Predicting children’s anxiety from early attachment relationships

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Abstract

This study assessed whether infants with anxious-ambivalent attachment develop higher levels of anxiety later in childhood than do infants with secure attachment. Infants (N = 136) participated in Ainsworth’s Strange Situation Procedure at 12 months of age. The Screen for Child Anxiety Related Emotional Disorders (SCARED) was completed by children and their mothers at 11 years of age. Results show that compared with children who were securely attached in infancy, children who were ambivalently attached had higher levels of school phobia, and, that compared with boys who were securely attached boys who were ambivalently attached had higher levels of social phobia at 11 years. However, in this normative sample, anxious-ambivalent attachment was not related to anxiety levels that approach pathological significance. These findings are discussed within the context of previous research on associations between attachment and anxiety disorders.

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1. Introduction

Development of early forms of anxiety in infancy and the interpersonal mechanisms by which anxiety is regulated through attachment relationships received significant theoretical consideration (e.g., Bowlby, 1973; Stayton & Ainsworth, 1973). At the core of attachment...
theory (Bowlby, 1969, 1973, 1980) is the presupposition of a biologically based system that promotes proximity with potential caregivers. Specifically, it is assumed that the behavioral attachment system is triggered by distress, and that the system’s concerted output (e.g., cries, cuing, and other signals in the infant’s repertoire) motivates caregivers to come close, thus affording infants care and protection. Sroufe (1996) noted that separation distress is one of the earliest forms of anxiety experienced by children and suggested it may thus be a precursor to later anxiety disorders. The purpose of this study was to test this hypothesis longitudinally.

Ainsworth, Blehar, Waters, and Wall (1978) designed a laboratory procedure to classify infants into attachment categories that is primarily based on infants’ behavior during epochs of separation from and reunion with their caregiver. Securely attached infants typically react with considerable distress to separation epochs, but make proximal contact with their mother upon reunion, are comforted by her caregiving efforts, and then can freely explore their surroundings, using mother as a secure base when needed. Infants are classified as avoidantly attached if they distance themselves from their mother or ignore her during the reunion phases. These infants often show low levels of overt distress during separation. Finally, infants who display high levels of distress to separation, seek contact with their mother upon reunion, but remain overtly distressed despite her physical availability, are classified as ambivalently attached.

According to attachment theory, ambivalently attached infants are particularly prone to develop chronic levels of anxiety later in life. Because ambivalent attachment has been associated with patterns of unpredictable and irregular responsiveness of the caregiver, it is believed that ambivalently attached infants must live with the constant fear of being left vulnerable and alone. This fear of separation or abandonment is thought to give rise to a coping strategy centered on chronic vigilance, which may continue throughout childhood and adulthood and lead to the development of anxiety disorders (Bowlby, 1973; Cassidy & Berlin, 1994; Weinfield, Sroufe, Egeland, & Carlson, 1999). Because ambivalently attached children lack confidence in their caregiver’s availability, their attachment system is thought to be chronically activated, even in situations with little danger, and exploration of the environment is curtailed. Such avoidance and overly cautious behavior are considered as core symptoms of various anxiety disorders in children (Manassis, 2001).

Although insecure-ambivalent attachment has been theoretically implicated in setting the stage for later development of anxiety disorders (Bowlby, 1973; Cassidy & Berlin, 1994; Manassis, Bradley, Goldberg, Hood, & Swinson, 1994; Weinfield et al., 1999), supportive research data are surprisingly limited (Greenberg, 1999). To our knowledge, only two studies (Lewis, Feiring, McGuffog, & Jaskir, 1984; Warren, Huston, Egeland, & Sroufe, 1997) examined the longitudinal association between attachment in infancy and anxiety disorders later on. Lewis et al. (1984) examined longitudinally the association between infant’s attachment history and later maternal reports of children’s anxiety-related symptoms. They found that boys with ambivalent attachment were more likely than boys with secure attachment to have somatic complaints at 6 years of age. And, that boys with avoidant and ambivalent attachment histories were more likely than boys with secure attachment to be socially withdrawn. No relationship between attachment and later anxiety was observed for girls. Warren et al. (1997) found that infants with ambivalent attachment were significantly more likely than infants with secure or avoidant attachment to be diagnosed with an anxiety disorder at 17.5 years of age. It should be noted however, that participants in Warren et al.’s (1997) study came from a sample specifically selected for poverty and high risk for poor developmental outcomes, a factor that may have contributed to or interacted with increased levels of anxiety.
In the present study, we longitudinally examined the association between attachment in infancy and anxiety at 11 years of age in a normal sample representing all socioeconomic levels. Based on the original hypotheses of attachment theory, we expected to find an association between insecure ambivalent attachment in infancy and high levels of anxiety at 11 years of age.

