



8-2016

Convergence versus Divergence of Social and Developmental Measures of Adult Attachment: Testing Jay Belsky's Proposals

Christopher Daniel Watkins

University of Tennessee, Knoxville, cwatkin1@utk.edu

Recommended Citation

Watkins, Christopher Daniel, "Convergence versus Divergence of Social and Developmental Measures of Adult Attachment: Testing Jay Belsky's Proposals." PhD diss., University of Tennessee, 2016.
https://trace.tennessee.edu/utk_graddiss/3976

This Dissertation is brought to you for free and open access by the Graduate School at Trace: Tennessee Research and Creative Exchange. It has been accepted for inclusion in Doctoral Dissertations by an authorized administrator of Trace: Tennessee Research and Creative Exchange. For more information, please contact trace@utk.edu.

To the Graduate Council:

I am submitting herewith a dissertation written by Christopher Daniel Watkins entitled "Convergence versus Divergence of Social and Developmental Measures of Adult Attachment: Testing Jay Belsky's Proposals." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

Jenny Macfie, Major Professor

We have read this dissertation and recommend its acceptance:

Deborah Welsh, Kristi Gordon, John Wodarski

Accepted for the Council:

Dixie L. Thompson

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

**Convergence versus Divergence of Social and Developmental Measures of Adult
Attachment: Testing Jay Belsky's Proposals**

**A Dissertation Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville**

**Christopher Daniel Watkins
August 2016**

Copyright © 2016 by Christopher Daniel Watkins
All rights reserved

Abstract

The current study assessed the empirical relationship between two social and developmental attachment measures in a sample of female adults, half of whom were diagnosed with BPD. Following Belsky (2002)'s conceptualization of the possible relationship between these two attachment traditions, the current study assessed two mutually exclusive propositions regarding the Adult attachment interview (AAI) and the experiences in close relationships (ECR) questionnaire. First, it is possible the AAI and ECR assess the same mental representations of attachment, but empirical correspondence does not emerge unless accommodations for method variance are made. Or second, AAI and ECR are not related to each other directly, but converge on another attachment-related construct.

Correspondence analyses suggested a significant positive correlation between AAI preoccupied/unresolved and ECR anxiety dimensions, but not between AAI dismissing and ECR avoidance or AAI 4-way classifications and ECR cluster-based categories. This partially supports Belsky's first proposition and suggests the AAI and ECR are not assessing entirely the same attachment representations but do assess one important aspect. Convergence analyses found both ECR anxiety and the AAI preoccupied/unresolved dimension were significantly correlated with borderline features. Because they were significantly related to each other, too, this did not fully support Belsky's second proposition of independent contributions to an attachment related construct. However, the correlation was moderate and the ECR provided more variance in borderline features than did the AAI, suggesting partial support for Belsky's second proposition

As a whole findings suggest limited support for Belsky (2002)'s first proposition that if methodological differences are removed, there is some association between the two sets of

measures. Moreover, there is some suggestion that AAI and ECR's provide some independent contribution to borderline features, in support for Belsky (2002)'s second proposition. Future comparison research would benefit from using research paradigms that are adaptive and assess social and developmental attachment in a range of contexts using a variety of methodologies. This could enhance our understanding of how these traditions relate and identify key points of convergence and divergence.

Table of Contents

Part I: Introduction.....	1
Developmental Attachment Research.....	2
Romantic Attachment Research.....	5
Method variance and Belsky’s proposal.....	9
Empirical Comparisons.....	10
Current Study.....	13
Part II: Method.....	15
Participants.....	15
Procedures.....	15
Measures.....	16
Demographics.....	16
Borderline features.....	16
Romantic attachment dimensions.....	17
ECR classifications.....	18
Creation of ECR attachment categories.....	19
Adult Attachment Interview classifications.....	20
AAI dimensions.....	20
Part III: Results.....	21
Correspondence between the AAI and ECR.....	21
Hypothesis 1: Categorical Analysis.....	21
Hypothesis 2: Dimensional Analysis.....	21
Convergence on Borderline Features.....	21
Hypothesis 3: Dimensional convergence on Borderline Features.....	21
Hypothesis 4: Categorical Convergence on Borderline Features.....	22
Post Hoc Analyses.....	22
Correspondence between AAI and ECR 2-way categories.....	22
Two-way categorical convergence on borderline features.....	23
Part IV: Discussion.....	24
Methodological accommodations.....	24
Correspondence between the AAI and ECR.....	25
Convergence of the AAI and ECR on Borderline Features.....	26
Convergence of AAI unresolved classification and ECR fearful category.....	26
Limitations.....	28
Conclusions.....	29
List of References.....	31
Appendix.....	36
Vita.....	41

List of Tables

Table 1. Sample Demographics	36
Table 2. Factors Underlying ECR ratings in the current sample	37
Table 3. Distributions of ECR cluster-based categories	44
Table 4. Distributions of ECR clusters and AAI classifications (4-way)	39
Table 5. Distributions of ECR clusters and AAI classifications (2-way).....	40

Part I: Introduction

Attachment theory (Bowlby, 1969, 1973, 1980, 1982) has profoundly influenced perspectives on human development and relational functioning across the lifespan (Cassidy & Shaver, 2008). It posits that relational experiences with caregivers in infancy foster the development of mental representations of attachment relationships, which guide a child's thoughts and behaviors within future relational contexts (Bowlby, 1980). Although this theory (Bowlby, 1969/1982) and early research (Ainsworth, 1967; Ainsworth, 1979) emphasizes the infant-caregiver relationship, mental representations of attachment carried forward from infancy also are theorized to strongly influence experiences within adult romantic relationships (Bowlby, 1979).

Empirical understanding of attachment representations in adulthood is limited, because this research is divided between two independent traditions—developmental and social psychology. Some suggest that measures from each tradition measure different aspects of attachment theory because they assess different forms of relational functioning (Crowell, Treboux, & Waters, 1999; Treboux, Crowell, & Waters, 2004): that they emphasize different psychological processes (Hesse, 1999), and show minimal empirical overlap (Roisman et al., 2007). Others dispute this, claiming that measures from each domain should predict the same kinds of outcomes (Fraley, 2002) and that comparison studies conducted thus far are methodologically biased, that findings are presented selectively and, that few researchers use measures from both traditions in a single study, so evidence for convergence is scarce (Dykas & Cassidy, 2011). This has led to controversy surrounding the relatedness of these traditions and intermittent hostility between social and developmental psychology researchers (Fraley, 2002).

Jay Belsky (2002) has suggested that comparison research is inconclusive and that broader empirical issues make it difficult to compare constructs (Belsky, 2002). Indeed, specific

assessment measures are nested within different empirical cultures (Roisman et al., 2007) and constructs they assess reflect both their theoretical and empirical heritage. In the current study we tried to assess like with like, for example developmental dimensional measures with social psychology dimensional measures.

Developmental Attachment Research

Developmental attachment research focuses on issues surrounding child development, including the parent child relationship and developmental influences on adult functioning. Developmental attachment research primarily assesses *attachment to parents*, using interview and observational methods, with infant, child and adult samples. Attachment in adulthood is almost exclusively assessed using the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985), which assesses an individual's current stance towards childhood attachment experiences. Unlike self-report measures, the AAI assesses aspects of thought and behavior that occurs outside an individual's awareness, which manifest during the assessment procedure.

The AAI is a semi-structured interview, which is transcribed and coded for an adult's current state of mind regarding childhood attachment experiences. The interview process presents a series of standardized questions, which requires interviewees to access and reflect on past experiences. Ideally, to be classified as autonomous (secure), interviewees provide relevant information in an efficient manner while remaining engaged with the interviewer. The interplay of coherent discourse and attentional flexibility is a central focus of an AAI assessment because this is assumed to represent mental representations of attachment (Hesse, 2008; Main, George, & Kaplan, 1985; Main & Goldwyn, 1984).

