure mother – infant attachment displayed significantly more positive emotionality than children in the stable insecure attachment group.

Marital context—A significant multivariate age effect was found for marital context for mothers, $F(2, 213) = 8.68, p < .001$. Univariate analyses indicated that according to maternal report, spousal aggression decreased over time. However, marital adjustment and marital aggression did not discriminate among attachment groups.

Parenting—Significant multivariate age effects were found for mothers' parenting behavior, $F(3, 212) = 8.31, p < .001$. Univariate analyses indicated that mothers' sensitivity increased over time. Multivariate interaction effects also were found for mothers' parenting, $F(6, 209) = 2.36, p < .05$. Univariate analyses indicated that there was a significant Attachment Group × Infant Age interaction for negative affect expression. Simple effects testing indicated that infants with stable secure attachment relationships had mothers who displayed lower levels of negative affect than infants with unstable or stable insecure attachment relationships at 12 months of infant age. In addition, children in the unstable attachment group experienced a decrease in negative affect expression over time while those in the stable secure group remained low and those in the stable insecure group remained high on negative affect expression from 12 to 18 months of age (see Figure 1).

Predictors of Father–Infant Attachment

Means and *SD*s of significant predictors of father – infant attachment can be seen in Table 3.

Paternal characteristics—Multivariate age effects were found for paternal characteristics, $F(4, 202) = 6.54, p < .001$. Fathers' depression, total number of alcohol symptoms, and binge

drinking decreased from 12 to 18 months of infant age. Fathers' characteristics did not discriminate significantly between attachment groups.

Infant characteristics—Multivariate age effects were found for paternal reports of infant temperament, $F(3, 203) = 3.63$, $p < .05$. Univariate analyses indicated that according to fathers, infants became more unadaptable over time. Infant temperament did not significantly discriminate among attachment groups.

Multivariate group effects were found for child behavior with fathers, $F(6, 204) = 3.93$, $p < .01$. Univariate analyses indicated that children with stable secure relationships with their fathers had lower levels of negative affect expression and higher positive affect expression than children with unstable and stable insecure father – infant attachment relationships.

In addition, significant multivariate group effects were found for child emotionality and attachment to fathers, $F(4, 202) = 2.31$, $p = .57$. Marginal univariate group differences were found for fathers in negative emotionality, with children with stable secure attachment relationships displaying lower levels than children with stable insecure attachment relationships. Children in the stable secure group also displayed significantly more positive emotionality than children in the unstable and stable insecure groups.

Marital context—A significant multivariate age effect was found for father reports of marital context, $F(2, 204) = 14.79$, $p < .001$. Univariate analyses indicated that spousal aggression decreased over time; however, marital adjustment and marital aggression did not discriminate among attachment groups.

Parenting—Significant multivariate group and interaction effects were found for fathers, $F(6, 203) = 2.28$, $p < .05$. There was a significant univariate group difference on positive affect expression, with stable secure fathers displaying higher levels than stable insecure fathers. A marginally significant univariate interaction was found for father sensitivity as well. Simple effects testing indicated that infants with stable secure attachment had fathers whose sensitivity increased over time. In addition, fathers of children in the stable insecure group displayed significantly lower levels of sensitivity than fathers of children in the unstable group at 18 months and marginally significantly lower levels of sensitivity than fathers of children in the stable secure group (see Figure 2).

Summary of Predictors of Parent–Infant Attachment

Demographic, parent reports of infant temperament, and marital-climate variables failed to discriminate among the attachment groups for both mothers and fathers. Higher levels of maternal depression, maternal antisocial behavior, and both maternal and paternal alcohol symptomatology were associated with stable insecure mother – infant attachment relationships; however, increased levels of such pathology in fathers was not predictive of insecure father – infant attachments. Children with stable insecure attachment relationships with both mothers and fathers had higher levels of negative affect and emotionality and lower levels of positive affect and emotionality during interactions with their parents and the experimenter. The most pronounced difference between maternal and paternal factors was the way in which parenting affected attachment stability. Stable insecure mother – infant attachment relationships were associated with higher levels of maternal negative affect expression during play; however, lower levels of paternal positive affect expression and sensitivity were associated with stable father –infant attachment insecurity.

