

# Links Between Disorganized Attachment Classification and Clinical Symptoms in School-Aged Children

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**Abstract** Research examining the links between disorganized attachment and clinical symptoms largely has neglected middle childhood due to lack of available measurement tools. The few studies that have examined these links in other developmental phases have found higher clinical symptoms in disorganized individuals. Our study extended this research by using a recently-developed attachment interview measure ideally suited to evaluate disorganized attachment in middle childhood. We examined concurrent associations among disorganized attachment in 8–12 year old children and symptoms of psychopathology theoretically hypothesized for their links with disorganized attachment. Using child- and parent-reports, we measured symptoms of depression, social anxiety, shyness, inattention, and thought problems. During our two-session study, 97 children completed the Child Attachment Interview, and children and parents completed clinical questionnaires. Results suggested that disorganized attachment was associated with higher child reports of depressive symptoms and shyness, and with parent-reports of social anxiety, inattention, and thought problems, and that disorganized children are more likely to have symptoms that meet clinical criteria. Implications for the relation of attachment to psychopathology are discussed.

**Keywords** Disorganized attachment · Depressive symptoms · Children · Psychopathology · Anxiety

## Introduction

The associations among insecure attachment and psychopathology have long been predicted (Bowlby 1969/1982, 1973, 1980; Erickson et al. 1985). Bowlby postulated that insecure attachment is an adaptive response to a consistently or intermittently unresponsive caregiver (Bowlby 1988), and that while insecure attachment is functional in terms of ensuring the caregiver's proximity, it may put the child at risk for maladaptive symptoms later in life. Research has examined prospective and concurrent associations between clinical disorders and symptomatology in children and adults classified as insecure on a variety of attachment measures with mixed findings (e.g., see Greenberg 1999; Dozier et al. 1999, for a review), but few studies have examined the more recently identified disorganized classification. In this study we expanded on previous research with a singular focus on disorganized attachment, defined as a breakdown or disintegration of an attachment strategy (Main and Solomon 1990), in middle childhood. There is particular reason to believe that examining this link is important in middle childhood/emerging adolescence given the steep rise in incidence of psychiatric disorders, and particularly internalizing disorders, during this developmental phase (e.g., Hankin and Abramson 2001). We aimed to advance the field in two important directions: first, by focusing on the attachment classification that in adults has been found to be most highly related to psychopathology (e.g., Fonagy et al. 1996), but has been under-examined in the literature in

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general; and second, by examining the link between disorganized attachment in middle childhood, a heretofore neglected period of study in attachment research (Dwyer 2005; Weinfield 2005).

Disorganized attachment initially was identified using samples of infant behavior from the Strange Situation Procedure (SSP; Ainsworth et al. 1978), but since has been measured using narrative assessments in adults. The SSP is a moderately stressful experimental paradigm where the infant undergoes a series of episodes, including separations from the caregiver (mother, father, or other guardian) while in a foreign place (a room filled with toys in a psychology laboratory) both when alone and when with a stranger. The infant's behavior upon separation from and reunion with the caregiver is assessed and compared with his behavior upon separation from and reunion with the stranger (Ainsworth et al. 1978). Importantly, an infant's behavior in the SSP is related to differences in observer-rated indices of parental sensitivity in the home (Ainsworth et al. 1978). Disorganized attachment, a more recently identified category (Main and Weston 1981), is indicated by a "diverse array of inexplicable, odd, disorganized, disoriented, or overly conflicted behaviors in the parent's presence" during the experimental procedure (Hesse and Main 2000, p. 1099). Examples of the behaviors classified as disorganized include an infant rocking on his hands and knees after aborting an approach towards the parent during a reunion; beginning to approach the parent while crying and then dropping on the floor in silence and ceasing movement; and raising hand to mouth upon the parent's re-entry into the room as if to stifle a scream (Hesse and Main 2000). Such behaviors are thought to occur when conflicting behavioral tendencies are activated within the infant and compete for expression, resulting in the appearance of disorganized or disoriented responses, or an "observed contradiction in movement patterns" or "lack of orientation to the present environment" (Hesse and Main 2000, p. 1099).

In the Adult Attachment Interview (AAI; George et al. 1984, 1985, 1996, Adult attachment interview protocol, unpublished manuscript) the adult analogue of disorganization (called unresolved/disorganized) is typified by disorganization or disorientation in discourse or reasoning while attempting to discuss events involving trauma or loss (Hesse and Main 2000; Main and Hesse 1990). Examples include uttering multiple statements within an interview that are incompatible with one another (e.g., "She died when I was five;" "My mother tells me I should become a doctor"), lapsing into odd or funereal speech, or inserting unexplained lengthy pauses during discussion of a loss or trauma (Hesse 1999; Hesse and Main 2000). Importantly, research indicates that a classification of unresolved/disorganized on the AAI has been found to predict infant disorganization in the interviewee's child (Hesse and Main

1999; van IJzendoorn 1995), a finding that holds with expectant parents prior to the birth of their first child (Hesse and Main 1999).