However, details about mental representations of attachment are derived from specific coding systems, the most widely used being the Main & Goldwyn (1998) system. According to

scoring protocols, interviews are transcribed and rated along two continuous scales—inferred experiences and state of mind. Inferred experiences assess historical events, while the state of mind scales assess the quality of discourse and theoretically, the quality of cognitive processes based on mental representations of attachment. Coherence of transcript and coherence of mind are the most important dimensions on these scales and an essential feature of the AAI as a whole. Coherence is the central focus of the AAI and the most robust predictor of AAI security (Main, Hesse, & Kaplan, 2005)

Ratings from these scales are used to classify transcripts into categories which represent qualitatively different forms of mental representation of attachment (Hesse, 2008; Main & Goldwyn, 1984; Main & Goldwyn, 1998). Transcripts classified as *secure-autonomous* exhibit coherent collaborative discourse, and represent individuals that are independent and dependent appropriately on others. *Insecure-dismissing* transcripts exhibit low coherence, the tendency to minimize discussions about relational conflict work or dependency needs, and minimize discussing attachment experiences as a whole. *Insecure-preoccupied* transcripts exhibit low coherence, responses that are long, fixated on experiences with parents even when not relevant. Transcripts can be assigned to additional sub-classifications if they show marked disruptions and thoughts and memory when discussing experiences of loss or abuse. Theoretically, these disruptions represent interference from disturbed memories that are triggered by the AAI itself (Hesse, 2008).

The AAI and the Main & Goldwyn classification system was developed as a measure of adult attachment in parents that could predict childhood attachment classifications from the Strange Situation with their infants (SS; Ainsworth, Blehar, Waters, & Wall, 1978). Indeed, a

meta-analysis of 13 studies found that correspondence between AAI classifications and infant SS classifications is 70% (Van Ijzendoorn, 1995).

AAI classifications have also been linked to behavioral observations of couples interactions, however, few researchers have examined links between the AAI and self-report measures of romantic relationships (Jacobvitz, Curran, & Moller, 2002). Moreover, findings from comparison studies suggest that AAI classifications are not good predictors of self-reported relationship features (Riggs et al., 2007; Treboux et al., 2004).

Although most AAI research uses the Main & Goldwyn (1998), a growing body of research has used dimensions derived from a factor analysis of the AAI state of mind scales (Haydon, Roisman, Marks, & Fraley, 2011; Macfie et al., 2014; Roisman, Fraley, & Belsky, 2007; Whipple, Bernier, & Mageau, 2011). These methods have consistently yielded two dimensions: *preoccupied/unresolved* and *dismissing*. This is interesting because it closely parallels work done within romantic attachment research, which also yielded two factors romantic attachment *anxiety* and romantic attachment *avoidance* (Brennan, Clark, & Shaver, 1998). Latent factors of the AAI's state of mind scales are conceptually similar to the ECR dimensions; however, their empirical relationship has not been assessed. Understanding the correspondence between these variables could contribute to the growing body of research on these dimensions and inform research on the relationship between the AAI and self-reported romantic attachment. In light of their qualitative similarities and potential importance, the current study includes these variables in our analyses with the expectation that they are statistically related.

Romantic Attachment Research

On the other hand, social psychological research on attachment began later, focuses exclusively on adults and how the attachment process is related to romantic relationships (Hazan & Shaver, 1987), using self-report questionnaires. Although, links between self-reported romantic attachment and subconscious processes have been made (Shaver & Mikulincer, 2002), this attachment tradition emphasizes conscious thoughts and behavior. Early romantic attachment research identified four attachment styles and named them according to conceptually similar categories from developmental psychology (*secure, dismissing, preoccupied, and fearful*). Fearful was the only category not taken from developmental psychology nomenclature as this classification (later termed unresolved with respect to loss or abuse in the AAI) had not been developed yet (Main & Hesse, 1990).

Romantic attachment styles are also theorized to develop from childhood mental representations of attachment with parents and hypothetically, develop from the same attachment representations assessed by the Strange Situation. However, connections to these traditions were based on conceptual similarities alone and not an empirical relationship (Hazan & Shaver, 1987). This is problematic, because comparison research suggests that these categories are not equivalent (Crowell et al., 1999) and have no empirical overlap (Roisman et al., 2007), but use similar terminology. Furthermore, there have not been any attempts to link self-reported romantic attachment to infant attachment measures. Indeed, other than within its theoretical foundations, theories regarding developmental origins of romantic attachment have not been tested (Belsky, 2002). This has led to degree of confusion and disputes between attachment researchers and those in the broader enterprise of seeking to understand the significance of attachment (Fraley, 2002).

Although there are a variety of questionnaires used to assess romantic attachment, the Experiences in Close Relationships Inventory (ECR; Brennan, Clark, & Shaver, 1998) is widely used and is also representative of this empirical domain. This questionnaire was created from a factor analysis of 60 romantic attachment scales, which yielded two dimensions; romantic attachment *anxiety* and *avoidance*. Romantic attachment anxiety is described as worry about being rejected, abandoned, and unloved. Avoidance is described as being uncomfortable with closeness, intimacy, depending on others, and the perception of the romantic partner's dependability. Although the ECR includes a categorical coding system, researchers have preferred the use of dimensions because of enhanced measurement accuracy and statistical power (Brennan, Clark, & Shaver, 1998; Fraley & Spieker, 2003; Roisman, Fraley, & Belsky, 2007).

Indeed, since the creation of the ECR, researchers have discouraged the use of categorical romantic attachment classifications, claiming there are no advantages to this approach (Fraley & Spieker, 2003). However, a notable exception, Levy, Meehan, Reynoso, & Clarkin (2005) found that ECR categories developed a cluster analysis of ECR ratings, could reveal information missed by dimension-oriented methodologies.

Using a sample of individuals diagnosed with BPD, Levy et al. (2005) created three romantic attachment categories, *avoidant*, *preoccupied*, and *fearfully-preoccupied*. These categories detected subtle differences between romantic attachment characteristics and symptoms of BPD that were not detected using standard romantic attachment dimensions or categories. Specifically, preoccupied individuals had higher ratings of fear of abandonment, avoidant individuals had higher ratings of inappropriate anger, and the fearfully-preoccupied group had higher ratings of identity disturbance at the trend level.

The fearfully-preoccupied category in particular is interesting because it is qualitatively different from the fearful-avoidant attachment style established in normative samples (Brennan, Clarke, & Shaver, 1998). This is an important distinction, because ECR avoidance has been associated with adaptive coping mechanisms designed to deescalate emotional distress, while ECR anxiety has been associated with maladaptive coping mechanisms characterized by escalating emotional intensity (Campbell, Simpson, Boldry, & Kashy, 2005). Conceptually, fearful-avoidant individuals have high levels of attachment anxiety that is regulated by attachment avoidance. On the other hand, fearfully-preoccupied individuals have high levels of intense romantic attachment anxiety and ineffective means of regulating attachment anxiety related distress (Campbell et al., 2005; Fraley & Shaver, 2000).

Fearfully-preoccupied attachment classifications parallel longstanding clinical conceptualizations of BPD (Gunderson, 1984; Gunderson, 1996) and central diagnostic criteria (American Psychiatric, 2013). Moreover, this cluster-based ECR classification is conceptually similar to AAI classifications typically associated with BPD (Barone, 2003; Dutton, Saunders, Starzomski, & Bartholomew, 1994; Fossati et al., 2001).

This makes sense because individuals diagnosed with BPD often report maladaptive relationships with caregivers in childhood *and* tumultuous relationships with romantic partners in adulthood. Moreover, BPD is unique amongst other samples, in that it has consistent associations with the same forms of insecure attachment regardless of assessment methodology (Agrawal, Gunderson, Holmes, & Lyons-Ruth, 2004). BPD is typically associated with preoccupied and unresolved AAI classifications (Barone, 2003; Dutton et al., 1994; Fossati et al., 2001) and the AAI preoccupied/unresolved dimension (Macfie et al., 2014). Romantic attachment classifications are primarily fearful and also preoccupied (Dutton, Saunders,

Starzomski, & Bartholomew, 1994; Fossati et al., 2001). When assessed dimensionally, BPD is associated with primarily high romantic attachment anxiety, and romantic attachment avoidance (Levy, Beeney, & Temes, 2011; Levy & Clarkin, 2005; Shaver, Belsky, & Brennan, 2000).

The AAI and self-reported romantic attachment are minimally related in normative samples (Roisman et al., 2007), but are consistently related in BPD samples (Agrawal et al., 2004). This consistency could enhance research assessing the empirical overlap of these traditions by increasing the chances of detecting possible empirical associations between developmental and romantic attachment measures. Previous BPD studies have not included both developmental and romantic attachment measures in a single sample, and the current study does this using the AAI, ECR, and a measure of BPD symptomology, in a sample of individuals, half of whom are diagnosed with BPD.