2. Method

2.1. Participants

Participants of this study were drawn from an original pull of 758 children whose attachment classification was assessed at 12 months of age as part of the Haifa Study of Early Child Care (Sagi, Koren-Karie, Gini, Ziv, & Joels, 2002). Because the original study completed its course several years before the present study started, we were able to locate and contact only 212 families out of the original sample. Of these 212 families, 37 moved out of the greater Haifa metropolitan area and were not included in the present sample, and 39 families declined participation. Thus, the present sample consists of 136 eleven-year-old children (mean age = 11.5 years, SD = 0.39). One hundred and four children (49 males and 55 females) were classified as securely attached in infancy and 32 (17 males and 15 females) were classified as ambivalently attached in infancy.\(^1\)

Participants of the original study (49 percent female, 51 percent male) were recruited from three large hospitals in the greater Haifa metropolitan area, over a 1-year period. All infants were term, singleton, and healthy (no serious medical diagnosis, no serious perinatal complications). The sample was carefully selected to reflect the full range of social-economic status (SES) in the population of the greater Haifa metropolitan area, which is one of the three major urban areas in Israel, and as such represents the larger Israeli urban population. Distribution of attachment classification and gender in the present sample is statistically indistinguishable from that of the original sample (Sagi et al., 2002). And, the SES of the participants included in the present study is equivalent to the SES of the original sample, \(p > .60\).

2.2. Measures and procedures

2.2.1. Attachment

Attachment at 12 months of age was assessed using Ainsworth’s Strange Situation Procedure (Ainsworth et al., 1978). The Strange Situation consists of eight episodes, including two brief separations from and reunions with the mother. The attachment classification is based primarily on infant’s reactions to the mother’s return. Infant behavior was classified into three main attachment categories: securely attached infants (group B) may or may not be upset when their mothers leave but calm down quickly when their mothers return. These infants show minimal resistant or avoidant behaviors. Ambivalently attached infants (group C) seek contact with their mothers but at the same time resist them. Some ambivalently attached infants are unable to settle down during the reunion episodes. Finally, avoidantly attached infants (group A) do not seek proximity or contact with their mothers upon reunion but show avoidant behavior instead.

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\(^1\) The avoidant attachment category was not considered in the present study as it has extremely low incidence in Israeli culture. This fact has been documented consistently in various samples (for reviews see Aviezer, van IJzendoorn, Sagi, & Schuengel, 1994; van IJzendoorn & Sagi, 1999).
The last author trained three coders who rated the tapes. In addition, these three coders participated in training and workshop sessions with Mary Main. Lastly, an inter-laboratory reliability has been established and maintained over the years with Marinus van IJzendoorn at Leiden University (The Netherlands). For the original sample, 15 percent of the cases were double coded in Haifa and Leiden. The range of inter-rater reliability for the ABCD system was 82–94 percent agreement, \( M = 90 \) percent. Kappa value range = .74–.90, all \( p < .001 \). For full detail on procedure and reliability of coding see Sagi et al. (2002).

2.2.2. Anxiety at 11 years of age

When children were 11 years of age, both mothers and children completed the Screen for Child Anxiety Related Emotional Disorders (SCARED). The SCARED (Birmaher et al., 1999; Birmaher et al., 1997) is a 41-item child/parent report instrument used to screen for children with anxiety disorders. The response scales of the SCARED ranges from 0 (not true or hardly ever true) to 2 (true or often true). The SCARED was specifically developed to screen for the following childhood anxiety disorders: generalized anxiety, separation anxiety, somatic/panic, social phobia, and school phobia. Various studies have shown that the SCARED is a valid and reliable child anxiety instrument (Birmaher et al., 1997, 1999; Muris, Mayer, Bartelds, Tierney, & Bogie, 2001; Muris, Merckelbach, Ollendick, King, & Bogie, 2002).

Child reports yielded higher SCARED scores than maternal reports, however, maternal and child reports on the different scales of the SCARED significantly correlated (\( r \)s ranged between .26 and .41, \( ps \) ranged between .05 and .0001). This pattern of results is similar to that reported by Wren, Bridge, and Birmaher (2004). Because parent and child reports correlated, and because Wren et al. (2004) demonstrated that children’s self-reports on the SCARED contribute important information beyond that provided by parents, we decided to combine the reports and used the averages of parent and child reports on corresponding SCARED scales in subsequent analyses (for further discussion of the advantages of integrating parent and child SCARED reports see Wren et al., 2004).