Various theoretical explanations for the etiology of disorganized attachment have been presented in the literature. Generally speaking, attachment theorists hypothesize that individual differences in attachment organization are borne of the quality of the interactions of a primary caregiver and his/her infant; however, it is not thought to be the case that these differences are "carried solely in the traits of the infant or the caregiver" (Weinfield et al. 1999, p. 68). The patterns of interaction that arise from a history of interactions are a product of infant constitution, parent constitution, the caregiver's own history of attachment relationships, and other influential social and environmental factors (e.g., exposure to community violence, socioeconomic risk). Though by and large research suggests that attachment classification cannot be reduced to infant temperament (e.g., Belsky and Rovine 1987), studies have documented an interaction between negative infant temperament and attachment organization (Crockenberg 1981; Mangelsdorf et al. 1990; see Vaughn and Bost 1999, for a review). When viewed in isolation, the types of behaviors seen in the SSP in disorganized infants might be thought to result from neurological impairment or pharmacological influences (Hesse 1999; Hesse and Main 2000; Solomon and George 1999), but disorganized attachment is only identified if these behaviors occur exclusively in the context of a reunion with the caregiver. Results from a meta-analysis suggest that disorganized attachment is not simply a product of the infant's constitutional problems, severe health problems, or difficult temperament: in support of this, there is no significant tendency for infants found to be disorganized with one parent in the SSP to be disorganized with the other parent (van IJzendoorn et al. 1999). However, there is recent evidence suggesting a potential link between disorganized attachment and the seven repeat allele of the DRD4 gene. These potential genetic underpinnings may be in addition to and independent of the quality of parent-child interaction (Bakermans-Kranenburg and van IJzendoorn 2004; Lakatos et al. 2000; Spangler and Grossmann 1999). Although this debate is beyond the scope of this paper, emerging research suggests that there are multiple pathways to disorganization over the lifespan (Spangler and Grossmann 1999).

Research suggests that rates of disorganized attachment are extremely high in maltreated samples (almost 80%) (Carlson et al. 1989; Lyons-Ruth 1996), but range from 15–30% in middle class samples at low risk for maltreatment (Main and Morgan 1996; Ainsworth and Eichberg 1991). Disorganized attachment tends to be particularly stable over time in middle class samples (van IJzendoorn et al. 1999).

Disorganized attachment is unrelated to clinical cut-offs and does not imply psychopathology. Research indicates that disorganized attachment conveys additional risk for the development of psychopathology but is not itself thought to be indicative of psychopathology. In contrast, according to attachment theory, all attachment patterns are adaptive responses to the current caregiving environment and are designed to keep an infant's parents close and responsive, thereby promoting the child's safety (Bowlby 1988). Insecure attachment, like multiple other forms of psychosocial risk, may best be conceptualized within a diathesis stress model as something that renders an individual more vulnerable to psychological distress following the onset of another significant stressor. However, given that disorganized attachment in and of itself does not signify pathology, it is important to identify whether there is an association between disorganized attachment and clinically-significant levels of psychopathology.

The majority of research examining links between attachment and psychopathology has focused on organized forms of insecure attachment (avoidant and ambivalent-resistant attachment) and has yielded contradictory findings. In general, studies show that insecure forms of attachment do not appear to be disorder-specific in their associations, but rather related to a variety of clinical outcomes (Greenberg 1999). Some research employing middle class samples has failed to find strong main effects of insecure attachment and externalizing problems (Bates et al. 1985, 1991; Fagot and Kavanagh 1990; Goldberg et al. 1990; Lewis et al. 1984, but see Erickson et al. 1985), but in impoverished samples insecure attachment is related to externalizing problems in childhood and early adolescence, especially among boys (Easterbrooks et al. 1993; Lyons-Ruth et al. 1989; Renken et al. 1989; Shaw et al. 1996; Shaw and Vondra 1995; Sroufe et al. 1990) and to internalizing symptoms (Ogawa et al. 1997; Warren et al. 1997) in adolescence. In general, links between insecure attachment and symptoms of psychopathology are stronger in samples comprised of higher risk, lower socioeconomic status samples, leading some to argue that insecure attachment operates as a risk factor only in the presence of additional psychosocial stress (Greenberg 1999; Morisset et al. 1990; Rutter 1987). However, as mentioned above, these studies have not examined the disorganized attachment category.

Theory regarding the link between disorganized attachment and psychopathology abounds, but surprisingly little research has been conducted on the topic. A major point of discussion in the field has been the hypothesized link between disorganized attachment in infancy and the development of dissociative disorders later in life (Liotti 1992; Main and Morgan 1996). This is based on the notion that the collapse in behavioral and attentional strategies observed in disorganized infants in the SSP and the parallel breakdown in

linguistic discourse seen in unresolved/disorganized adults on the AAI is indicative of momentary disorganization and disorientation similar to that seen in dissociation, and the results of one study provide preliminary support for a link between disorganization in infancy and dissociation in adolescence (Carlson 1998). Others have suggested that disorganized attachment in infancy is likely to increase vulnerability to phobias and anxiety disorders (Main and Morgan 1996). In fact, studies support a link between disorganized attachment and anxiety symptoms in early school-aged children (Moss et al. 1998, 2004, 2006) and adults (Fonagy et al. 1996). In addition, given the hypothesized centrality of loss and feelings of helplessness in disorganized attachment across the lifespan, links are drawn between disorganized attachment and depression (Dozier et al. 1999). To date research has failed to find the hypothesized link between disorganized attachment and depression in children (van IJzendoorn et al. 1999), though there is mixed support for this association in adults (Fonagy et al. 1996, but see Patrick et al. 1994 and Rosenstein and Horowitz 1996, for contradictory findings). In adulthood, disorganized attachment is associated with borderline personality disorder, antisocial personality disorder, anxiety disorders, eating disorders, substance abuse, major depressive disorder, and schizophrenia (Fonagy et al. 1996).

Until recently, research on attachment in children has been plagued by a lack of available narrative measures for the assessment of attachment into the school-aged years (see Kerns et al. 2000; Dwyer 2005, for a comparison of available measures). Behavioral (Crittenden 1992; Main and Cassidy 1988; Moss et al. 1996, 1998) and representational (Main et al. 2005) measures of attachment extend only until early middle childhood.