DISCUSSION

This study examined short-term attachment stability and sought to identify processes associated with attachment stability and change with both mothers and fathers within a high-risk sample characterized by paternal alcoholism. Specifically, we explored whether parental characteristics, infant characteristics, marital context, and/or parenting were associated with attachment stability from 12 to 18 months of infant age.

Results suggest moderate stability of attachment classifications similar to other studies of high-risk samples such as socioeconomically disadvantaged families (Egeland & Farber, 1984; Maslin-Cole & Spieker, 1990; Vondra et al., 1999), families with maltreated children (Lyons-Ruth et al., 1991), and families with mothers under stress (Vaughn et al., 1979). Attachment stability in these high-risk samples generally ranged from 54 to 60% — figures almost identical to those found in the current study. Thus, from an attachment perspective, the aggregation of risk characteristics in alcoholic families is associated with rates of stability similar to those found in other high-risk samples; however, unlike other studies using low-income or high-risk samples, we did not find increases in insecurity or disorganization from 12 to 18 months for either mother – infant or father – infant attachment (e.g., Egeland & Sroufe, 1981; Lyons-Ruth et al., 1991). One possibility for this may be that the nature of risk in our sample was different from that identified in previous samples. Previous studies with such patterns have been at risk due to maternal characteristics or due to poverty. Our sample was characterized at high risk due to both maternal and paternal characteristics, but was mostly middle-class, Caucasian families.

One goal of this study was to examine patterns of parental, infant, and contextual characteristics and parenting that explained attachment stability and differentiated between infants with secure attachment relationships at both ages and infants with insecure attachment relationships at both ages. Some significant patterns associated with attachment stability did emerge. Infants with insecure attachment relationships with their mothers at both 12 and 18 months of age had the highest maternal and child risk characteristics. In particular, these infants had mothers with more alcohol abuse and dependence symptoms, depression, and antisocial behavior than infants in the other two groups. Stable insecure mother – infant attachments also were associated with higher levels of paternal alcohol use, suggesting perhaps that these families experienced a more pronounced aggregation of parental risk factors.

Surprisingly, similar effects were not found for the father – infant attachment relationship. For fathers, only infant characteristics and parenting behavior were associated with attachment security; however, Eiden et al. (2002) found that paternal heavy drinking was only indirectly related to father – infant attachment via paternal sensitivity, which may account for this lack of findings. Another possibility is that fathers' self-reports of their own risk is less reliable and indicative of their risk characteristics compared to maternal reports. This is less likely given the lack of evidence regarding differences in reliability of self-report measures between men and women. Another possible explanation for the finding that fathers' self-reported risk characteristics were not directly associated with father – infant attachment stability is that fathers in our study spent less time with their infants compared to mothers. Demographic characteristics such as maternal and paternal work hours examined in this study may not have accurately reflected this difference. We did not have a measure of the number of hours fathers spent with their children. Previous studies have suggested substantial differences between fathers and mothers in both the quantity and quality of interactions (see Parke, 2002), and have noted that these differences can affect parents' perceptions of child behavior (Fitzgerald, Zucker, Maguin, & Reider, 1994). Others have noted that there is considerable variability in the level and type of father involvement with their children, even among fathers from intact families. For instance, Jain, Belsky, and Crnic (1996) reported two major types of fathers: (a)

those who were involved in caregiving, play, and teaching and (b) those who were either disengaged or engaged in a disciplinary role with their children. Indeed, at the level of behavior, fathers' positive engagement was associated with attachment stability in the current sample; however, if a large number of the fathers who were most at risk within our sample were disengaged or engaged only in play interactions, it may explain the finding that their self-reported risk characteristics were not directly associated with father – infant attachment stability. Moreover, under such circumstances, fathers may be more reactive to infant behaviors in the context of father – infant interactions, thus explaining the association between infant characteristics measured in such contexts and father – infant attachment. It also is possible that psychopathology affects parent – child interaction differently for mothers and fathers. For instance, Field, Hossain, and Malphurs (1999) found that depressed fathers' affective states did not appear to influence father – child interaction in a play situation with their 3- to 6-month-old infants in the same way mothers' affective states did. As more work is done in the area of father – child relationships, these differences will no doubt be further elucidated.

