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Infant Mother and Father Attachment Predict Child Behavior at 24 Months

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Abstract

A large body of evidence indicates that secure infant-mother attachment significantly predicts optimal social-emotional development; however, fathers' role in infancy has received less attention. Fathers' role may be especially critical in families who are at higher risk due to fathers' alcohol abuse/dependence and associated risks. We hypothesized that infants who are securely attached to both parents in the first year (as measured by the Strange Situation paradigm) of life will be more responsive and positive during play interactions with both parents in the second year. The sample consisted of 227 infants (50.1% female); 55.1% had a father who met the criteria for alcohol abuse/dependence. Results indicated that infants who were securely attached with both parents displayed higher positive affect, lower negative affect, more responsiveness and less passivity during parent-child interactions at 24 months, compared to infants who were insecurely attached to both parents.

Keywords: infant attachment, father, mother, alcohol

Attachment is characterized by specific behaviors in children, such as seeking proximity with the attachment figure when upset or threatened (Bowlby, 1982). Bowlby (1988) defined a secure attachment as one where the child is confident that the parent is responsive to their needs, and will be available in the face of adverse situations. Anxious-resistant attachment is a pattern in which children are unsure of whether or not the parent will respond to their needs. Due to the inconsistency in the parents' responsiveness, anxious-resistant children will often experience separation anxiety stemming from their fear of abandonment. An anxious-avoidant attachment develops when the child has become accustomed to their needs not being met, and therefore expects this behavior.

Research supports that infant attachment security is a significant contributor to future emotional, social, and relationship development (Stefanovic-Stanojevic, Tosic-Radev, & Velikic, 2015; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000). Previous research conducted over a 20-year span, from infancy to early adulthood, has

shown the consistency of attachment security over time and its link to future attachment styles and relationship quality (Walters et al., 2000). Indeed, infant's secure attachment to the mother increases the likelihood that the child will form positive representations of themselves and form more successful relationships with others in the future (Stefanovic-Stanojevic et al., 2000).

While a large body of evidence supports the predictive role of attachment security in infancy for later child outcomes, much of the research has focused on the infant's attachment to the mother. This dates back to Ainsworth (1970) who stated that infant-mother attachment may have an evolutionary advantage: the mother provides the child protection during the most vulnerable period of life in order to ensure their survival. Along with an evolutionary advantage, infant-mother attachment may also provide a social advantage. Schneider, Atkinson, and Tardif (2007) predicted that a secure relationship between the infant and mother encourages reciprocity in their relationship, which then may transfer to future peer relationships; thus forming more favorable interactions. In

contrast, insecure infant-mother attachment has been associated with above-average levels of behavioral problems during childhood (McCartney, Owen, Booth, Clarke-Stewart, & Vandell, 2004). For example O'Connor, Collins, and Supplee (2012) reported that insecurely attached children experienced higher levels of conflicts with their teachers during late childhood compared to their securely attached peers.

Unfortunately, father-infant attachment has not received as much attention in the literature as infant-mother attachment. However, the research that does exist indicates associations between attachment security with the father and future child outcomes. Chae (2011) found that the quality of the father-child relationship directly impacted their son's social competence. However, the father-child attachment did not impact daughters' social competence. Suess, Grossman, and Sroufe (1992) found that infant insecure attachment with the father predicts negative affect and tension. However, infant-mother attachment security was a more powerful predictor than infant-father attachment security alone. Although, infant-mother attachment security is traditionally thought of as a stronger predictor of a child's future outcomes, Al-Yagon (2014) found that infant-father attachment and infant-mother attachment predicts different outcomes in children with learning disabilities. Children who were securely attached to their mothers reported lower feelings of loneliness, and, in general, had less internalizing behavior problems. Children who were securely attached to fathers, however, were more likely to view the world as more manageable, had higher levels of hope, and were more likely to persist through difficult tasks in order to achieve their goals.