The recent advent of an interview assessment measure of attachment for use with school-aged children permits the examination of attachment in a heretofore inaccessible age range. The Child Attachment Interview (CAI; Target et al. 1999, The child attachment interview (CAI) protocol, unpublished manuscript, 2003; Shmueli-Goetz et al. 2004, Child attachment interview (CAI) coding and classification manual, unpublished manuscript) is a semi-structured interview that combines elements of both the AAI (George et al. 1984, 1985, 1996, Adult attachment interview protocol, unpublished manuscript) and the SSP (Ainsworth et al. 1978) and is designed for use with children between the ages of 8 and 13. Like the AAI, the CAI challenges children to provide a general assessment of their current relationships with their parents and to support this assessment with concrete examples. Like the SSP, coders rate the child's nonverbal behavior during the interview as part of the classification process. Children are classified into one of four attachment categories (secure-autonomous, insecure-dismissing, insecure-preoccupied, disorganized). As

compared to other modes of attachment assessment in middle childhood, the CAI may be uniquely designed to capture disorganization because it incorporates both narrative and behavioral markers of this classification (Shmueli-Goetz et al. 2004, Child attachment interview (CAI) coding and classification manual, unpublished manuscript).

Within the attachment field, a debate wages regarding the most optimal assessment of attachment. Proponents from the behavioral styles tradition discuss the utility and feasibility of self-report measures of attachment (e.g., Bartholomew 1990; Fraley et al. 2000; Hazan and Shaver 1987, 1990), and studies that have employed this methodology have generated significant insight into adults' interpersonal functioning. Generally speaking, these measures yield data corresponding to two underlying orthogonal dimensions (anxiety and avoidance), but individuals can also be separated into categories. The internal working model tradition, on the other hand, has retained Ainsworth's original categorical system of partitioning attachment data (avoidant/dismissing, secure/autonomous, ambivalent/preoccupied, disorganized/unresolved; Ainsworth and Bell 1970; Ainsworth et al. 1978), with current attachment measures reflecting this focus (SSP, AAI, CAI). The topic of whether continuous or categorical measures of attachment best capture the constructs of interest has been a considerable debate in the field of late (Fraley and Spieker 2003a), as has the issue of whether attachment is best measured through self-report (e.g., ECR) or observational/narrative (e.g., AAI) methodologies. It is our contention that both methodologies and measurement strategies have value and predictive validity regarding individuals' interpersonal functioning, much as the use of both clinical disorders and symptom counts have value within the field of psychiatry, though given their small correlations with one another (an average of .15, see Crowell et al. 1999), they may be measuring different underlying constructs. However, especially with respect to children, for whom there are no self-report measures of attachment style in existence and for whom reporting on their attachment style may be an unwieldy task, observational/narrative approaches may be more appropriate. In addition, to our knowledge the disorganized attachment classification, originating in the internal working model attachment literature, does not have an analogue within the self-report attachment style literature (Fraley and Spieker 2003b). Therefore, for the purposes of examining disorganized attachment in school-aged children, a categorical and narrative assessment of attachment is optimal at this time.

The aim of our study is to examine associations between disorganized attachment classification and symptoms of psychiatric disorders in an attempt to evaluate these associations in an understudied developmental phase and utilizing a novel assessment tool. Despite high rates of continuity between assessments of attachment in infancy and adulthood in low risk samples (Benoit and Parker

1994; Waters et al. 2000a, b, c; but see Weinfield et al. 2000, for a report on a high-risk sample) the investigation of associations between attachment and psychopathology at different points in development is central to the evolution of developmental theory and to our understanding of the influence of risk and protective factors at different points in development. Moreover, applying an attachment framework to the understanding of child psychopathology implies a different etiological perspective on the development of clinical symptoms, one that might provide insight and direction for interventions.

We evaluated our hypotheses in a middle class sample of school-aged children recruited from the community. We selected psychopathology symptoms based on a previously documented or theorized association with disorganized attachment. We made four hypotheses regarding outcome data. First, based on research documenting higher levels of internalizing symptoms in disorganized 6 year olds (Moss et al. 1998, 2004, 2006), as well as theorizing that disorganized attachment may be related to feelings of loss and helplessness characteristic of depressive states, we hypothesized that disorganized children would have higher levels of self-reported and parent-reported depressive symptoms. Second, we hypothesized that disorganized children would have higher levels of self-reported shyness and parent-reported social phobia symptoms. This hypothesis derives from empirical links between disorganized attachment and anxiety states in young children (Moss et al. 1998, 2004, 2006) and anxiety disorders in adults (Fonagy et al. 1996), as well as the theoretical prediction that children who are frightened by their primary caregiver may approach social situations with reticence and fear. Third, given the theoretical link between disorganized attachment and disturbances in thought processes and attention, as well as the established link between disorganized attachment and dissociation in late adolescence (e.g., Carlson 1998), we predicted that disorganized children would have higher levels of parent-reported thought and attention problems. Finally, we were interested in investigating whether disorganized attachment is associated with clinically-significant levels of psychopathology symptoms. Here we predicted that disorganized attachment would be associated with clinically-significant levels of symptoms of depression, social reticence, thought problems, and inattention.

## Method

### Participants

Ninety-seven children between the ages of 8 and 12 participated in the study. We recruited participants from the community through a variety of means, including a mass



mailing, flyers, and internet postings. The resulting sample was drawn from a lower middle to middle class population from the surrounding New Haven area. Parents consented and children assented to participate in the study. The sample included 56.6% boys and of 43.3% girls with a mean age of 10.01 years old (35.1% 8, 18.5% 9, 16.5% 10, 15.5% 11 year-olds, and 14.4% 12 year-olds), with 86.6% Caucasian, 3.1% Hispanic, 3.1% African American, and 7.2% biracial children. Experimenters informed children that they could refuse to participate in any part of the study if they wished. Accordingly, data were missing due to failure to attend the second session ( $n = 2$ ).