Empirical Comparisons

Developmental and social attachment measures claim the same theoretical heritage, assess mental representations of attachment developed from the infant-caregiver relationship, and conceptualize individual differences in similar ways. However, they are thought to be different because they focus on different aspects of psychological experience, emphasize different kinds of relationships, and use different methods.

Moreover, a meta-analytic review of 10 studies comparing the AAI and self-reported romantic attachment suggest little to no empirical links between these measures (Roisman et al., 2007). However, many of these studies use psychometrically outdated or obscure romantic attachment measures, suffer from significant statistical limitations that may directly affect statistical analyses, and do not address issues of method variance. Several of these studies use romantic attachment measures that do not assess fearful attachment styles, (Bouthillier et al.,

2002; De Haas, Bakermans-Kranenburg, & Van Ijzendoorn, 1994; Shaver et al., 2000; Simpson, Rholes, Orina, & Grich, 2002) or lacked the statistical power to compare all romantic attachment styles (Crowell, Treboux, & Waters, 1999; Holtzworth-Munroe, Stuart, & Hutchinson, 1997).

Although comparison studies vary in their assessment of romantic attachment, almost all utilize AAI classifications derived from the Main & Goldwyn (1998) classification system. This is problematic because taxonomic research has suggested that these classifications may not be as accurate as dimensions derived from a factor analysis of the AAI state of mind scales (Roisman et al., 2007). Although no comparison studies have utilized these factors, studies that have compared specific dimensions from the AAI state of mind scales have often found statistically significant associations between AAI coherence of mind and dimensions of romantic attachment (Dykas, Woodhouse, Cassidy, & Waters, 2006; Shaver et al., 2000; Treboux et al., 2004).

Method Variance and Belsky's Proposals

Scholars have suggested that methodological differences between social and developmental assessment measures may prevent the detection of meaningful relationships between variables (Belsky, 2002; Shaver & Mikulincer, 2002). This is congruent with broader assessments of measurement bias, which suggests method variance is one of the main sources of measurement errors and can have a substantial effect on observed relationships between constructs (Bagozzi & Yi, 1991; Cote & Buckley, 1987; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

Belsky (2002) makes two possible suggestions on how the two sets of measures are related, that have not been tested by comparison research. Either first, it is possible that these two traditions are indeed assessing the same mental representations of attachment, but the empirical associations are obscured by methodological differences. Or second, it is possible that

these two traditions are not related to each other directly, but each provides separate amounts of variance in a third variable that is an attachment-related construct (Belsky, 2002).

The current study uses Belsky (2002)'s proposals as a framework for testing the empirical relationship between two measures of adult attachment from developmental and social psychology. Methodological issues were addressed by using qualitatively similar variables from widely used, well established attachment measures that are representative of their empirical domains. To address Belsky's proposals, correspondence between these measures was assessed as well as convergence on a measure of self-reported symptomology.

Empirical Relatedness

Despite the ECR's place within romantic attachment research, there are only two studies that assess empirical connections to the AAI. First, in a sample of inpatients diagnosed with PTSD, Riggs et al. (2007) did not find an empirical link between AAI classifications, ECR dimensions, or ECR categories. However, their findings are difficult to generalize from because of their sample's range of intense psychopathologies and their uneven distribution of AAI classifications (80% unresolved, 7.5% secure, 5% dismissing, 5% preoccupied, 1.3% cannot classify). This is important because only AAI categorical data was compared to ECR categories and dimensions. Unfortunately, this limited statistical power and also the ability to detect subtle relationships between attachment variables (Brennan et al., 1998; Fraley & Spieker, 2003). The use of dimensional data from the AAI may have increased opportunities to find correspondence between the AAI and ECR, which is why the current study includes both categorical and dimensional variables in our analyses.

Second, Treboux, Crowell, and Waters (2004) *did* find a significant correlation between an AAI dimension and ECR dimensions. Specifically, they found that AAI coherence of mind

was inversely correlated with ECR avoidance. This may suggest an empirical link. However, it is difficult to interpret. AAI coherence scales have an important place in the AAI's approach to attachment, but these scales have rarely been used in empirical domains (Hesse, 2008). Also, this is one correlation tested among many and may have occurred by chance.

The current study aims to use dimensional variables derived from a factor analysis of AAI state of mind scales. This a broader approach than Treboux, Crowell, and Waters (2004) took because it provides AAI dimensions that are more comprehensive regarding AAI state of mind scales (Larose & Bernier, 2001; Roisman et al., 2007). Moreover, these dimensions have been used in a variety of adult samples (Haydon et al., 2011; Macfie et al., 2014; Roisman et al., 2007; Whipple et al., 2011) and are expected to result in more robust correlations with ECR dimensions.

Treboux, Crowell, and Waters (2004) also found some areas of AAI and ECR convergence. These measures were both related to self-reported depressive symptoms and self-esteem ratings. In addition, ECR avoidance and AAI coherence correlated with observed secure base behavior and *Current Relationship Interview* coherence (CRI; Crowell & Owens, 1996). This is interesting because the CRI is an interview designed to assess adult romantic attachment, its procedure is similar to the AAI, and scoring system parallels the Main & Goldwyn (1998) AAI coding system.

Although these areas of convergence are important, they are few considering the range of relational and psychological factors this study assessed. However, it is of note that the ECR demonstrated a range of strong correlations with self-reported assessments and few correlations to observed behavior. Likewise, the AAI demonstrated few significant correlations with self-reported constructs, but strong relationships with measures of the quality of observed behavior.

Moreover, it is difficult to interpret this pattern because few studies compare the AAI to self-reported features of romantic relationships (Jacobvitz et al., 2002) and few compare the ECR to observational measures (Jacobvitz et al., 2002; Ravitz, Maunder, Sthankiya, & Lancee, 2010). This makes it difficult to determine if the AAI and ECR are indeed measuring different aspects of attachment or merely lining up with similar assessment methods.

As a whole, these two studies do not demonstrate conclusively that the AAI and ECR are related or unrelated. Furthermore, as suggested by Belsky (2002) in his first proposal, these studies also suggest that methodological issues may obscure possible empirical associations between the AAI and ECR. The current study addressed this issue by making methodological adjustments to both the AAI and ECR in effort to minimize statistical limitations due to method variance. The current study also tested Belsky's (2002) second proposal, that the two traditions might not be related directly, but will each be significantly related to a third variable.

Current Study

The current study examined the possible correspondence between the AAI and ECR and possible independent convergence on self-reported borderline features in a sample of individuals participating in a larger study of the effects of maternal BPD on offspring. Participants included both normative women and women diagnosed with BPD. Therefore, this sample includes a wide range of borderline features, from high to low, which makes it useful for comparing the two measurement traditions. This is important because BPD has close theoretical ties to attachment theory and BPD symptomology has been linked to similar forms of insecure attachment across assessment domains (Agrawal, Gunderson, Bjarne, & Lyons-Ruth, 2004). The attachment characteristics of this sample could highlight possible areas of empirical overlap, which could be applied to broader attachment research.

This study utilized Belsky (2002)'s perspective of how the social and developmental attachment measures may be related. As noted earlier, Belsky (2002) first posits that social and developmental attachment may assess the same mental representations of attachment, but method variance prevents the detection of empirical association. Therefore, making methodological adjustments to measures from each domain will allow for both categorical and dimensional analyses, which will increase the opportunities to detect meaningful empirical connections. Our adjustments emphasized the creation of qualitatively similar forms of data from the AAI and ECR based on our specific samples attachment data. We hypothesized that (1) ECR categories (*secure, dismissing, preoccupied, fearful*) created using Levy et al. (2005)'s methods would be significantly related to conceptually similar AAI classifications (*secure, dismissing, preoccupied, unresolved*). Also, we also hypothesized that dimensions derived from the AAI's state of mind scales, would be significantly related to the ECR's two dimensions. Specifically, (2) the AAI's preoccupied/unresolved dimension would be significantly correlated with ECR anxiety and (3) the AAI's dismissing dimension would be related to ECR avoidance.

Belsky (2002)'s second proposition, also noted earlier, suggests that social and developmental attachment measures may not assess the same mental representations of attachment, but may assess different aspects of the same mental representations of attachment. Therefore, the AAI and ECR may not be directly related to each other, but will converge on another construct theoretically anticipated by attachment theory. Evidence from clinical research suggests both the AAI and ECR may converge on features of borderline personality disorder (Agrawal et al., 2004).