While these findings are meaningful, additional research on a father's direct

interaction with their children needs to be conducted. A father's role in their child's life may be especially critical where one parent meets the criteria for alcohol dependence. Children of alcoholics are at a higher risk for developing behavioral problems due to their genetic associations or social learning (Tarter, 1988). However, it is notable that a secure attachment to a caregiver may reduce the risk for development of behavioral problems (Werner, 1986). A secure attachment to at least one parent is theorized to act as a protective factor in families with at least one alcoholic parent (Luthar & Cicchetti, 2000). Children with a secure attachment to at least one parent are at a lower risk for behavior problems (Werner, 1986). This is also true among families with alcoholic fathers (Edwards, Eiden, and Leonard, 2006). These children with a secure attachment as infants had fewer externalizing behavior problems at 24 and 36 months. Thus, a secure attachment to one or both parents may be especially critical when a father's alcohol dependence may jeopardize family relationships and increase the likelihood of difficulties in the parent-infant relationship. (Eiden, Edwards, & Leonard, 2002).

The purpose of this study was to examine the association between infant attachment security (secure, insecure) to mothers and fathers in infancy and toddler behavior during parent-child interactions at toddler age. We hypothesized that infants who were securely attached to both parents in infancy would display more positive behavior during interactions with their parents at toddler age compared to infants who were insecurely attached to both parents. We also explored if a secure attachment to one parent in infancy was also associated with more positive child behavior with that parent at toddler age.

Method

Participants

Participants were recruited from the New York State birth records for Erie County. Letters were sent to 9,547 families who met various criteria, such as healthy birth weight, maternal age between 18 and 40, and infants without birth defects. Once a letter of interest was returned, participants were further pre-screened through a phone interview. Participants verified that both parents lived together since the infant's birth, the infant was the youngest in the family, parents were the primary caregivers, and that the infant did not have major health problems. Mothers were also screened on their drug and alcohol use. Drug and alcohol use criteria included no maternal drug use during their pregnancy, except for rare marijuana use (less than twice during pregnancy), daily alcohol use was .05 ounces or less (one drink per day), and mothers did not binge drink (more than five drinks at a time) while pregnant. During this phone interview, mothers completed the Family History Research Diagnostic Criteria for alcoholism (RDC) as an initial measure of father's alcohol use. Fathers were also screened for their own alcohol use.

Based on the initial screening and phone interview, 227 families who met eligibility criteria were divided into two groups: nonalcoholic ($n = 102$) and father alcoholic ($n = 125$). Mothers in the nonalcoholic group drank on average less than one ounce a day and did not meet the DSM-IV criteria for alcohol dependence. Fathers in the nonalcoholic group did not meet criteria for alcohol dependence based on the mother's report on the RDC and their own reports of their alcohol problems.

Families were categorized into the father alcoholic group if they met any of the following criteria: maternal report on the

RDC indicated the father had an alcohol dependence, the father self-reported a problem with alcohol or received treatment for alcoholism, or he met DSM-IV criteria for alcohol dependence during the past year. The father alcoholic group was then divided into two groups: partners with low alcohol use and partners with high alcohol use. Alcoholic fathers with light drinking partners ($n = 95$) consisted of mothers who did not meet criteria for alcohol dependence and did not acknowledge they had problems related to alcohol use. The second smaller subgroup ($n = 30$) consisted of alcoholic fathers with heavy drinking partners or those who met DSM-IV criteria for alcohol abuse or dependence. However, mothers who engaged in moderate to heavy drinking during their pregnancy were not considered for this study to control for the potential effects of fetal alcohol spectrum disorders. In total, 125 families qualified for the father alcoholic group.

Demographics

At the end of the screening process 227 families with 12-month-old infants were selected to participate in the study (111 girls and 116 boys). Parents were predominantly Caucasian (Mothers: 94% Caucasian, 5% African American, and 1% Hispanic or Native American; Fathers: 89% Caucasian, 7% African American, and 4% Hispanic or Native American), middle class, and the majority of participants (57% mothers, 55% fathers) received an education beyond high school.

Procedures

Families who were selected visited the University laboratory at multiple time points between infancy and adolescence. However, this paper focuses on the parent-infant attachment observations at 12 months and the parent-toddler interactions at 24 months. Mother-child and father-child assessments were conducted within a month of each other

at two separate visits. Mothers and fathers were sent a packet of questionnaires to complete and return to the laboratory when they arrived for the in laboratory visits. At 12 months, the Ainsworth's Strange Situation paradigm was conducted first, followed by a five-minute free play, a 10-minute clean up, and an eight-minute structured play.

