Language use in the Adult Attachment Interview: Evidence for attachment-specific emotion regulation

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Abstract

Adult attachment classification is traditionally based on qualitative coding of participants’ discourse about their attachment history. Word count-based analyses have proven useful for assessing emotional states from narrative. To expand the understanding of how language is used in emotion regulation processes related to attachment, the authors assess 102 college-aged adults’ language on the Adult Attachment Interview (AAI). Autonomous adults use more emotion words and, in particular, negative emotion words. Preoccupied adults use more anger words. Disorganized adults use more experientially connected language and more death/dying words, but also use more second-person pronouns when discussing loss. Language use during the AAI explains variability in self-reported emotional distress above and beyond attachment classifications. Results are discussed in terms of their relevance to emotion and attachment.

Both cross-sectional and longitudinal research suggest that the quality of parent–child relationships in infancy and childhood contributes to the development of adults’ internal working models (IWMs) of attachment—that is, the mental representations people hold about the nature of caregivers’ and partners’ responsiveness (e.g., Waters, Merrick, Treboux, Crowell, & Albersheim, 2000). Importantly, IWMs assessed via the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1996) appear especially predictive of psychological functioning and behavior within close interpersonal relationships and, as expected, differ from IWMs regarding the workplace (Crowell et al., 1996). Indeed, over the last 20 years, a large body of research has documented that individual differences in IWMs assessed via the AAI guide emotion regulation as well as adults’ behaviors in close relationships and during periods of heightened stress (Roisman, Tsai, & Chiang, 2004; Roisman et al., 2007). IWMs as assessed by the AAI are robustly associated with both intraindividual (e.g., psychological adjustment, Fonagy et al., 1996) and interpersonal adjustment (e.g., romantic relationship quality, Roisman et al., 2007; parenting sensitivity, De Wolff & van IJzendoorn, 1997).

A different but increasingly important method for assessing variability in emotion regulation strategies during discourse involves an analysis of both the content and style of adults’ language use (Pennebaker & Francis,
Word-count-based text analysis uses computer programs to analyze the frequency of different types of words (e.g., pronouns) within written or spoken narratives (Pennebaker, Mehl, & Niederhoffer, 2003). The approach has proven highly effective for revealing linguistic expressions of psychological states and traits. The words people naturally use to describe their life experiences are associated with a wide range of psychological constructs, including personality (Fast & Funder, 2008; Küfner, Back, Nestler, & Egloff, 2010; Yarkoni, 2010), relationship satisfaction (Simmons, Chambless, & Gordon, 2008; Simmons, Gordon, & Chambless, 2005), and the future likelihood of a relationship breakup (Ireland et al., 2011; Slatcher & Pennebaker, 2006).

In this article, we investigate the degree to which word-count-based variations in emotion language on the AAI map onto narrative-based attachment classifications. The work is guided by two goals. First, we seek to evaluate whether word-count-based analyses can be used to more fully understand the emotional content and processing of adults’ discourse during the AAI. Linguistic discourse is an observable behavior (cf. Baumeister, Vohs, & Funder, 2007) and as such can provide a rich behavioral perspective that has the potential to augment our understanding of the different AAI categories.

Our second goal in conducting this study is to identify whether language use during the AAI (identified using the word count methodology) predicts self-reported affective distress above and beyond attachment classification. Attachment classifications are associated with a wide variety of psychosocial outcomes, including psychiatric symptoms, diagnosis, and response to psychotherapy (Fonagy et al., 1996; Heinicke & Levine, 2007; Riggs et al., 2007). In particular, studies consistently find that disorganized attachment is a risk factor for various forms of psychopathology, including affective disorders (see Dozier, Stovall-McClough, & Albus, 2008, for a review). Similarly, language use is also associated with psychiatric diagnoses, distress, and attitudes toward recovery from illness (Bucci & Freedman, 1981; Lyons, Mehl, & Pennebaker, 2006; Oxman, Rosenberg, Schnurr, & Tucker, 1988). In this study, we ask whether the language people use to describe their attachment history explains unique variability in affective distress after accounting for their attachment classification.

