

Attachment stability and the emergence of unresolved representations during adolescence

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This 15-year longitudinal study examined the stability of attachment representations from infancy to adolescence and investigated the emergence of unresolved representations during adolescence in a sample of 47 16-year-olds. Attachment was assessed at 12 months using the Strange Situation Procedure, at 4 years using the modified Strange Situation Procedure, and again at 16 years with the Adult Attachment Projective (AAP). The emergence of unresolved classifications in adolescence (AAP) was associated with higher rates of negative life events, low levels of early mother–child relationship security (an aggregate measure of the 12-month and 4-year measures), negative teacher–child relationship experiences in middle childhood, and low early adolescent friendship quality. The results support the growing body of evidence suggesting that changes in attachment are lawful, while adding to the growing understanding of the emergence of unresolved attachment representations.

Keywords: unresolved attachment representations; attachment stability; adolescence; socio-emotional adjustment; Adult Attachment Projective Picture System; AAP

Introduction

Bowlby proposed that individual's working models of relationships become increasingly stable and unconscious over time. As individuals use these models as the basis for their interpersonal expectations, interpretations, and behaviors, they become reinforced and increasingly resistant to change (Bowlby, 1969). However, Bowlby also theorized that internal working models may be flexible and open to some degree of modification in the context of discordant interpersonal or attachment-related experiences (Bowlby, 1991). Significant changes in the caregiving environment might necessitate modifications in attachment representations. While research has identified interpersonal and environmental contexts that lawfully predict change in attachment patterns, the contributions of these factors to the stability of or the emergence of disorganization has received limited attention. To date, studies regarding the antecedents of disorganization have primarily focused on early childhood. In the current study, we examine the stability of attachment from

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infancy to adolescence and predict the emergence of unresolved representations during adolescence.

Longitudinal studies examining attachment stability from infancy to adolescence and to adulthood have evidenced mixed findings. From infancy to adolescence, moderate stability was found in two low risk samples (63 and 64%; Hamilton, 2000; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000); however, lower rates of stability were found among two higher risk samples (48 and 39%; Lewis, Feiring, & Rosenthal, 2000; Weinfeld, Sroufe, & Egeland, 2000). Within these high risk samples, divorce, single parenthood, life threatening illnesses within the family, serious parental drug or alcohol use, child maltreatment, or parental death were all predictive of attachment change (Lewis et al., 2000; Weinfeld et al., 2000). Notably, Waters and his colleagues (2000) found that even in their low risk sample, experiencing a stressful life event was predictive of change in attachment representations over time. Between infancy and adulthood, Sroufe and colleagues found significant stability due primarily to the continuity in secure representations (53%; Sroufe, Egeland, Carlson, & Collins, 2005). Instability (i.e. movement from security in infancy to insecurity in adulthood) was predicted by maltreatment, the experience of more life stress for boys, and low parental support during early adolescence (Sroufe et al., 2005). Grossmann and colleagues (Becker-Stoll, Fremmer-Bombick, Wartner, Zimmermann, & Grossmann, 2008; Grossmann, Grossmann, Fremmer-Bombik, Kindler, Scheuerer-Engelisch, & Zimmermann, 2002; Grossmann, Grossmann, & Kindler, 2005) found that attachment representations in infancy did not predict attachment beyond childhood in either the Bielefeld or the Regensburg samples. Only fathers' sensitivity during father-child play was predictive of adolescent attachment representations (Grossmann et al., 2002). Together, these longitudinal studies suggest that attachment representations may be stable over time in particular contexts, that under certain circumstances change is expectable and lawful, and that non-attachment related parent-child experiences may also contribute to attachment patterns over time.

A significant limitation in this longitudinal research has been the reliance on three-way analyses that excluded disorganization. This omission is largely because the disorganized classification in infancy had not been identified when these studies were originally undertaken. Notably, the Berkley (Main, Hesse, & Kaplan, 2005) and Minnesota (Sroufe et al., 2005) samples, where a four-way analysis was possible, indicate substantial associations between disorganization in infancy and insecure classifications on the AAI at ages 19 and 26, with dismissing states of mind predominating. Across both samples, unresolved classifications were also predicted by disorganization in infancy; however, Main and Sroufe speculate that these findings likely underestimate the continuity in individuals' attachment disorganization as not all individuals coded as disorganized in infancy experienced loss or abuse that could allow assignment of an Unresolved classification (Main et al., 2005; Sroufe et al., 2005).

The antecedents of disorganized attachment during childhood have received a fair bit of attention. Caregiver representations of attachment are key predictors in the emergence of infants' disorganized attachment. Theoretically, it is expected that unresolved mothers will have disorganized infants; however, these pathways are not as linear as would have been anticipated, as around half of all unresolved mothers do not have children who are classified as disorganized (van IJzendoorn, Schuegel, & Bakermans-Kranenburg, 1999) and around half of disorganized children do not

have unresolved mothers (Solomon & George, in press). In theory, it is also anticipated that maternal behavior influences patterns of infant attachment. Evidence supports this notion with behaviors in both at risk (e.g. maltreatment; see Cicchetti, Toth, & Lynch, 1995, for a review) and normative samples (e.g. frightened/frightening behavior, Hesse & Main, 2006, Main & Hesse, 1990; hostile/helplessness, Lyons-Ruth, Bronfman, & Atwood, 1999; and dissociation, Hesse & Main, 2006) predicting the emergence of disorganization. In this context, George and Solomon (1999; in press) suggest that these caregiver behaviors result in children's experience of failed protection and that this "abdication of care" (Solomon & George, 2000) is dysregulating to the forming attachment bond.