Measures

Parent Alcohol Problems. A questionnaire based on the UM-CIDI interview was used to assess parents' current (in the past year) alcohol abuse and dependence symptoms (Anthony et al., 1994; Kessler et al., 1994). Parents' final alcohol group status was based on their reports on this measure in addition to the screening measures. Parents who met DSM-IV criteria for alcohol abuse or dependence were assigned to the alcohol group. Parents' quantity-frequency of alcohol consumption and frequency of binge drinking were also measured (Calahan, Cisin, & Crossley, 1969).

Infant Attachment. The Ainsworth Strange Situation paradigm (Ainsworth & Wittig, 1969) was conducted with both parents separately as described above in order to assess infant-parent attachment at 12 months. The Strange Situation paradigm is a separation-reunion procedure that consists of eight episodes lasting about three minutes each, that increases the level of stress experienced by the infant as a result of separation from the parent. These interactions were videotaped for later coding. The infants were then classified into one of three categories: secure, insecure-avoidant, and insecure-resistant. In addition to these three categories the coding scheme was expanded to include the disorganized (D) pattern because of its prevalence in high-risk infants (Main & Solomon, 1990). The D pattern is an insecure pattern that consists of erratic behavior resulting from a fear or

apprehension in the parent's presence. An alternate best-fit classification of secure, avoidant, or resistant was also assigned to D pattern infants. However in several cases of coding, an alternate classification was very difficult. For the main analyses, we created a variable reflecting infant attachment to both parents with four levels: secure with both mother and father, secure with mother but insecure with father, insecure with mother but secure with father, and insecure with both parents.

Two research assistants who were blind to group status coded all data in the Strange Situation paradigms. The principal investigator was originally trained in coding the Strange Situation by Douglas Teti and trained in D coding by Dante Cicchetti with follow-up training with Alan Sroufe and Elizabeth Carlson. The principal investigator provided consultation to the research assistants in difficult to code tapes. The mean interrater reliability using Pearson's r was .76 on the Strange Situation rating scales and .81 on the Disorganization scale score. Also, the four attachment classifications had an interrater agreement of 89%.

Parent-infant interactions. At 24 months, the infant-father and infant-mother dyad each participated in a free play interaction. During the free play, the parent-child dyad was left in a room filled with toys and asked to spend some time with each other as they normally would at home. After the free play, the pair then participated in an eight minute structured play where they were asked to work on four sets of problems together. During the structured play parents were asked to assist their infants complete one task at a time until moving on to the next task. Based on the parent-child play interactions, infant behavior was coded for displays of positive affect, negative affect, responsiveness and passivity. The interactions were coded using the 5-point

rating scale developed by Clark, Musick, Scott and Klehr (1980). The original scale consisted of 29 items measuring the parent behavior and 27 items measuring the child behavior. However, one parent scale and two child behavior scales were removed because the behaviors were less relevant during the free play interaction. Also, six additional parent behavior scales and nine child behavior scales were removed because of low variability. The end rating scale consisted of 22 items for the parent and 16 items for the child. Parents were measured on three scales that analyzed parental behavior that included negative affect, positive affect, and sensitivity. Also, children were analyzed on four scales for positive affect, negative affect, passivity, and responsiveness. The internal consistencies of the composite measures ranged from .83 to .94 for the mother-infant interactions, and .77 to .90 for the father-infant interactions. The interrater reliability for the two coders, who trained on the Clark scale by the principal investigator was quite high, ranging from $r = .89$ to $r = .95$ (Eiden, Chavez & Leonard, 1999). High scores were positive regardless of the name of the scale.

Results

Association between infant-mother and infant-father attachment. Chi-square analysis indicated that there was a significant association between infant-mother and infant-father two-group (secure, insecure that included disorganized) classifications, $\chi^2(4) = 11.32$, $p = .001$. About 44% of the infants were securely attached to both parents, 21% were insecurely attached to the father and securely attached to the mother, 16% were insecurely attached to the mother and securely attached to the father, and 19% were insecurely attached to both parents.