## Procedure

The current study was part of a larger cross-sectional investigation that involved two sessions, approximately 1 week apart, which lasted 1.5 h each. During the first session, children completed an attachment interview and the parent completed questionnaires about the child's symptoms. During the second study session, children completed questionnaires assessing their depressive symptoms and shyness.

For this study, all questionnaires were administered via computer using a program called Computerized Assessment and Presentation Engine (CAPE; Fisher and Mayes 2001). For children's questionnaires, each question was presented individually in both visual and auditory domains, the latter consisting of a pre-recorded voice recording of each question and the response choices. A computer touchscreen was utilized for child participants, such that in order to select their response, the children touched the button of the desired response choice. This procedure was designed to minimize the impact of reading ability on participants' responses. The parent questionnaire was also administered using CAPE, but the parents were presented with the questions in a visual format only. The computer administration format was designed to help minimize data entry errors and thus increase the accuracy of the study findings.

## Measures

### *Attachment Interview*

The CAI (Shmueli-Goetz et al. 2004, Child attachment interview (CAI) coding and classification manual, unpublished manuscript; Target et al. 1999, The child attachment interview (CAI) protocol, unpublished manuscript) is a semi-structured interview designed for 8–13 year olds. The interview is designed to be a downward extension of the AAI (George et al. 1984, 1985, 1996, Adult attachment interview protocol, unpublished manuscript). It consists of 19 questions concerning the child's current and past experiences with primary caregivers and prompts the child

to evaluate the qualities of these relationships (e.g., "What's it like to be with your mom/dad?"; "What happens when mom/dad get upset or angry?"; "Have you ever felt like your parents don't really love you?"). The interview lasts approximately 30–45 min and is both videotaped and transcribed verbatim, with both media utilized in the coding process. Interviews are coded on 8 scales (e.g., overall narrative coherence, emotional openness, use of examples, dismissal of attachment, resolution of conflict, idealization, preoccupying anger, balance of positive/negative references to attachment figures), each of which consists of 9 points (with a score of 1 signifying an absence of the construct being measured and a score of 9 meaning an exemplary level of the construct being measured). Each scale is coded across the interview as a whole, though responses to certain questions feed into particular scales more than others. The coder also evaluates the child's behavior during the interview, taking into account the child's manner, expressed affective state, stance towards the interviewer, and any behavioral oddities occurring during the interview.

As with the AAI, the overall narrative coherence score is a summary scale of the other ratings scales and measures the degree to which the narrative the child has presented translates into a coherent, rationale, and comprehensible story. The degree to which the child contradicts himself or becomes agitated to the point of losing focus of the topic of the interview detract from his overall coherence score. Similar to the AAI, this scale can be used as a dimensional measure of attachment security, with higher scores indicating greater security and lower scores indicating lower levels of security. The disadvantage to using this scale as opposed to attachment categories is that it does not distinguish between different types of insecurity (preoccupied, dismissing, and disorganized), because all forms of insecurity by definition have low scores on the coherence scale. Given that the central aim of this study was to evaluate associations between disorganized attachment and symptoms psychopathology, the categorical classifications were retained for analyses.

Generally speaking, a child is classified as secure if he appears reasonably emotionally open, provides concrete examples that support his characterization of his relationships with his parents, and can discuss positive and negative aspects of these relationships freely. A child is classified as dismissing if he has limited or no memory of his experiences with his parents; if he grossly idealizes his relationships with caregivers but either is unable to support his descriptions or actively contradicts them; if he denies ever having been upset, hurt, or sick; and if he is unable to acknowledge feelings of vulnerability when asked directly. A child is classified as preoccupied if he focuses exclusively on negative aspects of his relationship with his caregivers; becomes overtly angry to the point where he loses track of the

interview during a discussion of his caregivers; leaves all conflicts presented in the interview unresolved; and fails describe his emotional states in the interview. Similar to the AAI, a child is classified as disorganized if when discussing loss, trauma, or extremely frightening experiences, he demonstrates behavior that is indicative of a disintegration or breakdown of an otherwise organized attachment strategy. This is operationalized in the following ways on the CAI: sudden and marked switches in affect; interrupted speech (e.g., freezing or long, unexplained pauses); emotion states that are incompatible with the context and content of the topic discussed; bizarre and nonsensical descriptions of events; bizarre associations or catastrophic images; mixing up people repeatedly in the telling of a story without correcting the errors; talking about someone who is dead as though he is alive; or more generally displaying a hostile, punitive, or controlling stance towards the interviewer (Shmueli-Goetz et al. 2004, Child attachment interview (CAI) coding and classification manual, unpublished manuscript; Target et al. 2003).

Based on the idea that interview administration is enhanced by a working knowledge of the CAI coding scheme, two different female doctoral students in clinical psychology who had achieved coding reliability with the authors of the measure and each other administered all of the interviews for the study. The interviews were coded by the researcher who had not given the interview in order to avoid any coding contamination related to having performed the interviews. Each interview was coded by one person and difficult cases were discussed and resolved between the two coders. The coders classified each interview into one of four categories: autonomous/secure, dismissing, preoccupied, and disorganized.