2.2.3. Life events

The Life Experience Questionnaire (Sagi et al., 2002) measures the occurrence of difficult life events, and was used in the present study to obtain some control over aversive events that may have happened during the 10 years epoch between the attachment and anxiety assessments. The questionnaire consists of 75 items and is a combination of the Life Experiences Survey (Sarason, Johnson, & Siegel, 1978) and the PERI Life Events Scale (Levav, Krasnoff, & Dohrenwend, 1981). The questionnaire was especially adjusted to Israeli circumstances, and was administered to mothers, who were requested to check those events that had occurred during the period since their child was 12 months of age up until the interview, and rate the impact that the event had on their life on a 4-point scale, ranging from 1 (no impact) to 4 (high impact). A sum of scores of all marked items provided the final score of negative life events. Split-half reliability analysis in the current sample revealed strong internal consistency, Guttman’s Split-Half Coefficient = .90, Chronbach’s \( \alpha \) for the first and second halves of the questionnaire were .88 and .84, respectively.

3. Results

Means, standard deviations, and Chronbach’s \( \alpha \) reliabilities in the present sample of child, mother, and combined SCARED scores by attachment categorization are presented in Table 1. To assess whether individual differences in attachment classification at 12 months of age are
associated with each of the five anxiety clusters of the SCARED at 11 years of age, five separate ANCOVAs were computed with attachment classification (B vs. C) and gender (male vs. female) as between-subjects factors, and the anxiety scales from the SCARED (somatic/panic, generalized anxiety, separation anxiety, social phobia, school phobia) as dependent variables. Maternal reports of negative life events were entered to the analyses as a covariate.

Children who were ambivalently attached had higher scores of school phobia compared with children who were securely attached, $F(1, 131) = 3.55, p < .05$ (Cohen’s $d = .33$). In addition, a significant attachment by gender interaction effect was found in predicting social phobia at 11 years, $F(1, 131) = 4.69, p < .05$. Separate ANCOVAs for male and female participants revealed that compared with males who were securely attached at 12 months ($M = 4.00, SD = 2.10$), males who were ambivalently attached had higher scores of social phobia at 11 years ($M = 5.53, SD = 2.49$), $F(1, 63) = 6.13, p < .05$ (Cohen’s $d = .66$). Attachment was not associated with

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*Table 1*

Means, standard deviations, and Cronbach’s $\alpha$ reliabilities of child, mother, and combined SCARED scores by attachment categorization

<table>
<thead>
<tr>
<th></th>
<th>Chronbach’s $\alpha$</th>
<th>Secure attachment</th>
<th>Ambivalent attachment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td><strong>Child reports</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somatic/panic</td>
<td>.72</td>
<td>3.81</td>
<td>3.29</td>
</tr>
<tr>
<td>Generalized anxiety</td>
<td>.65</td>
<td>5.77</td>
<td>2.92</td>
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<tr>
<td>Separation anxiety</td>
<td>.68</td>
<td>5.44</td>
<td>3.08</td>
</tr>
<tr>
<td>Social phobia</td>
<td>.61</td>
<td>5.78</td>
<td>2.57</td>
</tr>
<tr>
<td>School phobia</td>
<td>.54</td>
<td>1.24</td>
<td>1.37</td>
</tr>
<tr>
<td>Total anxiety score</td>
<td>.86</td>
<td>22.04</td>
<td>9.77</td>
</tr>
<tr>
<td><strong>Maternal reports</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somatic/panic</td>
<td>.73</td>
<td>1.44</td>
<td>2.04</td>
</tr>
<tr>
<td>Generalized anxiety</td>
<td>.81</td>
<td>3.37</td>
<td>3.21</td>
</tr>
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<td>Separation anxiety</td>
<td>.80</td>
<td>2.85</td>
<td>2.87</td>
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<tr>
<td>Social phobia</td>
<td>.85</td>
<td>2.88</td>
<td>2.81</td>
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<tr>
<td>School phobia</td>
<td>.65</td>
<td>0.62</td>
<td>1.05</td>
</tr>
<tr>
<td>Total anxiety score</td>
<td>.91</td>
<td>11.17</td>
<td>9.06</td>
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<tr>
<td><strong>Combined parent–child reports</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Somatic/panic</td>
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<td>2.62</td>
<td>2.04</td>
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<tr>
<td>Generalized anxiety</td>
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<td>Social phobia</td>
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<tr>
<td>School phobia</td>
<td>.63</td>
<td>0.93</td>
<td>1.01</td>
</tr>
<tr>
<td>Total anxiety score</td>
<td>.89</td>
<td>16.61</td>
<td>7.49</td>
</tr>
</tbody>
</table>
social phobia in females. No other main or interaction effects concerning attachment were found, and the covariate effect of negative life events was nonsignificant.