Infant attachment security and child behavior with mother. Univariate ANOVA were used to examine the association between

parent-infant attachment security and child behavior during the interactions at 24 months. Infant attachment security with both parents (secure with both, secure with mother but insecure with father, secure with father but insecure with mother, and insecure with both) was the independent variable, and child behavior was the dependent variable in these analyses. Results indicated a significant association between attachment security with both parents and child positive affect during play interactions with the mother, $F(3) = 2.89$, $p = .04$. Simple contrasts indicated that compared to children who were securely attached to both parents in infancy, children who had an insecure attachment with both parents, or those who were insecurely attached with their fathers in infancy displayed lower positive affect (Table 1) during play interactions with their mother at 24 months ($p = .03$ and $p = .01$, respectively)

There was a significant association between attachment security with both parents and child negative affect during play interactions with the mother, $F(3) = 3.835$, $p = .011$. Simple contrasts indicated that compared to children who were securely attached to both parents in infancy, children who had an insecure attachment with both parents, displayed higher negative affect (Table 1) during play interactions with their mother at 24 months (see Table 1, $p = .004$). High scores on child negative affect was positive indicating lower negative affect.

Results indicated a significant association between attachment security with both parents and child passivity during the mother-child play interaction, $F(3) = 2.78$, $p = .04$. Simple contrasts indicated that compared to children who were securely attached to both parents in infancy, children who had an insecure attachment with parents displayed higher levels of passivity (Table 1) during play interactions with their mother at 24 months ($p = .02$). High scores on child

passivity were positive, indicating lower levels of passivity.

Results showed a marginally significant association between parent-infant attachment security with both parents and responsivity during play interactions with the mother, $F(3) = 2.37$, $p = .072$. Results indicated that compared to children who were securely attached to both parents in infancy, children who had an insecure attachment with both parents displayed lower responsiveness (Table 1) during play interactions with their mother at 24 months ($p = .02$).

Infant attachment security and child behavior with father. Results revealed similar associations between attachment and child outcomes in father-child interactions. There was a significant association between parent-infant attachment security with both parents and positive affect during play interactions with the father, $F(3) = 6.12$, $p < .01$. Simple contrasts indicated that compared to children who were securely attached to both parents in infancy, children who had an insecure attachment with both parents displayed lower levels of positive affect (Table 2) during play interactions with their father at 24 months ($p < .001$).

Results indicated a marginally significant association between attachment security with both parents and child negative affect during play interactions with the father, $F(3) = 2.572$, $p = .055$. Compared to children who were securely attached to both parents in infancy, children who had an insecure attachment with both parents displayed higher negative affect (Table 2) during play interactions with their father at 24 months ($p = .022$). Higher scores on negative affect indicated lower negative affect.

Results showed a significant association between attachment security with both parents and child passivity during play interactions with the father, $F(3) = 7.29$, $p <$

$.001$. Results indicated that compared to children who were securely attached to both parents in infancy, children who had an insecure attachment with both parents displayed higher levels of passivity (Table 2) during play interactions with their father at 24 months ($p < .001$). Higher scores on passivity were positive, indicating lower levels of passivity.

Lastly, results indicated a significant association between attachment security with both parents and responsivity during play interactions with the father, $F(3) = 4.23$, $p = .006$. Results indicated that compared to children who were securely attached to both parents in infancy, children who had an insecure attachment with both parents displayed lower responsiveness (Table 2) during play interactions with their father at 24 months ($p = .001$).

Discussion

Consistent with our hypothesis, we found that infants who were securely attached to both parents had more favorable behavior during parent-child interactions compared to infants who were insecurely attached to both parents. These results support the wide body of literature that stresses the importance of a secure attachment in predicting successful future outcomes; as well as the research that highlights the negative effects of an insecure infant-parent attachment (Waters et al., 2000).

Infants who were securely attached to both parents experienced the highest levels of positive affect and responsivity, as well as the lowest levels of negative affect and passivity in parent-child interactions. In addition, infants who were securely attached to their mother, but insecurely attached to their fathers, showed significantly lower levels of positive affect during the mother-child

interactions compared to infants who were securely attached to both parents. This suggests, that for at least positive affect, insecurity of attachment with the father had a spillover effect into toddler behavior with the mother. While behavior problems were not the focus of this study, our results contrast with at least one previous study conducted by Kochanska and Kim (2013). Kochanska and Kim reported that children who were securely attached to both parents were no different on behavior problems compared to those who were securely attached to only one parent. This was because neither parent was seen as the primary parental figure, and thus, either the father or the mother could serve as the attachment figure. Our results point to the importance of attachment security with both parents. However, in the case of positive affect, our results suggest that infant-mother attachment security was not the most significant contributor to toddler positive affect during mother-toddler interactions. Positive affect during the mother-child interactions was the only variable for which there was a significant difference for infants who were insecure with one parent; therefore these results need to be viewed with caution and replicated.