This interview has previously been used with clinical and non-clinical populations in London (Target et al. 2003). Test–retest reliability of both scale scores and attachment classifications has been shown at 3 months ( $\alpha$ 's .74–1.00) and 1 year later ( $\alpha$ 's .72–.79). In addition, internal consistency ( $\alpha$ 's ranged from .84 to .92 for 2 way, .84 to .85 for 3 way, and .74 to .89 for 4 way) of the scale scores and classifications, interrater reliability (.92 for 2 way classifications, .84 for 3 way, and .83 for 4 way), and validity of the measure have been determined with both clinical and normative samples (Humfress et al. 2002; Shmueli-Goetz et al. 2008; Target et al. 2003). CAI classification is correlated with the child's attachment security as measured in the SSP, maternal AAI classification, and with measures of social functioning (Shmueli-Goetz et al. 2008). Security of attachment on the CAI is not predicted by age, gender, socioeconomic status, ethnicity, verbal IQ, expressive language ability, or whether the child lives with one or two parents (Target et al. 2003). In this sample, interrater reliability on 20 cases (21% of sample) was excellent (4-way:  $\kappa = .86$ ,  $p < .001$ , 3-way:  $\kappa = .83$ ,

$p < .001$ ; narrative coherence scale: Intraclass Correlation Coefficient = .97,  $p < .001$ ).

## Child Reports

### *Children's Depression Inventory*

The Children's Depression Inventory (CDI; Kovacs 1992) consists of 27-items designed to assess the behavioral, cognitive, emotional, and physiological features of depression in children aged 7–17. Participants choose one of three statements which best describes their symptoms over the past 2 weeks (e.g., "I am sad once in a while," "I am sad many times," "I am sad all the time"). Responses are coded on a scale of 0–2, with higher scores indicating more severe depressive symptoms. For the purposes of these analyses, we utilized the clinical cut-off of 13 for mild depression (Kovacs 1992). The psychometric properties of the CDI have been reported in past work (Kovacs 1992; Saylor et al. 1984). Cronbach's alpha in this sample was .82.

### *Early Adolescent Temperament Questionnaire-Revised*

The Early Adolescent Temperament Questionnaire-Revised (EATQ-R) (Ellis and Rothbart, 1999, Early adolescent temperament questionnaire-revised: long form, unpublished document) is based on an earlier version of the measure, the Early Adolescent Temperament Questionnaire (EATQ; Capaldi and Rothbart 1992) and has been revised to include aspects of temperament related to self-regulation in adolescents (Ellis and Rothbart 2001). The measure was designed for use with normative samples and can be used with children ages 8–15. The questionnaire consists of 103 questions related to 11 temperamental and 2 behavioral domains. Participants are asked to rate how true statements are for them (e.g., "I feel shy about meeting new people") on a 1–5 scale, with a score of 1 meaning "always untrue for me" and a score of 5 meaning "always true for me". The measure has been found to be reliable and valid in a recent empirical investigation (Ellis and Rothbart 2001, 2005). For the purposes of the current investigation, we were most interested in examining children's reports social reticence; therefore we examined the shyness scale of the EATQ-R, which contains seven items. The first author (J.B.) received permission from the authors to use the measure in the current research.

## Parent Reports

### *Child Behavior Checklist- 4–18 Version*

The Child Behavior Checklist (Achenbach 1991) is a parent-report measure of the behavior of children aged 4–18.

Parents score each behavior item as either 0 (not true), 1 (somewhat or sometimes true), or 2 (very true or often true). The measure consists of 118 problem items (e.g., “teases a lot”) and 20 competency items, which can be grouped into 11 problem scales and four competence scales or two broader dimensions of internalizing and externalizing symptoms. For the purposes of this investigation, we were interested in two subscales: thought problems (Cronbach’s alpha .56 in this sample) and attention problems (Cronbach’s alpha .82). We utilized the author’s clinical cut-offs of scores greater than 63 (Achenbach 1991). The measure’s demonstrated reliability and validity (Achenbach 1991) result in its being a widely-used measure of behavior problems.

#### *Child Symptom Inventory-Parent Checklist*

The CSI (Gadow and Sprafkin 1994, 1997, 1998) is a 97-item measure which prompts parents to describe how often statements describe their child (e.g., “Is forgetful in daily activities”) on a 4-point scale (never, sometimes, often, very often), with higher scores indicating a greater frequency with which the statements describe their child. The items map onto DSM-IV diagnoses for children. For the purposes of this investigation, we utilized the scales for major depressive disorder and social phobia (Cronbach’s alpha .71 and .73, respectively). The clinical cut-offs provided by the authors were utilized to determine clinical significance (Gadow and Sprafkin 1998). The reliability and validity of the measure have been established (Gadow and Sprafkin 1994, 1997, 1998).

#### Data Analytic Plan

For the purposes of evaluating our initial three study hypotheses, we performed a series of Analyses of Covariance (ANCOVAs) due to the desire to include gender and age as covariates in the models. Since our primary interest was in evaluating associations between disorganized attachment and clinical symptoms, in all analyses we used a two-level attachment variable (comparing disorganized to organized children) to provide the greatest statistical power for examining these associations. Our final study hypothesis involved the examination of clinical significance of the previous findings. For these analyses, we were interested in examining whether disorganized children’s symptoms were more likely to be clinically-significant. Therefore we intended to evaluate hypotheses only with the symptoms found to occur at increased levels in disorganized children. We utilized clinical cut-off data provided by the authors of the measures employed in the study and conducted  $\chi^2$  analyses to evaluate hypotheses.

## Results

### Descriptives

Table 1 reports means and standard deviations for all primary study variables. *T*-tests were utilized to assess for the presence of gender differences in study variables, and results revealed that boys had higher scores on scales of thought problems and attention problems. Given the gender differences in some of the clinical variables of interest, we included gender as a covariate in all future analyses.