To date, however, the emergence of unresolved representations outside of childhood is still largely understudied. Unresolved states of mind are thought to reflect the degree to which experiences with trauma and loss have been cognitively integrated. Bowlby (1980) theorized that the processing of these experiences follow a logical pattern in which individuals understand their reality, nature, and consequences and are able to adjust accordingly. He suggested that some individuals are unable to resolve these experiences and instead manage extreme attachment failures and trauma by defensively excluding the experiences and associated affect, isolating them in a "segregated" representational system devised to "hold" them. Consistent with this notion, on the AAI, discourse regarding trauma is coded for the presence and strength of markers indicating lapses in the monitoring of reasoning, discourse, or behavior which are thought to be reflective of disorganized/disoriented responses to abusive behavior or the loss of an attachment figure (Main & Goldwyn, 1985/1998). These frameworks therefore suggest that experiences of loss or trauma lead to unresolved states of mind.

Yet, the expected links between severity of loss or abuse in childhood and unresolved representations have not consistently been identified. Ainsworth and Eichberg (1991) found that neither the age of the child at the time of the loss or the closeness of the person lost was predictive of unresolved classifications in adulthood. Similarly, Lyons-Ruth and her colleagues (Lyons-Ruth, Yellin, Melnick, & Atwood, 2003) found no association between the severity of loss or abuse and maternal unresolved states of mind. Taken together these findings suggest that a more complex approach that attends to developmental factors may untangle the origins of unresolved classifications (Lyons-Ruth et al., 2003).

The transactional and non-linear pathways suggested by Sroufe and his colleagues' (Sroufe, 2005; Sroufe et al., 2005) organizational model of development may provide a framework for examining the origins of unresolved classifications. This approach suggests that while early events, such as parent-child attachment experiences, set the course for differences in adjustment these processes are only probabilistic and not deterministic. That is, later experiences have the potential to concretize pathways of development or alternatively to influence deviations from these trajectories. While early events may serve as a cornerstone for development, the skills and experiences that children gain as they resolve stage salient challenges likely have a significant influence as well. As such, cumulative experiences, along with current stressors and circumstances, appear to be more predictive of outcomes than early experiences or attachment representations alone (Sroufe et al., 2005). To date, this framework has been used to conceptualize pathways of adjustment (e.g. psychopathology and social competence); however, this developmental theory could also be applied to the prediction of trajectories of attachment representations. That

is, while early experiences may set the likely course for attachment representations across the life course, intervening life experiences may contribute additional prediction to these pathways over time. The inability to resolve stage salient developmental tasks, particularly those that are interpersonal, may place some individuals at greater risk for developing unresolved representations.

Two salient interpersonal tasks that may influence adolescents' developing trajectories are the formation and maintenance of teacher–child and peer relationships. Positive teacher–child relationships have been tied to children's behavior (academic ability, learning, and achievement; social competence, skill, and peer relationships) as well as their ability to tolerate frustration and manage affect (Davis, 2003). During middle school, positive teacher–child relationships promote adaptation and motivate exploration and growth. Given the strength of these associations, teacher–child relationships may be particularly important at this juncture (Davis, 2003). During adolescence, friendships take on increasing significance, providing emotional support and social guidance that adolescents previously sought from their parents (Steinberg & Silverberg, 1986). These relationships provide opportunities for skill development and contexts for practicing new interpersonal approaches (Hartup, 1989). Friendships also begin to have a unique influence on adolescents emerging self understanding (Damon & Hart, 1982). Without positive high quality teacher–child and peer relationships, youth may have trouble developing the necessary skills for managing complex social interactions in adolescence and for forming appropriate strategies for regulating emotion and affective arousal. This may result in adolescents being overwhelmed by stressful experiences, unable to identify appropriate strategies for regulating the accompanying emotional reactions, and at increased risk for escalating levels of negative adaptation.

Understanding the emergence of unresolved/disorganized representations may be particularly important in part due to their more frequent association with negative outcomes than the other organized classifications (van IJzendoorn et al., 1999). Early disorganized attachment has been linked with non-clinical difficulties (e.g. controlling behaviors with parents, emotion dysregulation, low self regulation, low self esteem, and poor peer relations; Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2005; Jacobvitz & Hazan, 1999; Main, Kaplan, & Cassidy, 1985) as well as psychopathology (e.g. internalizing and externalizing disorders, dissociation, and self injurious behavior; Carlson, 1998; Macfie, Cicchetti, & Toth, 2001; Madigan, Moran, Schuengel, Pederson, & Roy, 2007; Sroufe et al., 2005). Unresolved representations in adolescence and adulthood have also been associated with higher rates of psychopathology (e.g. 65% of unresolved participants diagnosed with psychopathology; Ward, Lee, & Polan, 2006). Secondary insecure classifications appeared to confer particular risk, as unresolved individuals with a secondary secure classification were at less risk for negative outcomes. Disorganization may create risk by undermining individuals' ability to resolve difficulties or form intimate interpersonal relationships that can provide help.

Previous sample findings

Data for this current study were drawn from a longitudinal project designed to examine the associations and unique functions of interpersonal relationships across children's development. Children involved in this study had all entered an "out of home" caregiving environment (e.g. daycare center or home-based care) by preschool. Similar to previous findings regarding maternal attachment, teacher

involvement and sensitivity were predictive of secure teacher–child attachments (Howes & Hamilton, 1992a). Yet, limited concordance between mother and teacher attachments indicated that these relationships were distinct (Howes & Hamilton, 1992b; Howes, Rodning, Galluzzo, & Meyers, 1988). While mother–child attachments were largely stable over time, greater instability was found in teacher attachment representations during the early years (Howes & Hamilton, 1992b; Howes, Hamilton, & Philipsen, 1998). After age 2, stability in the teacher–child attachment relationship emerged as well suggesting that children had internalized a working representation of teachers. Notably, across development, children’s peer competence and friendship quality (Howes, Hamilton, & Matheson, 1998; Howes et al., 1988, 1998; Howes & Tonyan, 2000), sociability with teachers (Howes et al., 1988), and emotion regulation (Howes & Wargo Aikins, 2005) were associated concurrently and predictively with both mother–child and teacher–child relationships. Consistent with an “activity context hypothesis,” teacher–child relationships were the strongest predictors of peer relationships (Howes et al., 1998) suggesting that teachers may serve as a secure base for exploration of the peer domain since child care and school are contexts in which these relationships are first formed.