Observed infant characteristics discriminated among attachment groups for both mothers and fathers. Infants in the stable insecure groups displayed more negative affect, less positive affect, and less responsiveness to parents during play. They also were rated as having higher negative emotionality and lower positive emotionality during the Strange Situation and during episodes designed to elicit positive affect. The Strange Situation seeks to examine how infants regulate stress and achieve comfort from caregivers. Children more temperamentally prone to negative emotionality have been found to experience greater distress during this procedure; however, even when controlling for the effects of distress during the Strange Situation, Kochanska and Coy (2002) found that lower observed levels of joy and higher levels of anger during interactions with mothers were associated with attachment insecurity. This suggests that the history of interaction between mother and child influenced emotionality. The present results lend further support to this finding, although the direction of influence is difficult to determine from the current analyses.

Contrary to expectations, marital climate was not predictive of attachment stability. Findings in this area have been mixed (Belsky, 1996; Eiden & Leonard, 1996; Owen & Cox, 1997); however, in a previous study with the same sample, Eiden et al. (2002) found that parental conflict was associated with maternal sensitivity rather than attachment, per se. Marital satisfaction also has been linked to parenting behavior (Cox, Owen, Lewis, & Henderson, 1989; Goldberg & Easterbrooks, 1984). Thus, marital climate may have an indirect effect via parenting on attachment stability not detected by the present analyses.

Parenting affected attachment stability in different ways for mothers and fathers. For mothers, there was a significant interaction between age and negative affect expression during play on attachment stability. At 12 months of infant age, mothers of children in the stable secure group displayed significantly less negative affect than mothers of children in the unstable or stable insecure groups. The level of negative affect in mothers with stable secure attachment relationships remained low from 12 to 18 months infant age while mothers with stable insecure relationships maintained high levels of negative affect. This finding may be reflective of the high levels of maternal depression and antisocial behavior also associated with stable insecurity. In a high-risk sample of economically disadvantaged mothers and infants, Vondra et al. (1999) found that insecurity at 18 months was associated with indicators of maternal negative affect rather than previous insensitive or unresponsive parenting. Thus, negative affect expression may be a particularly salient variable in high-risk families.

For fathers, positive affect and sensitivity, rather than negative affect, discriminated among attachment groups. Specifically, fathers with stable secure attachment relationships with their children displayed higher levels of positive affect and sensitivity during play than fathers with

stable insecure attachment relationships. The sensitivity of these fathers also increased over time while the sensitivity of fathers with stable insecure relationships remained low. These results support previous research findings that found paternal warmth and sensitivity to be predictive of parent – infant security (Eiden et al., 2002; van IJzendoorn & de Wolff, 1997); however, one unexpected finding was that fathers' sensitivity increased from 12 to 18 months in the unstable group as well. We examined the possibility that this was mainly due to increases in sensitivity among fathers with infants who were insecure at 12 months but secure at 18 months, but not due to increases in sensitivity among fathers with infants who were secure at 12 months and insecure at 18 months. Contrary to expectations, both subgroups displayed similar increases in paternal sensitivity from 12 to 18 months. This is an unexpected and inexplicable finding that has not been reported in previous studies and requires further exploration.

One goal of this study was to examine if instability in attachment security may be explained by variables theoretically associated with parenting and parent – infant attachment. Despite examining a broad range of risk characteristics associated with attachment and with alcoholism, we were unable to identify sources of instability in this sample. Moreover, initial analyses indicated no differences between families with infants who changed attachment classification in the direction of security compared to those who changed in the direction of insecurity. Variables previously identified as being predictive of attachment insecurity that were not included in the present study, such as stressful life events and birth of a sibling, may have accounted for some of these changes. It also is possible that for some families, fathers entering treatment for alcoholism may have had a positive impact on the quality of the parent – infant attachment; however, this was difficult to ascertain at the analytic level because of the small number of fathers who were in treatment in our sample. Because of concerns about small cell sizes, we did not examine if changes in particular patterns of attachment classifications were lawful. Previous studies have provided evidence for lawful discontinuity at the level of classification (Belsky et al., 1991). Future studies with larger sample sizes may be better able to examine reasons for instability at the classification level.