Following the CAI coding system, coders assigned attachment classifications for the child’s attachment representations to each parent. Similar to previous studies documenting high concordance in child attachment with respect to mother and father (e.g., Shmueli-Goetz et al. 2008), 94.8% of children in our sample were classified in the same attachment category with respect to both parents in the 4-way attachment categorization system. Given the small number of children who had different classifications for mother and father, for all remaining analyses attachment classifications with respect to mother were used. Importantly, the analyses were repeated utilizing attachment classification with respect to father and all findings remained intact. Table 1 reports means and standard deviations for clinical symptoms by attachment classification. A  $\chi^2$  examining attachment classification and gender did not find a significant difference in distribution (see Table 2). The results of an Analysis of Variance (ANOVA) indicated significant attachment group differences by age ( $F = 3.64, p < .05$ ), with a Least Significant Difference (LSD) post-hoc test indicating that insecure-preoccupied children were older than secure, insecure-dismissing, and insecure-disorganized children. Therefore, age was retained as a covariate in all further data analyses. Eighteen children (18.6%) were classified as disorganized with mother; all of these children were also classified as disorganized with father. Consistent with the CAI coding protocol, all disorganized children were assigned a secondary organized classification. In this sample, with respect to attachment to the mother figure, 14 children were assigned secondary classifications of dismissing, one was assigned a classification of secure, and three were classified as preoccupied. With respect to father, 13 of these children were assigned a secondary dismissing classification and five were assigned a secondary preoccupied classification.

### Depressive Symptoms

For the purposes of examination of attachment group differences in self-reported depressive symptoms on the CDI, attachment was entered in the model, with age and gender included as covariates, and CDI total symptom score as the

**Table 1** Means (standard deviations) of measures of attachment and self- and parent-reports of clinical symptomatology

Measures	Total ( <i>N</i> = 97)	Dismissing <sup>a</sup>	Secure	Preoccupied	Disorganized
Child-reported depressive symptoms (CDI)					
Total score	5.78 (5.32)	5.69 (3.97)	4.00 (3.97)	5.83 (5.12)	10.00 (7.91)
Parent-reported clinical symptoms (CSI)					
Major depressive disorder	15.52 (2.13)	15.70 (2.91)	15.21 (1.05)	15.33 (2.39)	16.00 (2.47)
Social phobia disorder	7.77 (1.41)	7.45 (1.09)	7.79 (1.22)	6.83 (.41)	8.56 (2.06)
Early adolescent temperament questionnaire					
Shyness	20.14 (3.95)	20.97 (3.67)	18.85 (3.60)	19.67 (3.56)	21.83 (3/95)
Parent-reported clinical symptoms <i>t</i> scores (CBCL)					
Thought problems <sup>b</sup>	.83 (1.34)	.77 (1.33)	.62 (.96)	.83 (1.60)	1.39 (1.88)
Attention problems <sup>b</sup>	55.71 (7.94)	55.97 (8.57)	53.69 (6.27)	56.00 (8.88)	59.88 (9.29)

<sup>a</sup> Attachment classifications with respect to mother

<sup>b</sup> CBCL gender- and age-normed *t*-scores

**Table 2** Four category attachment classification by gender

	Total ( <i>N</i> = 97)	Boys ( <i>n</i> = 55)	Girls ( <i>n</i> = 42)	Gender differences Pearson $\chi^2$
CAI attachment classification for mother				
Disorganized	18	10	8	.01
Organized	79	45	34	

dependent variable (see Table 3). Results of the ANCOVA revealed a main effect of attachment classification,  $F(1, 91) = 15.67$ ,  $p < .0001$ , and no main effect of age or gender, with the model accounting for significant variance (17%) in children's depressive symptoms. Disorganized children report higher levels of depressive symptoms than children with organized attachment classifications.

In order to examine the relationship between attachment classification and parent-reported depressive symptoms, we utilized the CSI Major Depressive Disorder scale as a dependent variable. The results of the ANCOVA indicated that neither attachment nor age were statistically significant predictors of parent-rated symptoms of MDD (see Table 3). Surprisingly, gender was a main effect, with boys having higher parent-rated depressive symptoms than girls.

### Shyness and Anxiety Symptoms

An ANCOVA evaluated the association between disorganized attachment and self-reported symptoms of shyness. Results indicated that both age,  $F(1, 91) = 13.63$ ,  $p < .001$ , and attachment,  $F(1, 91) = 3.73$ ,  $p < .05$ , were significant main effects in the model, with the model explaining statistically significant variance in shyness (17%). Children who were younger and children classified as disorganized reported higher levels of shyness (see

**Table 3** Analysis of covariance for attachment and depressive symptoms

Source	<i>df</i>	<i>F</i>	$\eta^2$
Child-report CDI depressive symptoms score			
Age	1	.06	.00
Gender	1	1.79	.02
Attachment	1	15.76***	.15
Parent report CSI MDD symptoms score			
Age	1	1.55	.02
Gender	1	3.61*	.04
Attachment	1	1.39	.02

\*  $p < .05$ ; \*\*\*  $p < .001$

Table 4). Importantly, given that the current study utilized multiple statistical tests, if a Bonferroni correction were applied, this finding would no longer be significant.

For the purposes of analyzing parent-reports of anxiety symptoms, here we used the Social Phobia Scale from the CSI. The results of an ANCOVA indicated that neither age nor gender was statistically significant predictors of parent-reported social phobia symptoms, but that attachment exerted a significant main effect,  $F(1, 91) = 7.05$ ,  $p < .01$ , with the model explaining a significant portion of the variance in social phobia symptoms (10%). Children classified as disorganized had higher levels of parent-report social phobia symptoms than children in the organized attachment categories (see Table 4).