Current study

The current study uses this longitudinal data and is designed to examine the stability of attachment from infancy through middle adolescence. We anticipated low to moderate stability in this low risk sample, given that previous research has not demonstrated high levels of stability in attachment from infancy through adolescence. We also set out to predict unresolved representations during adolescence. We expected that there would be moderate continuity in disorganization from infancy through adolescence and also hypothesized that the emergence of unresolved representations would be lawful in nature reflective of both interpersonal developmental failures (i.e. insecure mother–child attachment history, negative teacher–child relationships, low quality friendships) and the experience of negative life events. Finally, we also examined whether Unresolved representations in adolescence were associated with negative outcomes.

Method

Participants

Participants were 47 adolescents (25 males, 22 females) and their mothers who were participants in a 15-year longitudinal study examining attachment history, child care involvement, and adjustment. The families were primarily European American (90%), at the beginning of the study had two parents in the home (87%), and were of middle class background. Ninety-four children were originally recruited from birth records and enrolled in the study at 12 months. Ten families retired from the study between 12 months and 4 years of age due to family moves ($n = 9$) and disinterest in participating ($n = 1$). An additional 35 families moved ($n = 29$) or chose not to participate ($n = 6$) between 4 and 16 years of age. Data was incomplete for an additional two families and therefore these participants were excluded from these analyses. There were no significant differences in demographics or primary study variables between those participants who were retained in the sample over the course of the 15 years and those who were not retained.

Procedures

Children in this longitudinal study were assessed bi-annually from 12 months to 16 years. Only those procedures and assessments that were included in the current study are discussed. Children were seen for the first time with their mothers in the Strange Situation Procedure (Ainsworth, Blehar, Waters, & Wall, 1978) at 12 months. At 4 years of age, all children participated in a 2-hour playgroup session with unfamiliar peers. At the conclusion of the playgroup, the mother–child reunion was videotaped and later assessed using the Marvin and Cassidy Reunion Procedure (1988)¹. At age 9, children completed questionnaires regarding significant relationships in their life while their teacher also reported on her perception of her relationship with the child. For the purposes of this study only the teacher's ratings of the teacher–child relationship will be considered. At 14 years of age, participants completed a battery of questionnaires which included their ratings of their best friendship. Finally, at age 16, participants completed a semi-structured interview, the Adult Attachment Projective Picture System (George, West, & Pettem, 1997) to assess their current state of mind in regards to attachment as well as completing a battery of questionnaires regarding their adjustment and relationships. Mothers were also asked to complete a questionnaire that assessed the quality of their relationship with their child.

Measures and assessments

Attachment to mother

Maternal attachment was assessed at 12 months, 4 years, and 16 years of age. At 12 months, the Strange Situation Procedure was used (Ainsworth et al., 1978; van IJzendoorn & Kroonenberg, 1988). As is standard, infant behavior was coded following reunion with the mother after two 3-minute separations. Infants were classified into one of four categories of attachment, A/B/C/D. Coding was completed by a coder trained and certified as reliable by Mary Main. At the time of coding, this judge was blind to the study's goals. All infants identified as disorganized as well as a random sample of other participants were re-coded by Mary Main to verify the coding of disorganization, since at the time this was a relatively new rating. All disorganized cases were judged by both raters as disorganized or were resolved by conferencing. Sixty-two percent of the participants were coded as secure, 22% as avoidant, 13% as ambivalent, and 6% as disorganized.

At 4 years, children's reunions with their mothers following a 2-hour playgroup were videotaped and coded (Cassidy & Marvin, 1988). Ratings in this system reflect the coder's evaluations of the physical proximity of the child to the mother, their affective expression, and verbal exchange following the reunion. Children were classified into one of the four attachment categories, A/B/C/D. Coding was completed by a trained and reliable coder who was unaware of the participants' attachment status in infancy or scores on other study measures.

The total number of mother–child secure attachments from 12 months to 4 years (range 0–2) was created by summing the number of secure attachments on the Strange Situation and Marvin and Cassidy Reunion Procedure. While 82% of the participants ($n = 37$) who had been secure at 12 months were also coded as secure at 4 years, an additional 17% of the overall sample ($n = 12$) who were insecure at 12

months were coded as secure at 4 years. This summary score therefore reflects a broader index of mother–child attachment security during childhood.

At 16 years of age, adolescents' states of mind in regards to attachment were measured using the Adult Attachment Projective Picture System (AAP; George et al., 1997), a relatively new representational attachment measure. The AAP assesses adolescent and adult attachment through the analysis of participants' narrative responses to a set of eight standardized projective pictures. Pictures are line drawings that represent events that based on theory and empirical work are believed to activate the attachment system. Specifically, pictures depict events including illness, separation, solitude, death, and threat. During this semi-structured interview, participants are asked to tell a story about what is going on in the picture, what led up to the scene, what the characters are thinking or feeling, and what might happen next. Participants' responses are coded and classifications are assigned based on the content (e.g. story character's agency, connectedness, and synchrony) of the response and presence or absence of markers of defensive processing. Participants coded as secure, dismissing, and preoccupied are judged to have organized approaches to attachment, while participants judged as unresolved evidence disorganized states of mind. Secure individuals tell a story that depicts agency of self, a desire to be connected with others, and synchronous and satisfying social interactions. Additionally, secure individuals employ limited use of defensive processing. Individuals classified as dismissing tell stories whose content is devoid of satisfying, connected, and mutual social relationships. Dismissing participants primarily utilize deactivating strategies as a mechanism of defensive processing. Preoccupied individuals evidence low levels of agency, synchrony, and connectedness, and use cognitive disconnection as the primary defensive process within their stories.