Results provide significant contributions to the existing literature on children of alcoholics and their developmental trajectories. It has been determined that these children are particularly at risk for later social-emotional and behavioral problems as well as adolescent substance use and abuse, although it should be noted that there is considerable heterogeneity in child outcomes (Carbonneau et al., 1998; Clark et al., 1997; Puttler et al., 1998). These children have seldom been studied during infancy, particularly in the absence of maternal prenatal alcohol use. Results emphasize the importance of focusing on multiple predictors of child risk. The present study demonstrates that the vulnerability associated with the status of being a child of an alcoholic is present as early as 12 to 18 months of age. Previous studies on children of alcoholics have noted that there is greater stability in difficult behavior (e.g., the association between difficult temperamental characteristics and behavior problems) among these children compared to children from families not experiencing a constellation of risk characteristics defined by parental alcoholism and antisocial behavior. The current results extend this idea of stability in the risk characteristics to the quality of mother – infant attachment. Stable insecure parent – child relationships were associated with higher aggregations of risk and most likely will be shown to be predictive of later behavioral difficulties in future studies. Studies of slightly older sons of alcoholics have found that in families with high levels of parental psychopathology characterized by alcoholism and antisocial behavior, difficult temperament was related to later externalizing behavior problems spanning the years from 3 to 8 years of age (Mun, Fitzgerald, Von Eye, Puttler, & Zucker, 2001). A previous study by the same group found this relationship to be moderated by parents' negative affect expression highlighting the reciprocal nature of parent – child interactions and resulting behavior problems (Wong, Zucker, Puttler, & Fitzgerald, 1999). Stability of insecurity is an important focus of this study, as Mun

et al. (2001) concluded that it is not the presence but the *persistence* of behavioral problems in children of alcoholics that places them at risk. Thus, interventions aimed at improving parent – child interactions may serve to decrease the risk to these children.

There are several limitations in this study. First, while deriving our sample from birth records has important advantages over newspaper- or clinic-based samples, there also are limitations. The response rate to our open letter of recruitment was slightly above 25%. This raises the possibility that respondents to our recruitment may have been a biased group. Our comparison of respondents with the entire population of birth records suggested that the bias was small with respect to the variables that we could examine; however, there could have been more significant biases in variables that we could not assess. Second, given the nature of the design, the role of maternal alcohol problems could not be examined independently from fathers' alcohol problems. Further, because only a small proportion of the mothers in our sample experienced alcohol problems, our ability to fully examine the role of maternal alcohol problems was limited. It is important to note that in the majority of families with alcohol problems, maternal alcohol problems exist in the context of paternal alcohol problems. In other words, women with alcohol problems are more likely to have partners with alcohol problems than vice versa (for further discussion, see Roberts & Leonard, 1997). Future studies including samples of mothers with and without alcoholic partners may be able to better answer the question of the role of maternal alcohol problems in the development of infant attachment. Finally, it should be noted that as a community sample, levels of average daily ethanol consumption by parents in this study (range of .14 – 5.73, $M = 1.43$, for alcoholic group), while comparable to other community samples (Hasin & Paykin, 1999, $M = 1.7$ for dependence diagnosis, $M = 1.04$ for abuse diagnosis, and $M = .44$ for no diagnosis), were significantly lower than ethanol consumption reported in treated and untreated clinical samples (Babor, Kranzler, & Lauerman, 1989, $M = 9.94$; Jacob & Krahn, 1987, $M = 6.47$; York & Welte, 1994, $M = 11.65$). Further, antisocial behavior and depression evident in parents in this study also were identified at largely subclinical levels. As a consequence, we would view our assessment of the association between alcoholic behavior, parental characteristics, and child development to be conservative.

Results demonstrate the moderate stability in attachment classifications in a high-risk sample from 12 to 18 months and elucidate some child and parenting characteristics that may explain stability and instability. The results also indicate similar levels of stability between mother – infant and father – infant attachment. Infants with insecure parent – infant attachment relationships at both time points had the highest constellation of risk characteristics in three major domains: maternal characteristics, infant characteristics, and parenting behavior; however, research has established that infant emotionality and parenting behavior are not static characteristics but may be influenced by developmental changes, life stresses, or planned interventions (Belsky et al., 1991; Holden & Miller, 1999; van den Boom, 1994). Further, the importance of the current environment on the continuity of attachment representations over time was emphasized in a recent review of the attachment literature (Sroufe, 1997). These findings and factors associated with attachment stability identified by the present study encourage the potential for successful intervention with these high-risk families.