### Parent-Reported Symptoms of Inattention and Thought Problems

For the purposes of these analyses, gender- and age-normed *t*-scores for CBCL scales were utilized in order to take gender and age differences in inattention and thought problems into account. We conducted two ANCOVAs with



**Table 4** Analysis of covariance for attachment and social reticence

Source	<i>df</i>	<i>F</i>	$\eta^2$
EATQ-C shyness score			
Age	1	13.63***	.13
Gender	1	.12	.00
Attachment	1	3.73*	.04
CSI social phobia symptoms score			
Age	1	.43	.01
Gender	1	1.77	.02
Attachment	1	7.05**	.07

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

CBCL scores for attention and thought problems as the dependent variables and age and gender controlled as covariates (see Table 5). The results of the ANCOVA predicting CBCL attention problems revealed a main effect for gender,  $F(1, 91) = 5.53, p < .05$ , and attachment,  $F(1, 91) = 6.44, p < .01$ , but no main effect of age. The model explained 13% of the variance in inattentive symptoms. With respect to parent-reported thought problems, results again revealed a main effect for gender,  $F(1, 91) = 4.63, p < .05$ , and attachment,  $F(1, 91) = 5.43, p = .01$ , with no main effect of age. The model explained 10% of the variance in thought problems. Disorganized children had higher levels of parent-reported attention and thought problems.

**Clinical Significance**

As mentioned above, our secondary aim was to evaluate whether the observed link between disorganized attachment and elevated clinical symptoms translates into clinical significance. In order to evaluate these, for each clinical variable in which we had observed an association between disorganized attachment and higher symptoms, we conducted  $2 \times 2 \chi^2$  analyses with an attachment variable

**Table 5** Analyses of covariance for attachment and parent-reported attention and thought problems

Source	<i>df</i>	<i>F</i>	$\eta^2$
CBCL attention problems <sup>a</sup>			
Age	1	1.33	.01
Gender	1	5.53*	.06
Attachment	1	6.44**	.06
CBCL thought problems <sup>a</sup>			
Age	1	.01	.00
Gender	1	4.63*	.05
Attachment	1	5.41**	.06

<sup>a</sup> Analyses based on CBCL gender- and age-normed *t*-scores

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

(disorganized, organized) and a clinical symptoms variable (above clinical threshold, below clinical threshold). Clinical threshold was determined using published clinical cut-off scores for study measures. Results revealed that disorganized attachment is associated with clinically-significant self-reported depressive symptoms ( $\chi^2(1) = 14.06, p < .001$ ), and with clinically-significant parent-reports of social phobia ( $\chi^2(1) = 8.74, p < .05$ ), thought problems ( $\chi^2(1) = 3.71, p < .05$ ), and attention problems ( $\chi^2(1) = 4.40, p < .05$ ). Child-reported shyness was not evaluated due to the absence of a clinical cut-off.

**Discussion**

Our aim in conducting this investigation was to evaluate whether there are associations between disorganized attachment organization in middle childhood and symptoms of psychopathology as reported by children and parents. Despite evidence that in infancy and adulthood disorganized attachment conveys significant risk for psychopathology, this link had yet to be measured in middle childhood. We utilized a novel attachment assessment tool that incorporates both narrative and behavioral assessments of attachment and allows for the detection of disorganization in this age group. In general our findings lent support for an association between disorganized attachment and symptoms of psychopathology in middle childhood. The specific study findings will be discussed in turn below.

Results indicated that disorganized children report significantly more depressive symptoms as compared to children with organized attachment classifications. Importantly, disorganized children were also more likely than other children to have self-reported depressive symptoms that were above the clinical threshold. This contributes to a growing body of research documenting associations between disorganized-controlling attachment, measured using a separation-reunion procedure at ages 5–7 (Main and Cassidy 1988), and child-reported internalizing symptoms (Moss et al. 2004, 2006; and at the level of marginal statistical significance, Moss et al. 1998), and extends these findings to a new measure of attachment and to middle childhood. Although the current data do not speak directly to this question, they may suggest that disorganized children might be at unique risk for the development of a depressive disorder in adolescence. Given the increased prevalence of depression in adolescence, especially among girls (Nolen-Hoeksema and Girgus 1994), future research ought to investigate the prospective relationship between disorganized attachment in middle childhood and self-reported depression in adolescence. Importantly, there were no attachment group differences in parent-reported symptoms of depression. This lack of

difference in parent-reported depressive symptoms may reflect a true lack of difference among the attachment groups, the difficulty in relying on parent-reports of child internalizing symptoms in general, or reporter biases.

Results indicated that disorganized attachment was associated with greater levels of self- and parent-reported social reticence. Specifically, disorganized children reported higher levels of shyness and their parents characterized them as more socially phobic, symptoms that reached the level of clinical significance. This fits with research linking disorganized attachment to anxiety states in younger children (Moss et al. 1996) and to anxiety disorders in adults (Fonagy et al. 1996), and theoretically fits with the conceptualization of disorganized children as perceiving the behavior of others as unpredictable and frightening (Main and Morgan 1996).

The hypothesized link between disorganized attachment and dissociation has received significant discussion, with the results of some empirical examinations validating this hypothesis (Carlson 1998; Hesse and van IJzendoorn 1998; West et al. 2001) and others challenging it (Lyons-Ruth and Block 1996; Stovall-McGough and Cloitre 2006) in adolescents and adults. In this study we sought to evaluate symptoms related to thought disorganization and disorientation that may be thought of as precursors or correlates of dissociative thought processes. According to parent report, we observed that disorganized children had higher symptoms of inattention and thought problems than children classified as having organized attachment, and that disorganized children were more likely to have clinically-significant levels of these symptoms. Though not suggestive of a tendency towards dissociation, these findings indicate that the parents of disorganized children view them as having more difficulty with maintaining coherent thought processes, which is phenotypically similar to the types of lapses in reasoning and discourse that are apparent in disorganized individuals on the CAI and AAI. Future research ought to examine the link between disorganized attachment and disorientation and dissociation in middle childhood.