Individuals classified as unresolved present stories that are characterized by unresolved "segregated systems markers." Although the experience of traumatic attachment experiences likely contributes to the expression of unresolved segregated system markers on the AAP, unlike the AAI, unresolved classifications on the AAP are not specific to loss or abuse. Segregated system markers are particular story responses that reflect attachment disorganization, dysregulation, and defensive breakdown. These included both content and process factors that include danger, fear, failed protection, helplessness, being out of control, isolation, and dysregulated or constricted emotional regulation. Individuals are coded as resolved (or unresolved) based on whether the story narrative contains or re-organizes the segregated systems. Resolution is achieved through narrative that describes individuals' ability to think about attachment distress, to engage in useful behaviors, or to receive care from others. Lack of resolution reflects uncontained segregated systems in which fear, distress, and danger persist.

What follows are examples of segregated system material and resolution when present. Segregated system words are in italics and markers of resolution are underlined. A participant responded to a picture showing a boy in a corner with, "Hey, this kid looks like he's being punished and he's *afraid* he's going to be hit because he probably broke his mom's lamp and he's *scared*. Next, he'll probably get hit." In this response, the words *afraid* and *scared* are segregated systems content markers reflecting fear and danger and there is no evidence of resolution. In contrast, in response to a picture of a child and mother on a bed, another participant responded, "Um, I guess the child just had a *nightmare* and that is the child's parent and the child is *afraid*. The parent is eager to *console* the child. And the parent will probably just *hug* the child and

you know get them back to sleep or at least calmness.” In this response, the words nightmare and afraid are again segregated system content markers that reflect fear and danger; however, in this story, the parent’s actions of consoling and hugging the child reflect a receipt of care that allows for resolution.

A recent validation study (George & West, 2001, in press) demonstrated the convergent validity, test–retest reliability, and interrater reliability of the AAP. Convergent validity between the AAP and the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985; Main & Goldwyn, 1985/1998) for the four major attachment groups was 90% ($\kappa = .84$, $p < .001$) and for two group classifications was 97% ($\kappa = .88$, $p < .001$). Test–retest reliability across a 3-month period was 84% ($\kappa = .78$, $p < .001$). Interrater reliability was examined among two sets of coders and yielded a reliabilities of 99% ($\kappa = .66$, $p < .001$) and 92% ($\kappa = .82$, $p < .001$).

Coding of the AAPs in this sample was conducted by the primary author who was trained for reliability by Carol George. At the time of coding, the primary author was blind to participants’ previous attachment classifications and scores on other study variables. Twenty-five percent of the AAP transcripts ($n = 12$) were also coded by another coder certified as reliable. Disagreements between the two coders on narratives were resolved by conferencing. Interrater agreement on the four-way classification was 83% ($\kappa = .78$).

Teacher–child relationship quality

All children in the study were elementary school students in regular education classrooms in community elementary schools. Students all had one primary teacher who completed the Pianta Student–Teacher Relationship Questionnaire (Pianta, 1994; Pianta & Nimetz, 1991) regarding the nature of her relationship with the child. This questionnaire consists of 30 items that explore teacher’s perceptions of the quality of their relationship with the child. Items are rated on a 5-point scale reflecting teachers’ agreement with each statement such as, “It is easy to be in tune with what this child is feeling”; “When this child arrives in a bad mood I know we are in for a long and difficult day.” Although the subscales in this measure reflect teacher’s ratings of closeness, conflict, and dependency within the teacher–child relationship, only the conflict ($\alpha = .81$) and closeness ($\alpha = .75$) subscales were used in the current study. The conflict scale was reverse scored and a composite of closeness and conflict was used to reflect teacher’s overall view of the relationship with higher scores reflecting more positive teacher–child relationships ($\alpha = .78$).

Friendship quality

Adolescents’ perceptions of the quality of their best friendship were assessed at age 14 and 16 using the Friendship Quality Scale (FQS; Bukowski, Hoza, & Boivin, 1994). This measure is composed of 23 items reflecting adolescents’ felt companionship, conflict, provision of help, closeness, and security within their friendship. Adolescents answered each question with respect to their self identified best friendship using a 5-point scale that reflected adolescents’ agreement with each statement. In the current study, subscales were averaged to form a global rating reflecting the positivity of adolescents’ views of their best friendship with higher scores reflecting higher quality friendships ($\alpha = .84$ at 14 and $\alpha = .87$ at 16).

Life events

Stressful life events were measured at age 16 using an adapted version of the Social Readjustment Rating Scale (SRRS; Holmes & Rahe, 1967). The SRRS is a checklist format survey that measures the numbers of specific stressors experienced including the death of a parent or sibling, parent divorce, parent remarriage, parent-child separations of greater than 2 weeks, serious parent or child illnesses, hospitalization, school change, parent job loss, family move, and experience as the victim or witness of violence. In addition there was an additional free response question that allowed participants to report up to three "major events." These free responses were coded for the categories listed above while the experience of alternative events was coded as "other." Coding was completed by two trained undergraduate research assistants who obtained a kappa of .87; discrepancies were resolved by conferencing. In order to create a scale to capture significant life events that are hypothesized to influence attachment, the total number of parent or sibling deaths, divorces, experiences of victimization or witnessing of violence, and serious parent or child illnesses were summed to create a total life events score with higher numbers reflecting more stressful events. The creation of a serious life events scale is consistent with Waters et al. (2000) life events score in which incidents on the AAI of these reported experiences were coded and summed to create a total life events score.

Behavior and emotion difficulties

Behavioral and emotional difficulties were measured at age 16 using the Child Behavior Checklist (CBCL; Achenbach, 1978, 1991). The CBCL includes 113 problem behavior items rated on a 3-point scale. The CBCL items are grouped in eight narrow band scales: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior. The items can also be grouped into two broad band scales, Internalizing (i.e. Withdrawn, Somatic Complaints, Anxious/Depressed) and Externalizing (Delinquent Behavior, Aggressive Behavior). For the purposes of this study, broad band internalizing and externalizing scores were used.

Mother-adolescent relationship quality

Adolescents' and their mothers' perceptions of the quality of their relationship was measured at age 16 using the Interaction Behavior Questionnaire (IBQ; Prinz, Foster, Kent, & O'Leary, 1979). The 20-item short form of the IBQ was used in this study. The short form has been found to correlate with the 75-item form at .96. Adolescents and their mothers were asked to respond true or false to items such as "We almost never agree" and "My mother/my child does not understand me." Responses to these items were summed with higher scores on the IBQ indicating better mother-child relationship quality, characterized by higher levels of support and lower levels of conflict ($\alpha = .90$).