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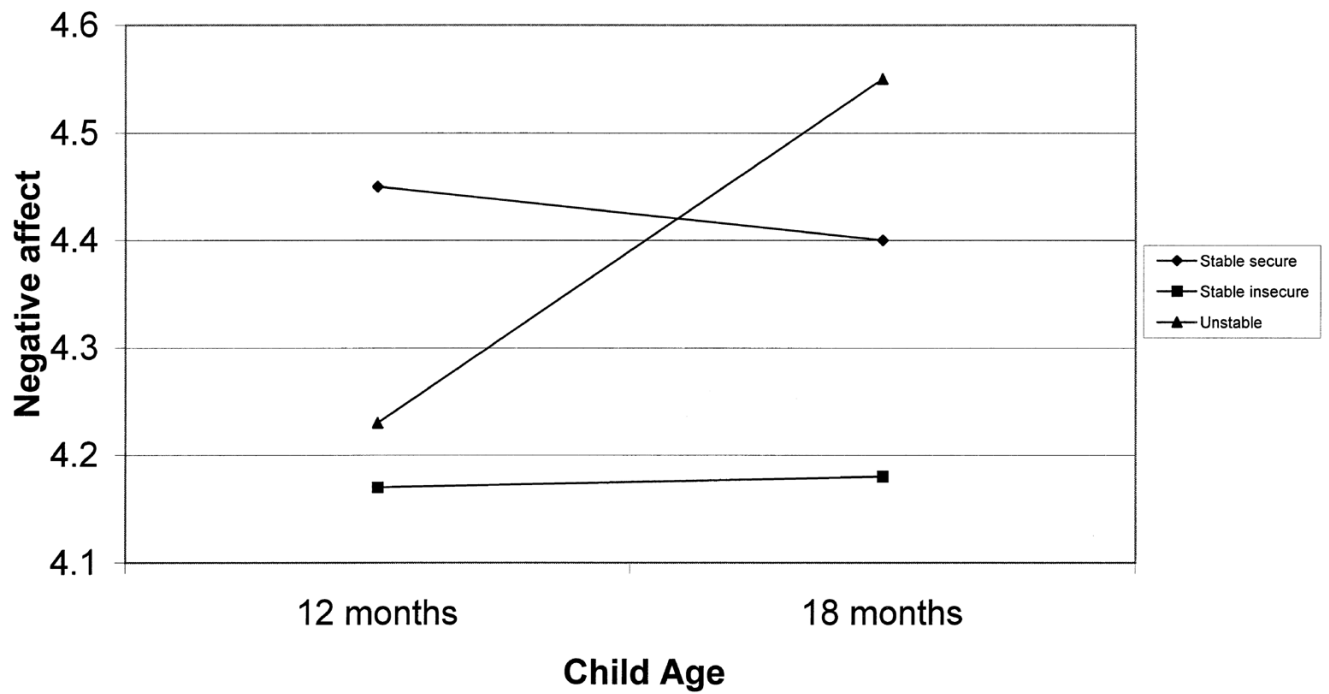
Figure 1.
Mother's negative affect expression during play and mother–infant attachment stability. Note. Higher scores on negative affect indicate lower negative affect.
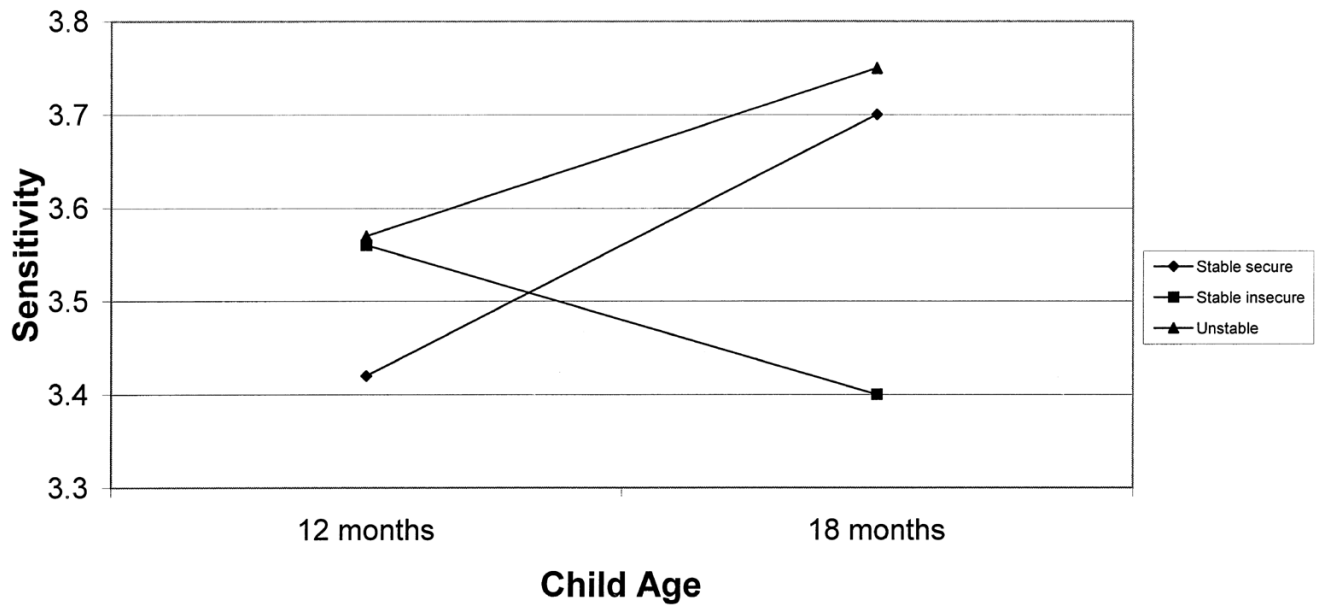
Figure 2.
Father's sensitivity during play and father–infant attachment stability.