Several caveats of the current study warrant mention. While it is tempting to infer that a child's preexisting attachment internal working model, thought to be borne of the interactions between him and his primary caregiver, is causally related to the clinical symptoms assessed in the current investigation, our concurrent assessment precludes such causal inferences. Longitudinal research would aid in the evaluation of the predictive validity of the CAI as an assessment tool and of attachment organization as a guiding theme in understanding social development. In addition, research incorporating behavioral observations of the interactions between parent and child would be helpful in

providing a more objective assessment of the nature of the relationship.

Secondly, an important question that emerges from this study is the question of circularity. By virtue of its definition, some of the narrative characteristics that signal disorganized attachment could in themselves also be suggestive of psychopathology (e.g., long, unlicensed pauses during the discussion of a loss could be indicative of dissociation). Despite this potential overlap between the markers of disorganized attachment and psychopathology, we contend that investigations such as the current one contribute to the literature in a central way. First, studies like ours dialogue between two disparate classification systems, the developmentally-based attachment classification system and the medically-based classification system for psychiatric disorders, and this dialogue allows for clarification of both systems' common as well as unique attributes.

In essence, these two different classification systems are designed, a priori, to tap two different constructs. The attachment classification system evaluates patterns of narrative discourse that emerge in a very specific context, the discussion of attachment relationships. With respect to disorganized attachment, these patterns of narrative discourse may only emerge in the discussion of loss or trauma. In contrast, questionnaires assessing clinical symptoms assess the frequency of varied behaviors across multiple contexts. It is possible that an individual has compromised functioning in the attachment domain but does not exhibit other indices of psychopathology, and vice versa- that psychopathology has a limited impact on interpersonal functioning and relatedness. Therefore although at some level the indices of disorganized attachment and childhood psychopathology may have phenotypic similarity, we feel it is far from a foregone conclusion that the two spheres map onto the same naturalistic phenomena.

Thus, the evaluation of convergent and discriminant validities between mental representations of attachment relationships and psychiatric symptoms can facilitate longitudinal research regarding the onset of psychopathology. Knowledge about discrepancies between attachment classifications and childhood pathology can enable researchers to evaluate whether certain types of relationships (as opposed to childhood disorders) are more likely to lead to the development of ongoing psychiatric distress over time. We argue that a similar line of reasoning justifies research examining links between attachment and temperament, as was done in this study. In line with Vaughn et al. (2008), we argue that these two constructs are distinct, though in part overlapping, influences on children's development, and therefore that research examining links between the two is valuable.

An additional caveat is that our study relied on categorical measures of attachment derived from narrative/behavioral data as opposed to self-report data. It is important to remember that a significant percentage of attachment research has been conducted utilizing self-reports of attachment styles, and that some have argued that attachment ought to be measured using dimensional rather than categorical data (e.g., Fraley and Spieker 2003a, b). The notion that categories may not be the most optimal measurement of attachment tendencies ought to be kept in mind when interpreting this study's findings, but given that the dimensional model does not directly involve disorganized attachment (Fraley and Spieker 2003b), this was not a possibility for the current study. In the future, researchers ought to strive to compare the predictive power of known self-report (e.g., Security Scale; Kerns et al. 1996) and interview-based measures of attachment for use in school-aged children in an attempt to bridge these two attachment literatures.

An additional caveat pertains to our reliance on self- and parent-reports of psychopathology. As has been documented extensively in other literatures (De Los Reyes and Kazdin 2005), parent and child reports of child symptoms can be highly divergent. Future research should use additional sources of information, including teacher-report, clinical interview-based diagnoses, and objective laboratory assessments of behavior deemed relevant to clinical symptoms (e.g., displayed aggression during a stressful laboratory task) in order to address this issue. Given the possibility that the child's or parent's attachment organization may influence their view on child psychopathology, teacher, clinician, and behavior observation of child behavior should be utilized when examining the relation between child attachment and symptoms of psychopathology. In addition, a large body of research has linked parent-child discrepancies in reports of child psychopathology to maternal depressive symptoms (e.g., Chi and Hinshaw 2002). The lack of assessment of parental psychiatric symptoms is a limitation of this study that constrains our interpretation.

Finally, the use of a typically developing sample of children limits the generalizability of the findings to clinic based samples. For the purposes of the current investigation, which was novel in its use of the CAI, a low risk, normative sample was desired for the purposes of evaluating our specific hypotheses. In addition, our assessment of social variables that could affect attachment security (e.g., exposure to community violence, time spent in contact with parents, parents' social support) was limited and therefore we were unable to control for these variables in study analyses. Future research ought to examine these additional psychosocial factors for their contribution to the

link between disorganized attachment and psychopathology.

Our results represent the first published attempt to evaluate associations between disorganized attachment and psychopathology in middle childhood. These findings underscore the association between disorganized attachment and symptoms of depression, social reticence, inattention and thought problems, and suggest that the link between disorganized attachment and these symptoms may have clinical significance. Findings emphasize the need for future research examining the link between disorganized attachment and symptoms of psychopathology in varied populations and using more extensive assessment batteries. In addition, the etiological model underpinning the development of disorganized attachment and its relation to child psychopathology warrants further examination and consideration.

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