Loneliness

Loneliness was measured at age 16 using the UCLA Loneliness Scale (ULS; Russell, 1996). The ULS is a 20-item questionnaire used to assess the degree of adolescents'

loneliness. Adolescents answered each question on a 4-point scale indicating the frequency with which they experienced certain situations such as “How often do you feel that you lack companionship”; “How often do you feel isolated from others.” In this sample, responses were averaged to create one indicator of loneliness with higher scores reflect greater loneliness ($\alpha = .91$).

Results

Preliminary analyses

Table 1 presents the means and standard deviations for all primary study variables in the total sample and by gender. For all analyses, the mother–child attachment variable reflects the total number of secure attachments from 12 months to 4 years (range 0–2) as derived from the Strange Situation and Marvin and Cassidy Reunion Procedure. No means were significantly different between boys and girls. The correlations among all variables are presented in Table 2. Notably, results indicated that mother–child attachment, teacher–child relationship quality, friendship quality, and the experience of serious life events were all unrelated. More secure mother–child attachment histories were associated with lower rates of internalizing and externalizing symptoms, lower rates of loneliness, and higher quality mother–child relationships during adolescence. Predictably, internalizing symptoms, externalizing symptoms, and loneliness in adolescence were all positively correlated. Finally, mother–child relationship quality during adolescence was also concurrently associated with better socio-emotional functioning, including lower levels of internalizing symptoms, externalizing symptoms, and loneliness.

Stability of attachment classifications

The distribution of the four attachment classification groups from infancy to adolescence are presented in Table 3. A χ^2 analysis was used to assess the continuity

Table 1. Descriptive statistics for main study variables, mean (standard deviation).

	Total (<i>n</i> = 47)	Boys (<i>n</i> = 25)	Girls (<i>n</i> = 22)	<i>t</i> (45)*
Mother–child attachment history	1.35 (.77)	1.52 (.75)	1.38 (.74)	–.62
Teacher–child relationship quality	1.49 (1.36)	1.32 (.97)	1.66 (1.56)	.84
Friendship quality (age 14)	3.86 (.62)	3.70 (.70)	4.01 (.42)	1.83
Life events	.30 (.54)	.26 (.44)	.25 (.45)	–.09
Internalizing symptoms	45.45 (9.24)	43.77 (7.51)	47.35 (10.73)	1.37
Externalizing symptoms	45.47 (9.12)	45.00 (9.35)	46.00 (9.04)	.38
Loneliness	.94 (.42)	1.00 (.42)	.87 (.46)	–1.04
Mother–child relationship quality—child	15.18 (4.77)	16.08 (4.63)	16.00 (5.07)	–.06
Mother–child relationship quality—mother	16.13 (4.72)	14.85 (4.86)	14.74 (5.12)	–.08
Friendship quality (age 16)	4.32 (.58)	4.85 (4.86)	14.74 (5.12)	.86

**t*-test examines gender differences.

Note: Mother–child attachment history variable reflects the total number of secure attachment from 12 months (i.e. the Strange Situation) to 4 years (i.e. the Marvin and Cassidy Reunion Procedure), (range 0–2).

Table 2. Correlations among primary study variables.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Mother-child attachment history	—									
2. Teacher-child relationship quality	.22	—								
3. Friendship quality (age 14)	.02	-.05	—							
4. Life events	-.02	.08	.01	—						
5. Internalizing symptoms	-.32*	.13	-.01	.18	—					
6. Externalizing symptoms	-.38*	-.08	.09	-.16	.58***	—				
7. Loneliness	-.37*	-.21	-.30	.02	.43***	.41**	—			
8. Mother-child relationship quality—child	.34*	.22	-.04	-.13	-.42**	-.54***	-.34*	—		
9. Mother-child relationship quality—parent	.44**	.05	-.08	-.15	-.59***	-.54***	-.22	-.68***	—	
10. Friendship quality (age 16)	.15	-.13	.45**	.18	-.18	-.12	-.40**	.14	.20	—

* $p < .05$.

Note: The mother-child attachment history variable reflects the total number of secure attachment from 12 months (i.e. the Strange Situation) to 4 years (i.e. the Marvin and Cassidy Reunion Procedure), (range 0-2).

Table 3. Stability and change in attachment classifications from infancy to adolescence.

Adolescent attachment classifications	Infant attachment classifications				Totals
	Avoidant	Secure	Ambivalent	Disorganized	
Dismissing	1	6	1	0	8
Secure/autonomous	5	8	0	1	14
Preoccupied	1	6	2	3	12
Unresolved	1	11	0	1	13
Totals	8	31	3	5	47

in attachment classification from infancy through adolescence. The four category classification at each time point was used for these analyses. Only 25.5% of the participants demonstrated continuity in attachment, with a non-significant χ^2 (9, $N = 47$) = 13.21 ($\kappa = -.01$, n.s.) that indicated marked discontinuity in attachment classification. While 62% of the participants were classified as secure in infancy, only 29.78% of the participants were classified as secure/autonomous in adolescence. Notably, the number of adolescence classified as unresolved (27.65%) was almost equal to the number classified as secure/autonomous.

Given the high frequency of adolescents classified as unresolved, another χ^2 analysis was conducted to examine the continuity in this classification from infancy through adolescence. The non-significant χ^2 (1, $N = 47$) = .33 indicated that there was no continuity in disorganization from infancy to adolescence. As seen in Table 1, only one participant (2%) was classified as disorganized at both time points.