Although not explicitly stated in his second proposition, Belsky (2002) emphasizes the importance of addressing method variance in any comparison of social and developmental

attachment measures. Accordingly, methodological accommodations were also applied to examinations of the convergence of the AAI and ECR on borderline features scales. Research with AAI factor-based dimensions and ECR cluster-based categories both suggest their approach may increase the predictive power of their assessment instruments and may have an incremental validity over standard approaches (Haydon, Roisman, & Burt, 2012; Levy et al., 2005; Roisman et al., 2007). This is hypothesized to increase the chances of empirical association, which could bias analyses of convergence (Stevens, 2012). Although Belsky's second proposition suggests these measures are not empirically related, they may both be significantly related yet contribute independent amounts of variance to a third variable (borderline features). To address this, examinations of Belsky's second proposition included correlational and regression analyses.

We hypothesized that: (4) AAI preoccupied/unresolved dimension and ECR anxiety dimension would have significant correlations with total borderline features. However, AAI preoccupied/unresolved dimension would account for more variance in borderline features because it was developed from the current samples AAIs and is more accurate regarding our sample's attachment characteristics. Correspondingly, we hypothesized that (5) the AAI unresolved classification and conceptually similar ECR cluster-based fearful category would correlate with total borderline features. However, ECR fearful will account for more variance than AAI unresolved classification because it was developed from participant ECR ratings and is more accurate regarding individual differences in the current sample's attachment characteristics.

Part II: Method

Participants

Participants included $N = 87$ individuals enrolled in a larger study on the effects of maternal BPD on offspring. 43 participants were diagnosed with BPD and $n = 44$ did not meet criteria for BPD or any other Axis II disorder. Participants were female, generally low-socioeconomic status, 12% were from a minority background and 7% were Hispanic, reflecting proportions in the local population. See Table 1 for demographic information.

Participants were recruited from a five-county region, consisting of both rural and urban districts. Individuals diagnosed with BPD were recruited via presentations on treatment for BPD to clinicians at hospitals, community mental health centers, and private practices. Clinicians were given brochures that explained the study and provided contact information. Normative participants were recruited from community centers, parks, and sporting events, and fliers posted in the community. Individuals were provided transportation to our laboratory if requested and were compensated for their participation with and participation with gift certificates.

Procedures

Data was collected in three sessions. Initially, participants completed a phone interview that determined eligibility to participate in this study. In the second session, research assistants met with participants at their home or public place if preferred. During this session, research assistants obtained informed consent, demographic information, and a self-report screen for a possible BPD diagnosis. The third session occurred during a three-hour University laboratory visit as part of a larger study exploring the impact of BPD on psychosocial functioning and offspring's development. During this visit, participants were interviewed about early attachment

experiences and completed questionnaires that assessed borderline features and romantic attachment.

Measures

Demographics. Demographic information was collected with a maternal interview (MHFC, 1995). See Table 1.

Borderline features. Dimensional ratings of borderline features were assessed using the Personality Assessment Inventory—Borderline Features Scale (PAI-BOR, Morey, 1991). The PAI-BOR is a well-validated 24 item self-report scale that reports features of borderline pathology empirically associated with BPD. It is composed of a total score (BOR) and four subscales— affective instability, identity problems, negative relationships, and self-harm. Only the total score for this scale was used in our analyses ($M = 29$, $SD = 18.71$). Information reported in early validation studies provided strong support for the validity of this scale and it correlates highly with interview based BPD diagnostic criteria (Morey, 2007).

Romantic attachment dimensions. Romantic attachment ratings were assessed using the Experiences in Close Relationships Scale (ECR; Brennan et.al, 1998). This is a widely used self-reported measure of romantic attachment anxiety and avoidance. For each item, individuals rate items in terms of general romantic relationship experiences, using a 7-point Likert scale, ranging from (1) disagree strongly to (7) agree strongly. The *anxiety* subscale is composed of 18 questions and measures the extent to which individuals are worried about being rejected, abandoned, and unloved by others ($\alpha = .72$, $M = 68.55$, $SD = 27.30$). The *avoidance* subscale is also composed of 18 questions and measures the extent to which individuals are uncomfortable with closeness, intimacy, depending on others, and perception of the partners' dependability ($\alpha = .79$, $M = 58.03$, $SD = 25.53$). Items are summed to generate two summary scores for attachment

anxiety and attachment avoidance. It is favored for its dimensional assessment of these constructs and demonstrates higher-test-retest reliabilities than other measures of romantic attachment (Fraley et al., 2000). Reliability coefficients are reported to be near or above .90, and test–retest coefficients are reported to be between .50 and .75, with little correlation between the two dimensions in most samples (Mikulincer & Shaver, 2007). However, these dimensions were significantly correlated in our sample ($r = .54, p < .001$).

ECR classifications. Although current research perspectives on romantic attachment emphasizes the use of dimensional assessments, Levy et. al. (2005) found that romantic attachment classifications developed from a sample’s ECR ratings could enhance the ability to detect meaningful relationships between variables. Romantic attachment style categories were derived from ECR ratings provided by our sample following Levy et. al (2005)’s methods. A principal component factor analysis with varimax rotation was conducted on ECR items to determine factors underlying romantic attachment characteristics. Factors were extracted on the basis of eigenvalues greater than 1, scree testing, factor interpretability and internal consistency.

As in Levy et. al (2005), seven main factors with eigenvalues greater than 1 emerged, however, scree testing, interpretability, and internal consistency suggested a six factor solution, accounting for 71.77% variance in scores. The first factor included 11 items representing *avoidance of intimacy* ($\alpha = .94$), the second factor included 11 items representing *resentment of partner’s unavailability* ($\alpha = .92$), the third factor included 6 items representing *comfort sharing thoughts and seeking support* ($\alpha = .80$), the fourth factor included 3 items representing *worry about abandonment* ($\alpha = .85$), the fifth factor included 3 items representing *wants more closeness than others give* ($\alpha = .74$), the sixth factor included 2 items representing *comfort*

depending on others ($\alpha = .79$). These alphas are adequate or higher, indicating these subscales represent independent and cohesive constructs.

Generally, these factors are similar to those found by Levy et al. (2005). However, factors detected included more elements associated with secure romantic attachment, which is consistent with the current study's inclusion of both individuals diagnosed with BPD and normative comparisons. See Table 2.

Creation of ECR cluster-based attachment categories. As in Levy et al. (2005), ECR categories were identified using a cluster analysis, with Ward's minimum-variance on ECR avoidance and ECR anxiety. Within group variance and agglomeration schedule suggested a four-cluster solution. A second non-hierarchical (K-means) analysis was performed to allow cases to be switched from their initial clusters, to a better-fitting cluster.

ECR categories were characterized (*secure, dismissing, preoccupied, fearful*) based on associations with the 6 ECR factors identified earlier. Clusters were compared to factors using a MANOVA, using Univariate F tests with Tukey B contrasts. Cluster 2 (*secure*) scored significantly higher than Cluster 1 (*fearful*) on *avoids intimacy, worry about abandonment, and lower on resents others when unavailable, and wants more closeness than others can give*. Cluster 3 (*preoccupied*) scored lower than cluster 1 (*fearful*) on all factors except *difficulty depending on others*. Cluster 2 (*secure*) scored significantly lower than Cluster 1 (*fearful*) on all factors except *resentment of others unavailability*. Cluster 4 (*avoidant*) scored significantly lower than Cluster 1 on *avoids intimacy and sharing feelings*.

Based on these patterns Cluster 1 appears to be a *fearful* attachment type, Cluster 2 appears to be a *secure* attachment type, Cluster 3 appears to be a *preoccupied* attachment type, and cluster 4 appears to be an *avoidant* attachment type. These are similar to clusters found by

Levy et al. (2005), with deviations consistent with our sample type. A secure cluster was identified. However, Levy et al. (2005)'s fearful category was primarily preoccupied (*fearfully-preoccupied*), and ECR validity studies described fearful as predominately avoidant (*fearful-avoidant*, Brennan, Clark, Shaver, 1998), the current studies fearful category (*fearful*) was relatively balanced regarding ECR anxiety ($M = 95.06$, $SD = 13.30$) and ECR avoidance ($M = 92.72$, $SD = 12.28$) See Table 3. For comparisons to Levy et al. (2005)'s ECR clusters.