These results show the importance of having a secure attachment relationship with both parents and the increased risk for children who have insecure relationships with both parents. We did not have any specific hypotheses regarding infants who were secure with one parent but insecure with the other. However, results indicated that infants who were securely attached to one parent, but insecurely attached to the other, were not significantly different than children who were securely attached or insecurely attached to both parents in infancy.

Secure attachment to both parents may be especially critical in families with an

alcoholic parent. Children of alcoholics are more likely to develop behavioral and emotional problems in their lifetime (Tarter, 1988). In these cases, a secure attachment to both parents is especially imperative.

However, some limitations of this study need to be addressed. First, participants were recruited using birth records and we received a response rate slightly above 25%. Due to the low response rate, there is a possibility that the recruited sample may not be representative of the population. However, upon examination of all eligible participants' birth records, the effect size and resulting potential bias of our sample was small.

Second, self-report measures were used to assess parental alcohol dependence and psychopathology. A future study could assess alcohol dependence or psychopathology through a clinical assessment by a trained professional.

Lastly, very few mothers in our sample were classified as alcoholics. Therefore, the role of maternal alcohol dependence could not be thoroughly assessed. Maternal alcohol use could not be studied separately from the father's alcohol dependence. A future study could address this limitation by recruiting more mothers with an alcohol dependence, which would allow the thorough assessment of maternal alcohol use on future outcomes.

However, these limitations do not detract from the importance of these findings, highlighting the importance of infant attachment security with both parents for child behavior with both mothers and fathers. Consistent with attachment theory, the infant-parent attachment may have implications for the quality of the child's first social relationships when entering school with classmates and teachers.

In conclusion, the results from this study indicate the importance of a secure attachment to both parents, and stress the negative effects associated with having an

insecure attachment to both parents. Especially critical in a high-risk sample, this secure attachment may be even more essential when the infant has an alcoholic parent. These results also call for more attention to the direct father's role in their children's lives.

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Appendix

Table 1. Means and standard deviations for child behavior in mother-child interactions by infant attachment security

Variables	Secure with Both		Secure with Mother Insecure with Father		Insecure with Mother Secure with Father		Insecure with Both		F Value	p Value
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Positive Affect	4.41 ^a	.64	4.11 ^b	.73	4.21	.76	4.06 ^b	.93	2.89	.04
Negative Affect	4.84 ^a	.34	4.80	.31	4.92	.14	4.63 ^b	.67	3.84	.01
Passivity	4.83 ^a	.33	4.69	.52	4.68	.45	4.65 ^b	.42	2.78	.04
Responsivity	4.71 ^a	.49	4.58	.65	4.76	.44	4.46 ^b	.58	2.37	.07

Note: High scores on negative affect indicate low negative affect and high scores on passivity indicate low passivity. Means with different superscripts were significantly different from each other.

Table 2. Means and standard deviations for child behavior in father-child interactions by infant attachment security

Variables	Secure with Both		Secure with Mother Insecure with Father		Insecure with Mother Secure with Father		Insecure with Both		F Value	p Value
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Positive Affect	4.33 ^a	.66	4.24	.64	4.34	.65	3.74 ^b	1.14	6.12	.001
Negative Affect	4.87 ^a	.27	4.91	.18	4.89	.19	4.72 ^b	.64	2.57	.055
Passivity	4.81 ^a	.33	4.83	.25	4.77	.34	4.42 ^b	.88	7.29	.00
Responsivity	4.67 ^a	.51	4.62	.49	4.70	.54	4.28 ^b	.92	4.26	.006

Note: High scores on negative affect indicate low negative affect and high scores on passivity indicate low passivity. Means with different superscripts were significantly different from each other.