Association of life events and developmentally salient predictors of adolescent attachment organization

Logistic regression analyses were used to examine the prospective relation between history of maternal security, quality of the teacher–child relationship in middle childhood, friendship quality during early adolescence, experience of one or more serious life events, and the organization of their state of mind in regards to attachment at 16 years of age. Results of the logistic regression indicated that these predictors significantly differentiated those adolescents who were judged as organized vs. disorganized, χ^2 (4) = 23.44, $p < .001$. Thirty-one of 34 adolescents with organized representations (91.17% accurate) and 8 of 13 (61.5% accurate) adolescents with unresolved representations were correctly classified. Overall, 83% of the participants were correctly identified, exceeding the rate of classification that would be predicted by chance alone. All predictors contributed significantly to the goodness of fit of the model (Table 4). Membership in the unresolved group was predicted by the experience of a serious negative life event and lower levels of mother–child security, negative teacher–child relationship experiences, and lower friendship quality. The strongest predictor was the experience of a significant negative life event which increased the likelihood of an unresolved classification 144.28 times. Low levels of early mother–child security, negative teacher–child relationship experiences, and lower adolescent friendship quality increased the chances of an unresolved classification 7.76, 5.08, and 2.58 times, respectively.

Table 4. Logistic regression analyses for predicting unresolved status in adolescence.

Variable	Wald χ^2	B	SE	Odds ratio	95% Confidence intervals
Life events	5.84*	4.97	2.05	144.28	116.86–178.12
Mother–child attachment history	3.78*	–2.04	1.06	7.76	5.04–11.93
Teacher–child relationship quality	4.02*	–1.63	.81	5.08	2.74–9.41
Friendship quality (age 14)	3.99*	–2.85	1.43	2.58	1.73–3.85

Notes: Overall model, $\chi^2(4) = 23.44, p < .001$. The overall correct classification for this logistic regression was 83%. * $p < .05$. Mother–child attachment history variable reflects the total number of secure attachment from 12 months (i.e. the Strange Situation) to 4 years (i.e. the Marvin and Cassidy Reunion Procedure), (range 0–2).

Differences in social and emotional adjustment for unresolved and organized adolescents

A series of *t*-tests were conducted to examine potential differences in social and emotional adjustment for adolescents who judged as organized vs. disorganized at age 16. Results of those analyses indicated that there were no significant differences between these groups for internalizing symptoms $t(47) = -.41$, loneliness $t(47) = .18$, mother–adolescent relationship quality as rated by the adolescent $t(47) = -1.15$ and by the mother $t(47) = -1.25$, or friendship quality $t(47) = .32$, all $ps > .05$. There was only a significant effect for externalizing symptoms $t(47) = 2.51, p < .05, M = 39.68, SD = 5.93$ for unresolved/disorganized adolescents and $M = 46.94, SD = 9.27$ for organized adolescents.

Discussion

This study builds on the growing literature examining the stability in attachment representations from infancy to adolescence and is among the few to include disorganized classifications in this investigation. Using a 15-year longitudinal design, the stability of attachment representations was evaluated. Next, analyses were used to discriminate those youth who were prone to develop unresolved representations in adolescence. Finally the association between unresolved representations and adaptation was examined. The findings suggest that processes of change are at work during this developmental period with instability resulting from both lawful predictors such as life stressors and broader interpersonal contributors; however, unresolved representations weren't concurrently related to negative adjustment.

Attachment stability

The low levels of stability from infancy through adolescence found in this study provide compelling evidence regarding the degree of potential change in attachment representations. These results replicate previous findings that have demonstrated discontinuity in attachment (Lewis et al., 2000; Weinfeld et al., 2000; Weinfeld, Whaley, & Egeland, 2004) illustrating the role of intervening life events. However, unlike other samples that have produced such findings, this sample was relatively low in risk. Largely, participants had lived in the same home and communities throughout their childhood (4% moved within their community), few had experienced parental divorce or significant conflict (6%), and most were afforded

the opportunities and stability associated with a primarily middle class upbringing. However, 22% of the sample did report experiencing a significant life event, including experiences such as the death of a family member (e.g. parent, grandparent, aunt, or uncle), a parent having cancer, or the attempted suicide of a sibling. Consistent with previous findings in which significant life events lead to discontinuity (Waters et al., 2000), these significant experiences did appear to produce change. Negative life events may challenge youths' feelings of security through decreased caregiver availability or responsiveness to their needs. For instance, parental illness may render both parents less available due to the sickness and the reallocation of resources towards the care of the ill spouse. Perhaps even more significantly, it may also raise the adolescent's fear regarding the ability of their parents to protect and take care of them.

Alternatively, it is possible that this instability is a reflection of this particular developmental period. Adolescence is a time of continued growth, development, and reorganization as shown by ongoing biological maturation of the brain and associated changes in cognition, self regulation, and decision making (Cauffman & Steinberg, 2000; Paus, 2005; Steinberg & Sheffield Morris, 2001). Perhaps, adolescents growing cognitive skills and increasing autonomy allows them to reevaluate their attachment experiences (Kobak, 1999) and leads to changes in attachment representations. Given the accompanying increases in parent-child conflict during adolescence (Smetana, Campione-Barr, & Metzger, 2006), concurrent relationship functioning may also impact current representations. Findings from the Minnesota longitudinal study support the notion of significant change during adolescence, as Sroufe and colleagues found greater instability from infancy to adolescence (i.e. 19 years; Weinfeld et al., 2000) than infancy to adulthood (i.e. 26 years; Sroufe et al., 2005).