AAI classifications. Mental representations regarding early attachment experiences were assessed with a semi structured, approximately 45 to 90-minute interview. This interview contains 20 questions that are designed to elicit current mental representations or internal working models with regard to early attachment experiences (George, Kaplan, & Main, 1985).

Interviews were audio taped and transcribed by research assistants trained in AAI transcription. In accordance with the AAI Coding Manual, version 7.1 (Main, Goldwyn, & Hesse, 2002) current representations of childhood attachment experiences were coded from transcripts by three coders. All coders were trained by June Sroufe, certified as reliable by Main and Hesse (Main, et al., 2002), and had an overall agreement rating of 87% for both 3-way and 4-way classifications. Classifications of state of mind regarding childhood attachment included *secure-autonomous*, *insecure-preoccupied*, *insecure-dismissive*, *unresolved (regarding loss/abuse)*.

Psychometric testing and meta-analyses of the AAI demonstrate stability and discriminant and predictive validity in both clinical and nonclinical populations (Bakermans-Kranenburg & Van Ijzendoorn, 1993; Hesse, 2008; Roisman et al., 2007; van Ijzendoorn & Bakermans-Kranenburg, 2008). The test-retest stabilities of the secure/autonomous, dismissing, and preoccupied categories are 77–90% across 1 to 15-month periods and are not attributable to

interviewer effects (Bakermans-Kranenburg & Van Ijzendoorn, 1993; Sagi et al., 1994; van Ijzendoorn & Bakermans-Kranenburg, 2008).

AAI dimensions. Dimensional AAI data were derived from a factor analysis of the AAI state of mind scales. Broader research enterprises (see Roisman et al., 2007 for a review) have identified two dimensions, preoccupied/unresolved and dismissing. Macfie et. al. (2014) identified these factors in the current sample, with minor differences from those found by others (Roisman et al., 2007; Whipple et al., 2011).

Macfie et. al. (2014) included the 12 state of mind variables in a principal component analysis with varimax rotation in line with previous research (Roisman et al., 2007; Whipple et al., 2011). Pairwise deletion was used for missing data. Factors related to the preoccupied/unresolved dimension included *anger at father, anger at mother, passivity, unresolved loss, unresolved trauma, and coherence of mind*. This dimension accounted for 28% of the variance in AAI scores. The dismissing dimension accounted for 16% variance in AAI state of mind scores and was comprised of scales for *idealization of father, idealization of mother, lack of recall, metacognitive monitoring, and derogation of attachment*. These two dimensions were weakly correlated, ($r = .24, p < .05$).

Part III: Results

Results are presented in two sections, following the two propositions outlined by Belsky (2002). The first section includes a comparison of the AAI and ECR, using both categorical and dimensional variables. The second section includes comparing these variables to borderline features.

Belsky I: Correspondence Between the AAI and ECR

The first hypothesis examined the correspondence between AAI 4-way classifications (*secure-autonomous, insecure-dismissing, insecure-preoccupied, insecure-unresolved*) and conceptually similar ECR cluster-based categories (*secure, avoidant, preoccupied, fearful*) Chi-square analyses were not significant ($\chi^2 = 11.02, df = 9, p = .275$). See Table 4. for AAI and ECR classification distributions and percent agreement.

Hypothesis 2: Dimensional analysis. The second hypothesis examined the correspondence between ECR dimensions and conceptually similar dimensions derived from a factor analysis of the AAI state of mind scales. Results found a significant positive correlation between ECR anxiety and AAI preoccupied/unresolved ($r = .34, p < .001$), but not between ECR avoidance and AAI dismissing ($r = .12, p = .27$).

This partially supports Belsky's first proposition. This suggests AAI preoccupied/unresolved and ECR anxiety are assessing similar aspects of the same attachment representations.

Belsky II: Convergence on Borderline Features

Hypothesis 3: Dimensional convergence on borderline features. As hypothesized, both ECR anxiety ($r = .73, p < .001$) and AAI preoccupied/unresolved, ($r = .43, p < .001$), were significantly correlated with total borderline features. However, because ECR anxiety and AAI

preoccupied/unresolved were significantly correlated with each other (see above), we examined the percent of variance accounted for by each in borderline features, to see if Belsky (2002)'s proposition was partially supported.

Hierarchical multiple regression analysis indicated that together these attachment dimensions explained 56% of the variance ($R^2 = .56$, $F(2,84)$, $p < .001$). When controlling for AAI preoccupied/unresolved, ECR anxiety dimension explained an additional 38% of the variance in borderline features ratings and this change in R^2 was significant, ($F(2,84) = 19.02$, $p < .001$). When controlling for ECR anxiety, AAI preoccupied/unresolved explained an additional 3.7% of the variance in borderline features ratings and this change in R^2 was significant, $F(2,84) = 19.02$, $p < .01$. Both attachment variables explain significant, unique amounts of variance in borderline features ratings and Belsky's second proposition is therefore partially supported. However, contrary to hypothesis, ECR anxiety was a stronger predictor of borderline features than AAI preoccupied/unresolved.

Hypothesis 4: Categorical convergence on borderline features. As hypothesized, ECR fearful category was significantly correlated with total borderline features ($r = .52$, $p < .001$). Contrary to hypothesis, AAI Unresolved was not significantly related to borderline features ($r = .09$, $p = .22$) and therefore regression analyses were not conducted.

. Post Hoc Analyses

Belsky I: Correspondence between AAI and ECR 2-way categories. AAI and ECR 4-way classifications were not significantly related. However, a review of AAI and ECR attachment distributions suggested possible correspondence between secure and insecure categories. A post hoc analysis was conducted to determine if conceptually similar AAI 2-way

classifications and ECR 2-way cluster-based categories (secure, insecure) are significantly related.

To create ECR categories, a two-factor solution was retained from previous ECR cluster analyses. A comparison of these clusters to ECR anxiety and avoidance dimensions suggested cluster 1 was an insecure type (high anxiety, $M = 87.00$; high avoidance, $M = 73.18$) and cluster 2 was a secure type (low anxiety, $M = 43.62$; low avoidance, $M = 37.57$). A Chi-square analysis suggested ECR cluster-based categories were not related to AAI 2-way classifications ($\chi^2 = 3.31$, $df = 1$, $p = .069$). A review of the distributions suggested that ECR secure individuals were equally likely to be classified as AAI secure or insecure. While insecure classifications had higher correspondence, approximately one third of ECR insecure participants were classified as AAI secure. This does not suggest that these categories are assessing the same mental representations of attachment and Belsky's first proposition is not supported.

Belsky II: Two-way categorical convergence on borderline features. In line with Belsky's two propositions, the convergence of AAI 2-way classifications (secure, insecure) and ECR 2-way cluster-based categories (secure, insecure) on borderline features was also assessed. Both ECR ($r = .59$, $p < .001$) and AAI classifications ($r = .396$, $p < .001$) were significantly correlated with borderline features ratings. Hierarchical multiple regression analysis indicated that together these attachment categories explained 41.1% of the variance ($R^2 = .411$, $F(2,86)$, $p < .001$) in borderline features ratings. When controlling for AAI classifications, ECR 2-way clusters explain 27.5% of the variance in borderline features, $F(2,84) = 29.35$, $p < .001$. When controlling for ECR classifications, AAI 2-way classifications explains 6.8% of the variance in borderline features, $F(2,84) = 29.35$, $p < .001$. This supports Belsky's second hypothesis.

Part IV: Discussion

The current study examined the correspondence between the developmental measure of adult attachment, the AAI, and the social psychology measure of adult attachment, the ECR and their convergence on self-reported borderline features in a sample of women participating in a larger study of BPD. Following Belsky (2002), this study examined two possibilities about the relationship between developmental and social measures. First, Belsky proposed that these measures actually assess the same mental representations of attachment, but methodological accommodations are required to demonstrate empirical correspondence. Second, he proposed that although not related to each other, these measures might assess different aspects of attachment representations, and each provide variance in associations with attachment-related constructs.