Notably, despite the significant attachment group differences in school and social anxiety, overall levels of anxiety in both children who had ambivalent and secure attachment in infancy were mild and within the range normally expected in the general population. Following Birmaher et al.’s (1999) suggestion for a clinical risk cutoff score of 25 points on the total anxiety score on the child SCARED, we examined the distribution of children who featured above the clinical cutoff in the different attachment groups. This analysis revealed no significant between-group differences. Specifically, 10.6 percent and 9.4 percent of the participants exceeded clinical cutoff in the secure and ambivalent attachment groups, respectively. These percentages mirror the known prevalence of childhood anxiety disorders in the general population.

4. Discussion

The prediction that relative to secure attachment in infancy, ambivalent attachment would be related to elevated anxiety later in childhood received only limited support. Children, who were ambivalently attached at 12 months of age, had higher levels of reported school phobia compared with children who were securely attached in infancy. In addition, compared with boys who were securely attached, boys who were ambivalently attached reported significantly higher levels of social phobia at 11 years. No such difference was found for girls. These findings are in accord with Lewis et al. (1984) who found similar attachment- and gender-related differences in their longitudinal study. These findings are also in accord with Warren et al. (1997), who found increased representation of social- and separation-related anxiety disorders among adolescents who were ambivalently attached in infancy.

In contrast with the findings of Warren et al. (1997), who reported increased frequencies of anxiety disorders in adolescents who were ambivalently attached in infancy, the present study revealed nonsignificant difference in the frequency of severe (potentially clinical) anxiety between the two groups. There are important differences between our study and Warren et al.’s (1997), which may account for variability in results.

First, the outcome measures are different (i.e., K-SADS vs. SCARED). One may claim that reports of children and mothers on questionnaires are very different from semi-structured psychiatric interviews. While this may be true, clinical cutoff scores on the SCARED has proved to be in good accordance with structured diagnostic interviews. In addition, there is no reason to expect that questionnaire reports would yield less sever anxiety indexes than a psychiatric interview would when measuring normative populations.

Second, the age of the children in our sample was 11 years versus 17.5 years in Warren et al.’s (1997). Potentially not as many 11 years olds as older adolescents would be expected to develop anxiety disorders; therefore, participants’ younger age may have attenuated the expected association between attachment and anxiety in the present study. This possibility is not likely, however, as the results from our sample suggest that both children who were securely attached and children who were ambivalently attached showed similar percentages of children being above the clinical anxiety cutoff. Moreover, these percentages are in accord with prevalence data for anxiety disorders in children and adolescents as reported in large epidemiological studies (e.g., Achenbach, Howell, McConaughy, & Stanger, 1995; Pine, 1994).

Third, countries from which the participants were drawn (Israel vs. USA) are characterized by differences in the distribution of attachment categories with more ambivalently attached infants in Israel. This may imply that ambivalent attachment is a more normative phenomenon in Israeli
culture, which entails less of a risk factor for later anxiety disorders than it does for children growing up in the USA.

Finally, the difference in results may reflect a difference in the risk status of the two samples. While Warren et al. (1997) studied at-risk population; our sample represents the population in general. It may be the case that in normative samples, anxious-ambivalent attachment in infancy is related to somewhat higher levels of social and school anxiety, but does not constitute a significant vulnerability factor for pathological anxiety disorders. Such interpretation highlights the role that low social and economic status might have in moderating the association between attachment patterns and later anxiety disorders.

Current findings should be considered in light of some limitations. First, several researchers have noticed that children vary considerably in the extent to which attachment security in infancy remains consistent over time and predicts later outcome (Bar-Haim, Sutton, Fox, & Marvin, 2000; Fraley, 2002; Thompson, 1999, 2000; Waters, Hamilton, & Weinfield, 2000). Such reported variation underscores the need to consider major issues pertinent to both longitudinal research and attachment theory. Grossmann, Grossmann, and Waters (2005) discuss the complexity of conducting longitudinal research that evolves over time rather than being designed as such from the outset. In the present study, additional interim measures of both attachment and anxiety may have provided some insight as to why, for example, generalized anxiety and separation anxiety were not related to security of attachment. Second, although measurement of anxiety in the present study relied on an instrument that demonstrated good internal consistency and acceptable discriminant validity, both between anxiety and other disorders and within anxiety disorders, it did not use formal diagnostic interviews to ascertain the actual occurrence of anxiety disorders. As such, the present findings should be interpreted with caution with respect to associations between early attachment and actual anxiety disorders later in life. Finally, it is important to notice that current conceptual models of anxiety disorders development are quite complex and involve numerous factors. The present study considered only one potential contributing factor (early attachment relationship) and assessed child functioning on one occasion using relatively limited indicators of anxiety. Indeed, the reported effects in the present study are of small to moderate size. That being said, longitudinal assessment of complex models of anxiety development is extremely rare. Therefore, documenting the longitudinal associations between even one factor (early attachment) and later anxiety, as in the present study, constitute and important contribution to the extant knowledge in this field.

References