The distribution of classifications during adolescence in this sample also likely influenced these stability findings. While the distribution of classifications during infancy was normative, the pattern of attachment representations in this sample during adolescence was markedly different than would be expected in a low risk sample, with higher rates of unresolved representations (27.7%) and lower rates of security (29.8%) than had been found in other studies (e.g. van IJzendoorn & Bakermans-Kranenburg, 1996). This unexpected distribution put a boundary on the continuity that was possible. These findings however may be consistent with other studies that have found higher rates of dismissing (Furman, Simon, Shaffer, & Bouchey, 2002; Ward & Carlson, 1995; Weinfeld et al., 2000) and preoccupied (Treboux, Crowell, & Waters, 2004) representations during adolescence. In each study these researchers suggested that both the degree of risk and the particular developmental tasks (e.g. autonomy seeking, marriage) associated with each of these samples may explain the variations in insecure attachment representations. In this same way, the challenges of middle adolescence may result in the increased rates of unresolved representations seen within this sample. Perhaps middle adolescents are exposed to more stressors and negative life events than are evident at other time points. Grappling for instance with the death of grandparents, first romantic breakups, significant changes in school settings, and increased challenges across these structural and interpersonal contexts may overwhelm adolescents. Alternatively, adolescents may simply be more affected by these events because of their still constrained cognitive and self regulation skills that make perspective taking or resolution difficult (Steinberg, 2005). In the face of similar experiences, younger

children would garner direct support from parents (Collins, 1990) and older adolescents would have more skills for managing these challenges (Steinberg, 2005). Thus, it may be the unique co-occurrence of limited support and skills for managing these difficulties, along with increased life stressors that puts middle adolescents at particular risk.

Notably, limited continuity in disorganization was found in this sample. This is consistent with Main and Sroufe's findings that disorganization in infancy predicted insecurity in adolescence and adulthood but not necessarily unresolved representations (Main et al., 2005; Sroufe et al., 2005). In part, these past findings have been attributed to methodological issues on the AAI in which individuals needed to have experienced an attachment loss or trauma in order for an unresolved classification to be possible. However, the AAP doesn't have these same measurement constraints as the underlying organization of attachment representations are measured by examining the presence, or absence, of unresolved segregated systems in individuals' responses to attachment eliciting picture stimuli. Preliminary data suggests that the AAP captures unresolved classifications that would not be coded on the AAI because losses aren't related to immediate attachment figures (George & West, 2001, in press). In this current sample, five infants had been classified as disorganized in infancy. One individual remained disorganized, three individuals were coded preoccupied in adolescence, and one individual was coded as secure/autonomous. These findings suggest that the discontinuity from disorganization in infancy to other classifications in adolescence/adulthood may not be a byproduct of measurement "error," but rather may reflect true instability. This conjecture would be consistent with findings across numerous short and long term longitudinal studies in which disorganization has been found to be the least stable classification (Barnett, Ganiban, & Cicchetti, 1999; Lyons-Ruth, Rapacholi, McLeod, & Silva, 1991; Treboux et al., 2004; Vondra, Hommerding, & Shaw, 1999). It seems apparent therefore that unresolved representations in adolescence are not best predicted by disorganization in infancy. The findings of the present study support an organizational model for conceptualizing development, suggesting that in addition to mother-child attachment security, the experience of negative life events and negative interpersonal experiences (i.e. teacher-child relationships and friendships) place adolescents at increased risk for the emergence of unresolved representations.

While, to date, little research has examined the emergence of unresolved representations outside of early childhood, consistent with findings from infancy and the preschool years (Moss, Cyr, Bureau, Tarabulsky, & Dubois-Comtois, 2005; Vondra et al., 1999), this study indicates that significant negative life events contributed to the development of unresolved representations in adolescence. Important family experiences such as parental illness or death and the death of a child's grandparent contributed to the emergence of unresolved representations. Associated changes in caregiver accessibility and responsiveness may result in adolescents' changing expectations regarding their caregivers' availability. Dependent on their own ability to manage stress the caregiver may demonstrate rejecting and helpless behavior, leaving the adolescent feeling abandoned, left to manage these life stressors themselves.

Although the experience of a negative life event was the most significant predictor of disorganization, negative interpersonal experiences at stage salient junctures also contributed to this prediction. Overall, adolescents who experienced failures across relationships and development were at the greatest interpersonal risk for the

emergence of unresolved representations in adolescence. Failure to establish positive high quality relationships at these developmental phases appeared to undermine the foundation for adolescent development, perhaps thwarting individuals' ability to build the internal and external resources necessary for managing the stressors encountered during adolescence. As such, the number of secure mother-child attachments in early childhood was predictive of subsequent attachment representations in adolescence. Adolescents with few secure attachments in childhood were at increased risk for later unresolved representations. Yet some youth with histories of security also demonstrated unresolved adolescent representations (35% of those participants secure in infancy). It is possible that the patterns of interaction that contribute to the formation of attachment at earlier developmental periods are not adequate for maintaining these patterns over time. For instance, Egeland and Farber (1984) found that changes in attachment from secure to insecure over 12 to 18 months of age were predicted by mothers who were low on the expression of joy. While the sensitivity of both the pacing and timing of care that these mothers provided their infants did not change across this period, the affective failure undermined the security of the relationship (Egeland & Farber, 1984). Perhaps in adolescence, mother-child relationships that fail to meet the adolescent's developmental demands (e.g. autonomy and relatedness) lead to unresolved patterns of attachments.

In addition to mother-child security, negative student-teacher relationships in middle childhood and low quality friendships in early adolescence placed children at increased risk for developing unresolved representations in adolescence. These findings lend support to the view that relationships outside of the family are unique and significant contributors to adolescents' adaptation (Collins & Steinberg, 2006; Smetana et al., 2006). To this end, Sroufe and colleagues have found that both peer relationships and attachment representations jointly predict a host of outcomes including school success, social competence, and behavioral problems (Sroufe et al., 2005). Our findings complement this research, indicating that over time teacher and peer experiences also predict trajectories of attachment representations. While the establishment of positive teacher and peer relationships could simply be markers of positive adjustment, indicating youth's ability to successfully resolve stage salient tasks, from an organizational perspective the importance of these achievements is their ability to set the stage for negotiating subsequent developmental challenges. Student-teacher relationships during middle childhood promote exploration and facilitate development across social, emotional, and cognitive domains (Davis, 2003). As friendships take on increasing salience and intimacy during adolescence they also provide additional sources of support and opportunities for skill development (Hartup, 1989; Sullivan, 1953). Without these positive relationship bases, adolescents may be at greater risk for the development of unresolved representations.