Overview of the attachment representation framework

Historically, adult attachment is measured using two distinct techniques, both derived from the works of Bowlby and Ainsworth (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby 1980) but differing in targeted construct and measurement. In one case, researchers focus upon romantic attachment “styles,” or an adult’s current attitudes and behavior within romantic relationships, using self-report questionnaires (e.g., Brennan, Clark & Shaver, 1998) that prompt the individual to characterize his or her general approach to romantic relationships. A second tradition investigates attachment “states of mind” or “representations,” typically through the use of interviews. Use of these tools results in an attachment classification based on the adult’s state of mind with respect to his or her childhood relationship with attachment figures, which is predictive of behavior within the adult’s current relationships (e.g., Cohn, Silver, Cowan, Cowan, & Pearson, 1992). The most widely used assessment of attachment representations is the AAI (George et al., 1996), a semistructured interview that challenges the speaker to provide a broad, semantic description of his or her childhood relationship with attachment figures, which is predictive of behavior within the adult’s current relationships (e.g., Cohn, Silver, Cowan, Cowan, & Pearson, 1992). The most widely used assessment of attachment representations is the AAI (George et al., 1996), a semistructured interview that challenges the speaker to provide a broad, semantic description of his or her childhood relationships with parents and to support this general description with concrete, episodic examples. Because this measure differs drastically from self-reports both in its methodology and theoretical stance (i.e., it attempts to capture unconscious vs. conscious representations), it should be unsurprising that these two types of assessments are not highly correlated (Crowell, Fraley, & Shaver, 1999; Riggs et al., 2007).

AAI transcripts are categorized into one of four classifications: autonomous, preoccupied,
dismissing, and disorganized (either unresolved/disorganized or cannot classify). Autonomous, preoccupied, and dismissing speakers are considered to be “organized” in that they demonstrate use of a consistent strategy during the interview (Hesse, 2008). Autonomous1 speakers demonstrate flexibility in their narrative style—they are able to concisely and coherently describe their experiences, speak personally and specifically about the topics, and consider both positive and negative aspects of these experiences (Allen & Manning, 2007; Main, 2000). In contrast, dismissing adults emphasize their own independence while denying or minimizing the negative impact of difficult experiences in early relationships, thereby exhibiting emotional distance from their attachment experiences (Crowell et al., 1999; Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993). Preoccupied adults seem emotionally entangled by their early experiences—one the AAI they may predominantly focus on negative experiences, may use “angry” speech during the interview (e.g., inappropriate shifts to present tense), and may oscillate in their evaluation of their experiences (Hesse, 2008; Kobak et al., 1993).

In contrast to adults classified as having organized attachment, disorganized adults show global or localized “breakdowns” in their discourse. When these “breakdowns” are present throughout the interview, speakers are considered disorganized/cannot classify (Hesse, 1996). When speech becomes disorganized exclusively during discussions of loss or trauma, speakers are considered to be unresolved/disorganized with respect to either loss or trauma (Hesse, 2008; Hesse & Main, 2000). For example, an unresolved person might lapse into odd or funereal speech, or have unexplained lengthy pauses during discussion of a loss or trauma; he or she may also slip into the present tense during such discussions and include highly detailed sensory imagery (Hesse, 2008; Hesse & Main, 2000). Such localized disintegration of speech is interpreted to be a sign of interference from intrusive/overwhelming memories or absorptive affective experiences that are triggered by the discussion of these topics (Hesse, 2008). Research repeatedly demonstrates that disorganized individuals are at high risk for psychopathology (Dozier et al., 2008; Fonagy et al., 1996). Specifically, because disorganized interviews contain unintegrated perspectives regarding attachment experiences, some researchers have proposed that disorganized attachment is phenotypically similar to posttraumatic stress disorder (PTSD) in that the individuals’ experiences of loss or trauma are psychologically segregated (Fearon & Mansell, 2001), and thus fragmented from, nontraumatic memories. Both disorganized attachment and PTSD may reflect the failed attempt of an unconscious strategy aimed at defensively excluding cognitive and affective information that is overwhelming and terrifying (Fearon & Mansell, 2001).

The current study: Emotional content and processing on AAIs

In this study, we explore how word-count-based text analyses can be used to better understand the emotional content of adults’ discourse on the AAI. Based on the notion that autonomous people have greater access to their emotional experience (Allen & Manning, 2007), we would expect them to use a wider range of affect words than insecure individuals during the AAI. Given their tendency to downplay the impact of negative experiences (Hesse, 2008; Hesse & Main,
2000), dismissing adults, on the other hand, should use fewer negative emotion words. Given that preoccupied adults often show enmeshed anger when discussing their childhood experiences (Hesse, 2008; Hesse & Main, 2000), they should use more anger words compared to others.