TABLE 1

Change in Attachment Patterns at 18 Months of Infant Age

Infant–Mother Attachment

12 Month	n	18 Month			
		Secure	Avoidant	Resistant	Disorganized
Secure	141	105 (48%)	13	12	11
Avoidant	29	16	9 (4%)	0	4
Resistant	28	15	0	9 (4%)	4
Disorganize *d*	19	6	6	1	6 (3%)
Total	217	142	28	22	25

Infant–Father Attachment

12 Month	n	18 Month			
		Secure	Avoidant	Resistant	Disorganized
Secure	123	89 (43%)	12	16	6
Avoidant	24	15	5 (2%)	0	4
Resistant	32	17	2	10 (5%)	3
Disorganize *d*	29	13	5	4	7 (3%)
Total	208	134	24	30	20

TABLE 2

Means and SDs for Predictors of Infant Attachment Security With Mothers

Predictors	Stable Secure		Unstable		Stable Insecure	
	M	SD	M	SD	M	SD
Mother Characteristics						
Alcohol Symptoms	.59^a	1.26	.25^b	.63	1.77^b	4.22
Depression	6.85^a	6.35	8.12	6.71	9.90^b	6.50
Antisocial Behavior	35.21^{a+}	4.50	37.13	6.61	36.90^{b+}	6.63
Father Alchol Symptoms	4.58^a	1.30	12.75^b	2.14	4.17^a	1.56
Infant Characteristics						
Positive Affect During Play	3.58^a	.80	3.41^b	.66	3.21^b	.71
Negative Affect During Play	4.40^a	.55	4.40^a	.53	4.11^b	.64
Responsivity During Play	4.12^a	.59	4.05^b	.59	3.80^c	.71
Positive Emotionality	1.43^a	.60	1.29	.65	1.16^b	.59
Negative Emotionality	1.32^{a+}	.88	1.50	1.05	1.75^{b+}	1.12

Note. Means with different superscripts were significantly different ($p < .05$),

$^+$marginal effect ($p < .10$). High scores on negative affect indicates low negative affect during play.

TABLE 3

Means and SDs for Predictors of Infant Attachment Security With Fathers

Predictors	Stable Secure				Unstable				Stable Insecure			
	M	SD			M	SD			M	SD		
Infant Characteristics												
Positive Affect During Play	3.55[a]	.69			3.21[b]	.69			3.12[b]	.77		
Negative Affect During Play	4.53[a]	.45			4.33[b]	.54			4.16[b]	.63		
Positive Emotionality	1.52[a]	.68			1.22[b]	.54			1.22[b]	.55		
Negative Emotionality	1.26[a+]	.88			1.51	.85			1.69[b+]	1.31		
Paternal Parenting												
Positive Affect During Play	3.82[a]	.69			3.69	.68			3.51[b]	.72		
Negative Affect During Play	4.34	.52			4.28	.57			4.39	.41		
Sensitivity During Play	3.57	.78			3.65	.65			3.47	.65		

Note. Means with different superscripts were significantly different,

[+] marginal effect. High scores on negative affect indicates low negative affect during play.