It is also possible that while some adolescents are more apt to evidence unresolved patterns of attachment during the adolescent time period, these shifts are temporary in nature. This is consistent with Bowlby's (1973) theoretical assertions that development is "hemeorhetic" with individuals prone to return to initial trajectories of development following slight deviations. As opposed to research that had identified stability in attachment from 12 months to 6 years (e.g. Wartner, Grossman, Fremmer-Bombik, & Suess, 1994), Bar-Haim and colleagues (2000) found deviations in attachment at 12 months, 2 years, and 4½ years. They argued that these more frequent measures allowed for a truer picture of the normative

variability and patterns of parent–child relationship challenges that are characteristic of development. There is also evidence that temporary shifts in attachment representations may occur as a result of changing environmental stressors, such as entry into daycare (Blanchard & Main, 1979) or the birth of a sibling (Touris, Kromelow, & Harding, 1995). These temporary attachment shifts were hypothesized to reflect transient conditions in which waning maternal availability and sensitivity impacted the child’s current attachment organization rather than enduring attachment patterns. Similarly, normative adolescent developmental challenges or transitory shifts in the nature of the parent–child relationship may be the basis for temporary changes reflected in the discontinuity of attachment and emergence of high rates of unresolved representation in this sample. For instance, mothers’ sensitivity and support of adolescents’ autonomy strivings have important influences on the quality of the parent–child relationship (Allen, Hauser, Bell, & O’Connor, 1994). Mothers’ inability to flexibly respond to this challenge may be reflective of a particular failure rather than a more global indicator of the quality of the parent–child relationship. While the mother may have met her child’s earlier developmental needs, this particular challenge may be overwhelming leading to emerging parent–child difficulties and the re-organization of attachment representations. It is possible that, once the challenge of autonomy strivings has resolved, the parent–child relationship will return to its earlier quality and that youth’s representation of attachment will also return to its original organization.

In this manner, the high rates of unresolved/disorganized representations in our sample may be a temporary change. The developmental course of attachment representations within the adolescent years warrants additional attention. Adolescents’ growing cognitive and self regulatory abilities may provide many youth with the capacity to move back towards attachment resolution. To date, few studies with adolescents have used four-way classifications to allow for the study of the longitudinal course of attachment representations in adolescence. Stability in attachment representations across adolescence has been found in a few studies (Allen, McElhaney, Kuperminc, & Jodl, 2004; Ammaniti, van IJzendoorn, Speranza, & Tambelli, 2000; Zimmermann & Becker-Stoll, 2002), however small to moderate sample sizes, the use of discrepant methodologies for measuring and coding attachment, and corresponding low rates of unresolved classification within these samples does not allow for a comparison of these studies to our current investigation. Our findings suggest the importance of further examining the continuity of attachment representations during the adolescent period. Such an investigation could examine whether unresolved representations are more prevalent in middle adolescence and indeed are temporary perturbations in some youth’s trajectories. It may also be able to examine whether certain adolescents are more likely than others to revert to their previous attachment representations, for instance will adolescents who were secure at earlier time points demonstrate greater resilience.

In contrast to assertions that attachment is stable, the findings of this study and accumulating evidence suggests that representations of attachment likely show at least some variability over time. Weinfeld and her colleagues (2004) suggest that even those youth who appear to demonstrate stable attachment patterns from infancy through adolescence and adulthood likely experience some shifts along the way. To date, research within the field has primarily used a “snapshot” approach which neither necessarily captures enduring patterns of attachment nor predicts future representations. The difficulty of conducting longitudinal studies and the ongoing

methodological struggles with measuring attachment during middle childhood contribute to these difficulties. Continued study regarding stability and patterns of change seem important. These issues of temporary or enduring shifts seem particularly interesting and future studies may not only investigate trajectories of stability but also may benefit from examining whether there are associated patterns of adaptation.

Although previous research has demonstrated a link between unresolved representations and negative outcomes, these links were not found in this study. All adolescents, regardless of attachment representations, demonstrated similar levels of internalizing symptoms, loneliness, peer functioning, and parent–child relationship quality. Only differences in externalizing symptoms were found with unresolved adolescents exhibiting lower levels than their organized peers. These findings are inconsistent with the prediction that unresolved representations should contribute to negative outcomes, perhaps lending credence to our conjecture that the high rates of unresolved representations in early adolescence reflect a temporary shift and as such don't confer the same risk. Ward and colleagues (2006) speculate that unresolved representations contribute to difficulties by undermining interpersonal interactions and emotion regulation thereby interfering with the garnering of support. If indeed these representations are temporary perturbations, the broader deficits discussed by Ward and colleagues (2006) may not characterize these youth and as such may put them at less risk. Alternatively, perhaps these “new” attachment representations have yet to have much impact and the repercussions of interpersonal and regulation difficulties may occur “down the line.” Who might experience long term difficulty is unclear but we could speculate that those adolescents who have concurrent as well as ongoing negative family or peer relationships or who experience continued stressors may be at the greatest risk for psychopathology. Further longitudinal study would also be able to examine this question.

Several factors should be considered when interpreting the findings from this study. This study examined the continuity of attachment and prediction of unresolved status in a sample of participants who were raised in a community that was low in risk. Given the complexity of developmental pathways, and the importance of contextual factors in influencing these pathways, consideration of the degree of risk is essential. Patterns of stability, change, and “homeorhesis” may differ depending on the risk that characterizes individuals' developmental and concurrent contexts. Youth with secure histories of attachment and early experiences that were low in risk may demonstrate more resilience in the face of difficult adolescent challenges than adolescents whose experiences have been chronically difficult. The nature and predictability of adaptation will become increasingly clearer, when further long term longitudinal studies are completed that examine attachment continuity across high and low risk samples. In conclusion, these results raise interesting questions regarding the degree to which attachment representations remain open to change during adolescence. Our findings are particularly important in adding to the growing understanding of the emergence of unresolved representations outside of infancy, suggesting that stage salient interpersonal failures may set the stage for later difficulties in the face of negative life events.

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Note

1. For more information regarding study procedures and the measurement of attachment during early childhood see Howes, Matheson, & Hamilton, 1994, or Howes, Hamilton, & Philipsen, 1998.

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