Disorganized attachment has unique markers that set it apart from the three organized types of adult attachment. It remains an open question as to whether the hypothesized PTSD-like avoidance–intrusion pattern (Fearon & Mansell, 2001) is manifest at the level of observable behavior. Second-person pronouns are thought to serve the function of depersonalizing or distancing the individual from his or her experiences (Chung & Pennebaker, 2007; Solomon, 1978; Tausczik & Pennebaker, 2010). A greater frequency of second-person pronouns in disorganized adults’ discussion of loss or trauma may reflect a linguistic manifestation of psychological avoidance; likewise, a greater frequency of words related to loss (death/dying words) among disorganized individuals throughout the AAI would provide evidence for intrusion or “leaking” of loss-related themes despite attempts at avoidance.

Word count methodologies also allow the examination of levels of emotional processing in language (Epstein, 1994). The linguistic construct of verbal immediacy (Biber, 1988; Pennebaker & King, 1999) defines language in terms of how concrete, personal, present focused, involved, and experiential it seems. On the AAI, verbal immediacy can be thought of as reflecting the degree of experiential connectedness that an individual feels to the verbalized material (Borelli, Sbarra, Mehl, & David, 2011; Cohn, Mehl, & Pennebaker, 2004). Language low in verbal immediacy can be described as psychologically distant and detached, while language high in verbal immediacy may indicate overinvolvement with one’s feelings and thoughts (Borelli et al., 2011; Lee, Sbarra, Mason, & Law, 2011). Recently separated adults with high attachment anxiety show greater physiological arousal when they discussed their divorce experiences in a highly verbally immediate way (Lee et al., 2011). Moderate levels of verbal immediacy, which may reflect the ability to balance engagement and reflection about childhood experiences, may therefore be a marker of effective emotion regulation in the context of the AAI (Borelli et al., 2011). It follows that immediacy would vary by attachment classification—autonomous adults ought to have higher levels of immediacy than dismissing adults but lower levels than preoccupied and disorganized adults who may become enmeshed in their experience and overwhelmed during the AAI.

Study hypotheses

In this study, we evaluate four hypotheses related to emotional content and processing. First, we hypothesize that autonomous adults will use more affect words, dismissing adults will use fewer negative emotion words, and preoccupied adults will use more anger words as compared to other groups. Second, in terms of emotional processing, we predict that autonomous adults will show greater verbal immediacy than dismissing adults but less verbal immediacy than preoccupied and disorganized adults. Third, we examine emotional content in disorganized individuals in order to evaluate the avoidance–intrusion model. We predict (a) that disorganized adults will use more frequent second-person pronouns during the discussion of loss and trauma and (b) that disorganized adults will show greater frequency of words related to loss (death/dying words). Fourth, to explore concurrent validity between psychiatric well-being and emotional processing, we evaluate whether word count variables have incremental validity in the prediction of self-reported affective distress; specifically, we hypothesize that the word-count-derived variables discussed above will be associated with affective distress after controlling for attachment classification.

Method

Data were obtained from two studies examining attachment, cognition, and stress. The
Attachment and language use

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studies were conducted at American universities using undergraduate students as research participants.2

Participants and procedure

Participants included 102 students (n = 25 women, 78 men) between the ages of 18 and 25 (M = 19.92, SD = 1.9) who participated in larger studies on attachment, stress, and cognition. One of the studies included only male participants (see Rifkin-Graboi, 2008, for more details); the other included both males and females. Only individuals with no current psychopathology, no history of serious head trauma, and no exposure to trauma in the past year were invited to participate. The sample was primarily Caucasian (51%), with 3% African American, 25% Asian American, 7% Hispanic/Latino, and 14% who identified as Other.