Methodological Accommodations

To minimize the interference from method variance, analyses compared qualitatively similar attachment constructs, using AAI dimensions (preoccupied/unresolved, dismissing) created in a prior study (Macfie et al., 2014) and cluster-based ECR attachment categories (Levy et al., 2005). Applications of Levy et al. (2005)'s methods resulted in ECR romantic attachment categories that were theoretically consistent with Levy et al. (2005) and original ECR validation studies (Brennan et al., 1998), with some important differences. Unlike Levy et al. (2005), factor analyses yielded more secure elements and cluster analyses yielded four romantic attachment categories (*secure, avoidant, preoccupied, fearful*) as in ECR validation studies (Brennan et al., 1998).

In addition the current sample's fearful respondents reported relatively equal ratings for ECR anxiety and avoidance, while Levy (2005)'s BPD sample had higher ECR anxiety

(*fearfully-preoccupied*) and the normative validation sample had higher ECR avoidance ratings (*fearful-avoidant*). This makes sense considering the current sample of individuals diagnosed with BPD and normative individuals—our fearful category represents a combination of fearfully-preoccupied individuals and fearful-avoidant individuals. This suggests that the cluster-based approach to the ECR is a reliable way to derive accurate ECR attachment categories for BPD samples other clinical samples. This methodology could be a useful option for future research concerned with the applications of categorical romantic attachment data.

Correspondence Between the AAI and ECR

Categorical analysis. AAI and ECR 4-way categorical classifications were not significantly related. A post hoc analysis, comparing 2-way classifications was also non-significant. There was a trend towards significance in this analysis ($p = .069$) and empirical links between these categories may have emerged in a larger sample. However, distributions of secure attachment categories did not suggest the possibility of correspondence and partial correspondence between the insecure categories may have been due to other factors that were not assessed. In particular, the AAI assesses unconscious attachment-related processes and the ECR assesses conscious perceptions of attachment related thoughts and behavior. The ECR could be vulnerable to response bias that the AAI is not, which could significantly affect categorical analysis. This could also suggest that AAI and ECR categories are indeed assessing different constructs, which would support findings from previous comparison studies.

Dimensional analysis. Results from dimensional analyses partially supported Belsky's first proposition. ECR anxiety and the AAI preoccupied/unresolved dimension were significantly related, but dimensions related to avoidance/dismissing were not. Researchers should consider

the inclusion of these dimensions in future comparison studies, as larger samples may be needed to achieve statistically significant links between AAI dismissing and ECR avoidance dimensions.

Significant associations between ECR anxiety and the AAI preoccupied/unresolved dimension is important because taxonomic research has suggested that these AAI dimensions may better account for individual differences in attachment than AAI coding systems (Roisman et al., 2007). Also, the effect size of this correlation is higher than in studies that have examined associations between AAI coherence of mind and ECR dimensions (Treboux et al., 2004) and all studies comparing AAI classifications to various self-reported romantic attachment dimensions (Roisman et al., 2007).

Partial support of Belsky's first proposition suggests AAI preoccupied/unresolved and ECR anxiety may assess similar aspects of the same mental representations of attachment. This partially supports theoretical assertions from attachment theory, which suggests that mental representations of childhood attachment relationships carry forward to influence adult romantic attachment relationships.

Convergence of the AAI and ECR on Self-reported Borderline Features

Dimensional analysis. Although ECR anxiety and AAI preoccupied/unresolved dimensions were both significantly correlated with self-reported ratings of borderline features, they were also significantly correlated with each other. However, this correlation was moderate, and hierarchical regression analyses suggested that the ECR contributed more variance to borderline features than did the AAI. This could suggest methodological bias against the AAI or in favor of the ECR or both.

Indeed, the borderline features scale and the ECR are both self-report instruments that assess conscious thoughts and behaviors. Moreover, symptoms of BPD often occur within

relational contexts—ratings of borderline features may overlap with the ECR’s emphasis on relational experiences. Previous research has shown that generally the ECR is a better predictor of self-reported constructs than the AAI (Treboux et al., 2004). As a whole, these factors may have proved advantageous for the ECR and disadvantageous for the AAI in this analysis.

Regardless, this analysis partially supports Belsky’s first proposition—AAI preoccupied/unresolved and ECR anxiety may assess similar aspects of an attachment representation that is also related to borderline features. Congruent with past research, the AAI and ECR do not assess equivalent constructs (Treboux et al., 2004), but do share some empirical overlap on symptomology related to borderline personality disorder. Future research would benefit from an increased understanding of the different contributions of these measures to attachment-related phenomena. This could inform the process of selecting attachment measures and enhance the quality of future research paradigms.

Categorical analysis. Contrary to hypothesis, AAI unresolved classifications and borderline features were not significantly related. This suggests AAI unresolved classifications are not assessing attachment representations associated with the ECR and do not overlap on borderline features. This is somewhat surprising considering strong links between BPD and AAI unresolved attachment (Bakermans-Kranenburg & van Ijzendoorn, 2009; Barone, 2003; Fonagy et al., 1996; Levy et al., 2006; Patrick et al., 1994) and borderline features scales’ psychometrics (Morey, 1991, 1999). This may have been related to sample characteristics, method variance, or limited statistical power due to our sample size

However, post hoc analyses did find significant empirical links between AAI 2-way classifications, ECR 2-cluster solutions, and borderline feature ratings. This supports Belsky’s

second proposition, that AAI classifications and ECR cluster based categories are not directly related, but do converge on an attachment related construct.

Limitations

There were several limitations to this study, which may limit the interpretation of findings. Our sample was relatively small, mostly Caucasian, low SES, and female, which may limit generalizability. Moreover, this sample consisted of individuals participating in a larger study on BPD—half of whom were diagnosed with BPD.

This can also be considered a strength because most comparison studies almost use normative samples (Roisman et al., 2007), which may systematically exclude certain forms of insecure attachment that are uncommon in the general population (Riggs et al., 2007). BPD samples in particular are a good sample to use because of consistent associations with similar forms of insecure attachment regardless of attachment methods.

However, the current sample's atypical composition could also reduce its generalizability and may have unexpected effects on analyses. Categorical analyses, and in particular, AAI categorical data, may have been negatively impacted by sample characteristics. While this is informative for the current study, future research may benefit from utilizing samples that are either more diverse or more homogenous regarding diagnostic categories or symptom presentation.

Although the current study addressed issues of method variance regarding attachment measures, this was not extended to attachment-related constructs. Although, the borderline features scale has strong psychometric properties (Morey, 1991, 1999), it is a self-report measure which may have impacted associations with the self-reported ECR or interview-based AAI. In addition, this emphasis on BPD symptomology may have also impacted our analyses in

unexpected ways. Although the inclusion of this measure may provide clinical research with much needed empirical validation (Agrawal et al., 2004), Future research may benefit from selecting several measures of convergence which vary regarding methodology and psychological experiences.

Conclusions

The current study assessed the empirical relationship between two social and developmental attachment measures in a sample of female adults, half of whom were diagnosed with BPD. This investigation followed Belsky (2002)'s conceptualization of the possible relationship between these two attachment traditions, which include two mutually exclusive propositions. Our findings partially support Belsky's first proposition—after making accommodations for method variance, statistically significant associations emerged between AAI preoccupied/unresolved and ECR anxiety. These dimensions were both significantly related to self-reported borderline features, which suggests they assess similar attachment representations.

However, it is important to note that only half of the AAI and ECR dimensions were significantly related. Furthermore, categorical variables were not directly related, but were significantly related to borderline features. As a whole, findings may lend more support for Belsky's second proposition, that the AAI and ECR are not completely directly related, but do assess similar aspects of mental representations of attachment.

Although Belsky (2002) conceptualized the relationship between social and developmental attachment measures with two mutually exclusive proposals, our findings did not conform to this perspective. Future comparison research would benefit from using research paradigms that are adaptive and assess social and developmental attachment in a range of contexts using a variety of methodologies. This could enhance our understanding of how these

traditions relate and identify key points of convergence and divergence. Indeed, developmental and romantic attachment research make valuable contributions to attachment theory and more should be known about their empirical performance(Cassidy & Shaver, 2016).