2. Although these data were collected from different samples, we combine them for this investigation. Importantly, both studies were an examination of stress, cognition, and attachment; both used undergraduates at elite large colleges (one a public university in the Western United States [hereafter referred to as Western sample] and one a private university in the Northeast [hereafter referred to as Northeast sample]) as participants. The largest relevant difference between the studies was that one used male and female undergraduates as participants while, due to the nature of the primary research questions investigated in this study, the other used only males. Another difference is that although participants in both studies completed the questions from the Brief Symptom Inventory (BSI), Western sample completed the BSI–18 and Northeast sample completed the BSI (which consists of 53 total items, including the 18 items in the BSI–18). In order to compare self-reported affective distress across samples, we took Northeast sample’s scores on the 18 items included in the BSI–18 and computed the global severity index for both samples. In addition, the timing of these BSI administration varied (participants in Northeast sample completed it a few weeks before the AAI, whereas participants in Western sample completed it in a packet they took home roughly 1 year after completing the AAI). For additional information on the Northeast sample, see David (2009), and for information on the Western sample, see Rifkin-Graboi (2008). In order to control for sample effects, all analyses were initially conducted including sample as a covariate. These analyses revealed that sample of origin did not change the overall pattern of findings; therefore, analyses are reported here without sample origin information for ease of interpretation.

Measures

Attachment state of mind

The AAI (George et al., 1996) is a semistructured interview evaluating an individual’s current state of mind regarding childhood attachment experiences. The interviewer asks participants to provide a broad overview of their childhood relationship with each parent and to support this with specific memories of parental behavior. Participants are also asked about their memories of being upset, hurt, and sick as a child, as well as about their experiences of loss and trauma. Interviews typically last between 45 and 90 min. Attachment classifications are derived from scores on five 9-point scales that rate the speaker’s probable experience with caregivers (e.g., how rejecting the coder believes the speaker’s parents to be during childhood) and from scores on seven 9-point scales assessing current state of mind regarding attachment (e.g., idealization, passivity, involving/preoccupying anger, narrative coherence throughout interview; see Hesse, 2008, for more details on interview coding). AAI transcripts are categorized into one of four classifications: autonomous, preoccupied, dismissing, and disorganized (either unresolved/disorganized or cannot classify). Participants who report experiences of loss (losing someone to death), abuse by attachment figures (episodes of severe physical abuse, sexual abuse, or neglect), or trauma (e.g., rape by strangers) and who show marked deterioration in reasoning or discourse during their discussion of these experiences are considered unresolved/disorganized (Main, Goldwyn, & Hesse, 2002). Extensive psychometric testing supports the test–retest reliability of the instrument, predictive validity with childhood measures of attachment, and absence of a relationship between AAI classification and intelligence, verbal fluency, or memory for nonattachment information (Bakersman-Kranenburg & van IJzendoorn, 1993; Crowell et al., 1999; Hamilton, 2000; van IJzendoorn, 1995; Waters, Hamilton, & Weinfield, 2000; Waters, Merrick, et al., 2000; Waters, Weinfield, & Hamilton, 2000).
Most AAIs were administered by graduate students (n = 7 were administered by a specially trained undergraduate). Interviews were audio-recorded and then transcribed verbatim. Transcripts were deidentified such that information including participant name, place of birth, ethnicity, and gender were excluded. Coders for both samples attended AAI Training Institutes and were certified as reliable by Dr. Mary Main. For the Northeast sample, 18 transcripts (33%) were double coded to establish intercoder agreement (four-way: \( \kappa = .64, p < .01 \)). Disagreements in coding were resolved by conferencing, which resulted in improved intercoder agreement (four-way: \( \kappa = .92, p < .01 \)). For the Western sample, reliability was established by having an expert coder (M. Main) code six (12%) of the transcripts (five of which were in agreement with the primary coder’s assessment). Portions of the interview transcripts of other especially difficult cases in the Western sample were also discussed with two expert coders (M. Main and E. Hesse). Because there were only four “cannot classify” AAIs (3.92% of sample across the two samples), we included these interviews in the unresolved/disorganized category, as is standard practice in AAI research (e.g., Rifkin-Graboi, 2008; van IJzendoorn & Bakermans-Kranenburg, 1996).

**Word-count-based linguistic analysis of the AAIs**

After removing the interviewers’ statements from verbatim transcripts, the AAI texts were edited according to the format required by the Linguistic Inquiry and Word Count system (LIWC; Pennebaker, Francis, & Booth, 2001). Edited and checked transcripts were submitted to LIWC, which operates by comparing each word of a text to an internal dictionary consisting of 74 standardized linguistic (e.g., personal pronouns) and psychological (e.g., positive and negative emotion words) dimensions. The output tabulates word use as a percentage of total words in a text that fall into a given category (e.g., percentage of words that were first-person singular pronouns), thereby accounting for length of interview. Only those word categories that comprise the verbal immediacy index and words thought to reflect autonomous attachment (affect words, such as *happy, afraid, grief*), dismissing attachment (negative emotion words, such as *hate, worthless, enemy*), preoccupied attachment (angry words, *mad, pissed*), and disorganized attachment (death words, such as *dead, kill, grave*; and second-person pronouns, such as *you, you’ll, yours*) were selected for this study. Verbal immediacy was computed based on the standardized LIWC categories first-person singular, discrepancy words, present tense verbs and inverse scores for articles and words of more than six letters (Cohn et al., 2004; Pennebaker & King, 1999). Cronbach’s alpha for the immediacy scale in this sample was .90.