List of References

- Agrawal, H. R., Gunderson, J., Holmes, B. M., & Lyons-Ruth, K. (2004). Attachment studies with borderline patients: a review. *Harvard Review of Psychiatry*, 94-104.
- Agrawal, H. R., Gunderson, J. G., Bjarne, M. H., & Lyons-Ruth, K. (2004). Attachment studies with borderline patients: A review. *Harvard Review of Psychiatry*, 12(2), 94-104.
- Ainsworth, M., Blehar, M., Waters, E., & Wall, S. (1978). *Patterns of attachment: a psychological study of the strange situation*. Hillsdale, NJ: Erlbaum.
- Ainsworth, M. D. S. (1967). Infancy in Uganda: Infant care and the growth of love.
- Ainsworth, M. S. (1979). Infant–mother attachment. *American psychologist*, 34(10), 932.
- American Psychiatric, A. (2013). *DSM 5*: American Psychiatric Association.
- Bagozzi, R. P., & Yi, Y. (1991). Multitrait-multimethod matrices in consumer research. *Journal of Consumer Research*, 426-439.
- Bakermans-Kranenburg, M. J., & Van Ijzendoorn, M. H. (1993). A psychometric study of the Adult Attachment Interview: Reliability and discriminant validity. *Developmental psychology*, 29(5), 870.
- Bakermans-Kranenburg, M. J., & van Ijzendoorn, M. H. (2009). The first 10,000 Adult Attachment Interviews: Distributions of adult attachment representations in clinical and non-clinical groups. *Attachment & human development*, 11(3), 223-263.
- Barone, L. (2003). Developmental protective and risk factors in borderline personality disorder: a study using the Adult Attachment Interview. *Attachment & Human Development*, 5(1), 64-77.
- Belsky, J. (2002). Developmental origins of attachment styles. *Attachment & human development*, 4(2), 166-170.

- Bouthillier, D., Julien, D., Dub, M., Blanger, I., & Hamelin, M. (2002). Predictive validity of adult attachment measures in relation to emotion regulation behaviors in marital interactions. *Journal of Adult Development, 9*, 291-305.
- Bowlby, J. (1979). The making and breaking of affectional bonds. *London: Tavistock*.
- Bowlby, J. (1980). Attachment and loss: Loss, sadness and depression (Vol. 3). *New York: Basic*.
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: an integrative overview. *Attachment theory and close relationships*.
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview.
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment Theory and Close Relationships* (pp. 46-76). New York: The Guilford Press.
- Brennan, K. A., Clarke, C. L., & Shaver, P. R. (1998). *Self-report measurement of adult romantic attachment: An integrative overview*. . New York: Guilford Press.
- Campbell, L., Simpson, J. A., Boldry, J., & Kashy, D. A. (2005). Perceptions of conflict and support in romantic relationships: the role of attachment anxiety. *Journal of personality and social psychology, 88*(3), 510.
- Cassidy, J., & Shaver, P. R. (Eds.). (2008). *Handbook of Attachment: Theory, Research, and Clinical Applications* (2nd ed.). The Guilford Press: New York.
- Cassidy, J., & Shaver, P. R. (Eds.). (2016). *Handbook of Attachment: Theory, Research, and Clinical Applications* (3rd edition ed.). New York, NY: Guilford Press.
- Cote, J. A., & Buckley, M. R. (1987). Estimating trait, method, and error variance: Generalizing across 70 construct validation studies. *Journal of Marketing Research, 315-318*.

- Crowell, J. A., Treboux, D., & Waters, E. (1999). The Adult Attachment Interview and the Relationship Questionnaire: Relations to reports of mothers and partners. *Personal Relationships, 6*(1), 1-18.
- Crowell, J. A., Treboux, D., & Waters, E. (1999). s. *Personal Relationships, 6*(1), 1-18.
- De Haas, M. A., Bakermans-Kranenburg, M. J., & Van Ijzendoorn, M. H. (1994). The Adult Attachment Interview and questionnaires for attachment style, temperament, and memories of parental behavior. *The Journal of Genetic Psychology, 155*(4), 471-486.
- Dutton, D. G., Saunders, K., Starzomski, A., & Bartholomew, K. (1994). Intimacy-anger and insecure attachment as precursors of abuse in intimate relationships. *Journal of Applied Social Psychology, 24*, 1367-1367.
- Dutton, D. G., Saunders, K., Starzomski, A., & Bartholomew, K. (1994). Intimacy - Anger and Insecure Attachment as Precursors of Abuse in Intimate Relationships1. *Journal of Applied Social Psychology, 24*(15), 1367-1386.
- Dykas, M. J., & Cassidy, J. (2011). Attachment and the processing of social information across the life span: theory and evidence. *Psychological bulletin, 137*(1), 19.
- Dykas, M. J., Woodhouse, S. S., Cassidy, J., & Waters, H. S. (2006). Narrative assessment of attachment representations: Links between secure base scripts and adolescent attachment. *Attachment & Human Development, 8*(3), 221-240.
- Fonagy, P., Leigh, T., Steele, M., Steele, H., Kennedy, R., Mattoon, G., . . . Gerber, A. (1996). The relation of attachment status, psychiatric classification, and response to psychotherapy. *Journal of Consulting and Clinical Psychology, 64*(1), 22.

- Fossati, A., Donati, D., Donini, M., Novella, L., Bagnato, M., & Maffei, C. (2001). Temperament, character, and attachment patterns in borderline personality disorder. *Journal of Personality Disorders, 15*(5), 390-402.
- Fraley, C. (2002). Attachment stability from infancy to adulthood: Meta-analysis and dynamic modeling of developmental mechanisms. *Personality and Social Psychology Review, 6*(2), 123-151.
- Fraley, C. R. (2002). Attachment stability from infancy to adulthood: Meta-analysis and dynamic modeling of developmental mechanisms. *Personality and Social Psychology Review, 6*(2).
- Fraley, R. C., & Shaver, P. R. (2000). Adult romantic attachment: Theoretical developments, emerging controversies, and unanswered questions. *Review of general psychology, 4*(2), 132.
- Fraley, R. C., & Spieker, S. J. (2003). Are infant attachment patterns continuously or categorically distributed? A taxometric analysis of strange situation behavior. *Developmental psychology, 39*(3), 387.
- Gunderson, J. G. (1984). *Borderline personality disorder*. Washington, D.C.: American Psychiatric Press.
- Gunderson, J. G. (1996). The borderline patient's intolerance of aloneness: insecure attachments and therapist availability. *American Journal of Psychiatry, 153*, 752-758.
- Haydon, K., Roisman, G., Marks, M. J., & Fraley, R. C. (2011). An empirically derived approach to the latent structure of the Adult Attachment Interview: Additional convergent and discriminant validity evidence. *Attachment & Human Development, 13*(5), 503-524. doi: 10.1037/a0022898.

<http://dx.doi.org/10.1080/14616734.2011.602253>

- Haydon, K. C., Roisman, G. I., & Burt, K. B. (2012). In search of security: The latent structure of the Adult Attachment Interview revisited. *Development and psychopathology*, 24(02), 589-606.
- Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of personality and social psychology*, 52(3), 511.
- Hesse, E. (1999). The adult attachment interview: Historical and current perspectives.
- Hesse, E. (2008). The Adult Attachment Interview: Protocol, method of analysis, and empirical studies.
- Hesse, E. (Ed.). (2008). *The Adult Attachment Interview: protocol, method of analysis, and empirical studies*. New York: The Guilford Press.
- Holtzworth-Munroe, A., Stuart, G. L., & Hutchinson, G. (1997). Violent versus nonviolent husbands: differences in attachment patterns, dependency, and jealousy. *Journal of Family Psychology*, 11(31), 314-331.
- Jacobvitz, D., Curran, M., & Moller, N. (2002). Measurement of adult attachment: The place of self-report and interview methodologies. *Attachment & Human Development*, 4(2), 207-215.
- Larose, S., & Bernier, A. (2001). Social support processes: Mediators of attachment state of mind and adjustment in late adolescence. *Attachment & Human Development*, 3(1), 96-120.
- Levy, K. N., Beeney, J. E., & Temes, C. M. (2011). Attachment and its vicissitudes in borderline personality disorder. *Current psychiatry reports*, 13(1), 50-59.

- Levy, K. N., & Clarkin, J. F. (2005). *Attachment and Borderline Personality Disorder*. Unpublished manuscript. Cornell University Ithaca, N.Y. .
- Levy, K. N., Meehan, K. B., Kelly, K. M., Reynoso, J. S., Weber, M., Clarkin, J. F., & Kernberg, O. F. (2006). Change in attachment patterns and reflective function in a randomized control trial of transference-focused psychotherapy for borderline personality disorder. *Journal of consulting and clinical psychology, 74*(6), 1027.
- Levy, K. N., Meehan, K. B., Weber, M., Reynoso, J., & Clarkin, J. F. (2005). Attachment and borderline personality disorder: Implications for psychotherapy. *Psychopathology, 38*, 64-74.
- Macfie, J., Swan, S. A., Fitzpatrick, K. L., Watkins, C. D., & Rivas, E. M. (2014). Mothers with borderline personality and their young children: Adult Attachment Interviews, mother-child interactions, and children's narrative representations. *Development and psychopathology, 26*(02), 539-551.
- Main, M., George, C., & Kaplan, N. (1985). Adult attachment interview. *Growing points of attachment theory. Monographs of the Society for Research in Child Development.*
- Main, M., & Goldwyn, R. (1984). *Adult attachment scoring and classification system*. University of California at Berkeley. unpublished manuscript.
- Main, M., & Goldwyn, R. (1984). Adult attachment scoring and classification system. Unpublished Manuscript: Department of Psychology, University of California Berkeley.
- Main, M., & Goldwyn, R. (1998). *Adult attachment scoring and classification and scoring*. Unpublished manuscript, (6.0).
- Main, M., & Goldwyn, R. (1998). *Unpublished Manuscript* University of California, Berkely

- Main, M., & Hesse, E. (1990). Parents' unresolved traumatic experiences are related to infant disorganized attachment status: Is frightened and/or frightening parental behavior the linking mechanism?
- Main, M., Hesse, E., & Kaplan, N. (2005). Predictability of attachment behavior and representational processes at 1, 6, and 19 years of age. *Attachment from infancy to adulthood: The major longitudinal studies*, 245-304.
- MHFC. (1995). *Mt. Hope Demographic Interview*. Unpublished manuscript. University of Rochester.
- Mikulincer, M., & Shaver, P. R. (2007). *Attachment in adulthood: Structure, dynamics, and change*: Guilford Press.
- Morey, L. C. (1991). *Personality assessment inventory*: Routledge Odessa, FL.
- Morey, L. C. (1999). *Personality Assessment Inventory (PAI)*: Wiley Online Library.
- Patrick, M., Hobson, R. P., Castle, D., Howard, R., & Maughan, B. (1994). Personality disorder and the mental representation of early social experience. *Development and Psychopathology*, 6(02), 375-388.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of applied psychology*, 88(5), 879.
- Ravitz, P., Maunder, J. H., Sthankiya, B., & Lancee, W. (2010). Adult attachment measures: A 25-year review. *Journal of Psychosomatic Research*, 69, 419-432.
- Riggs, S. A., Paulson, A., Tunnell, E., Sahl, G., Atkison, H., & Ross, C. A. (2007). Attachment, personality, and psychopathology among adult inpatients: Self-reported romantic

- attachment style versus Adult Attachment Interview states of mind. *Development and Psychopathology*, 19(01), 263-291.
- Roisman, G. I., Fraley, R. C., & Belsky, J. (2007). A taxometric study of the Adult Attachment Interview. *Developmental Psychology*, 43, 675-686.
- Roisman, G. I., Fraley, R. C., & Belsky, J. (2007). A taxometric study of the Adult Attachment Interview. *Developmental psychology*, 43(3), 675.
- Roisman, G. I., Holland, A., Fortuna, K., Fraley, C. R., Clausell, E., & CLarke, A. (2007). The adult attachment interview and self-reports of attachment style: an empirical rapprochement. *journal of Personality and Social Psychology*, 92, 678-697.
- Sagi, A., van Ijzendoorn, M. H., Scharf, M., Koren-Karie, N., Joels, T., & Mayseless, O. (1994). Stability and discriminant validity of the Adult Attachment Interview: A psychometric study in young Israeli adults. *Developmental Psychology*, 30(5), 771.
- Shaver, P. R., Belsky, J., & Brennan, K. A. (2000). The adult attachment interview and self-reports of romantic attachment: associations accross domains and methods. *Personality and Relationships*, 7, 25-43.
- Shaver, P. R., & Mikulincer, M. (2002). Attachment related psychodynamics. *Attachment & human development*, 4(2), 133-161.
- Simpson, J. A., Rholes, S. W., Orina, M., & Grich, J. (2002). Working models of attachment, support giving, and support seeking in a stressful situation. *Personality and Social Psychology Bulletin*, 28, 598-608.
- Stevens, J. P. (2012). *Applied multivariate statistics for the social sciences*: Routledge.

- Treboux, D., Crowell, J. A., & Waters, E. (2004). When "new" meets "old": configurations of adult attachment representations and their implications for marital functioning. *Developmental psychology, 40*(2), 295.
- Van Ijzendoorn, M. (1995). Adult attachment representations, parental responsiveness, and infant attachment: a meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological bulletin, 117*(3), 387.
- van Ijzendoorn, M. H., & Bakermans-Kranenburg, M. J. (2008). The distribution of adult attachment representations in clinical groups: A meta-analytic search for patterns of attachment in 105 AAI studies.
- Whipple, N., Bernier, A., & Mageau, G. A. (2011). A dimensional approach to maternal attachment state of mind: Relations to maternal sensitivity and maternal autonomy support. *Developmental Psychology, 47*(2), 396.

Appendix

Table 1.

Sample demographics

Variable	<i>N</i> = 87 <i>M</i> (<i>SD</i>)
Age (years)	35 (7)
Hollingshead Occupational and Education Index	37 (14)
Yearly Income (\$)	27,591 (21,590)
Borderline Personality Disorder	49%
Preschool Aged Offspring	59%
Minority Ethnic Background	12%
Hispanic Background	7%
Completed High School	85%

Table 2.

Factors underlying ECR ratings in current sample and Levy et. al. (2005)

Factors in Current Sample (N=87)	α	Items	Levy et. Al. (2005) (N=89)	α	Items
Avoidance of intimacy	.94	11	Comfort Sharing Thoughts	.90	12
Resentment of partner's unavailability	.92	11	Wanting more closeness than others can give	.80	8
Comfort sharing thoughts and seeking support	.80	6	Anger at others absence	.78	6
Worry about abandonment	.85	3	Withdraw response to feelings of closeness	.81	4
Wants more closeness than others can give	.74	3	Worry about abandonment	.74	4
Comfort depending on others	.79	2	Difficulty depending on others	.68	2

Table 3.

Distributions of cluster-based ECR categories

Current Sample (N = 87)		Levy et. Al. (2005) (N = 89)	
Secure	33 (37.9%)	Secure	0 (0%)
Avoidant	10 (11.5%)	Avoidant	26 (29.3%)
Preoccupied	26 (29.9%)	Preoccupied	23 (25.8%)
Fearful	18 (20.7%)	Fearfully-Preoccupied	40 (44.9%)

Table 4.

Distributions for ECR clusters and AAI 4-way classifications with percent agreement

		AAI 4-way classifications				Total
		Dismissing	Preoccupied	Secure	Unresolved	
ECR Clusters	Fearful	2	3	4	9 (50%)	18
	Secure	8	2	16 (55%)	7	33
	Preoccupied	4	4 (15.4%)	7	11	26
	Avoidant	3 (17.6%)	2	2	3	10
Total		17	11	29	30	87

Table 5.

Distributions for 2-way ECR clusters and AAI 2-way classifications, with percent agreement

		AAI classifications		
		Secure	Insecure	Total
ECR Clusters	Secure	19 (51%)	18	37
	Insecure	16	34 (68%)	50
Total		35	52	87

Vita

Christopher Watkins received a Bachelor's of Arts in Anthropology and Psychology from the University of Tennessee in 2005. He enrolled in the Clinical Psychology doctoral program at the University of Tennessee in 2008. While there, he has worked a graduate student research assistant with Dr. Jenny Macfie, studying the effects of maternal BPD on child development. Also, he conducted individual therapy and psychological assessments at the UT Psychological Clinic, completed three clinical externships, and worked as a teaching assistant for the graduate level psychological assessment class. In 2015, he completed a clinical internship with the Jefferson County Internship Consortium based in Louisville, KY. While there he worked as an individual and family therapist, group therapist with adult victims of domestic violence, performed psychological assessments with incarcerated adults at the Kentucky Correctional Psychiatric Center, and worked as therapist and psychological assessor at Central State Hospital, an inpatient psychiatric hospital. Research interests include psychotherapy process and outcome, psychological assessment with developmental and clinical populations.