**Psychiatric distress**

Participants in both samples completed questions from the Brief Symptom Inventory—18 (BSI–18), which consists of items measuring a range of symptoms associated with psychiatric difficulties. Participants are asked to indicate, on a 5-point Likert-type scale, with low scores meaning *not at all* and high scores meaning *extremely*, how much each symptom has bothered them during the last 7 days. Three composite scales (Overall Severity of Depression, Anxiety, and Somatization) are computed. A Global Severity Index (GSI) is also calculated by taking the sum of the three composite scores. In this article, we use the GSI as our measure of psychiatric distress. The BSI and the BSI–18 have shown high validity with other measures of psychopathology and strong test–retest reliability with healthy and psychiatric populations (Boulet & Boss, 1991; Derogatis, 1993, 2004; Derogatis & Melisaratos, 1983).

**Data analytic plan**

Analyses of covariance (ANCOVAs) were conducted to evaluate attachment group differences in language use while controlling for potential confounds. Participant age and sex were included as covariates in all models. Furthermore, because attachment variables can
be grouped differently (e.g., using the four-group breakdown [dismissing, secure, preoccupied, disorganized], autonomous vs. insecure, organized vs. disorganized), in order to increase statistical power, we used different grouping variables depending on the a priori hypothesis. For analyses in which we wanted to compare autonomous adults with insecure (dismissing, preoccupied, disorganized) adults, we used the two-level organized versus organized individuals, we used the two-level disorganized versus organized grouping variable. Similarly, in analyses comparing disorganized to organized individuals, we used the two-level disorganized versus organized grouping variable. In analyses in which we are interested in differences among subtypes of organized insecure categories (dismissing and preoccupied), we used the four-group category.

Results

Descriptive statistics indicated that 25% (n = 26) of the combined sample was classified as dismissing, 41% (n = 42) as autonomous, 6% (n = 6) as preoccupied, 23% (n = 24) as unresolved/disorganized, and 4% (n = 4) as cannot classify (in subsequent analyses these groups are collapsed into one disorganized grouping), which is similar to the distribution reported in other samples (van IJzendoorn & Bakermans-Kranenburg, 1996). In this sample, 92% (n = 94) reported experiencing a loss and 18% (n = 18) reported experiencing a trauma (n = 9 reported experiencing abuse by caregiver(s), n = 16 reported experiencing another type of trauma, and n = 5 reported both abuse and another trauma). Of the participants classified as unresolved, 5 (21%) were unresolved with respect to trauma; the rest (79%) were unresolved with respect to loss. As stated above, for these analyses, both participants classified as unresolved and cannot classify were considered disorganized. All of the participants classified as unresolved or cannot classify were given secondary organized classifications (46% were dismissing, 46% were autonomous, 7% were preoccupied). By design (see Footnote 2), the samples differed in proportion of males and females, $\chi^2(1) = 30.69$, $p < .001$, but did not differ by age of participants, $t = 0.04$, $ns$. The results of a Pearson chi-square indicated that participant sex was not significantly associated with attachment classification, $\chi^2(3) = 1.73$, $ns$. Analysis of variance (ANOVA) revealed that age did not differ significantly between attachment groups, $F(1, 98) = 1.71$, $ns$. Table 1 reports means and standard deviations by attachment category.

Hypothesis 1: Association of specific emotion word categories with organized attachment categories

After controlling for participants’ sex, $F(1, 101) = 2.63$, $ns$, and age, $F(1, 101) = 0.01$, $ns$, attachment classification emerged as a main effect in a one-way ANCOVA model examining affect words, $F(1, 101) = 3.66$, $p < .05$, $\eta^2 = 0.04$, and the interaction between attachment and sex was also significant, $F(1, 101) = 6.30$, $p < .05$, $\eta^2 = 0.06$. Autonomous attachment was associated with more frequent use of affect words, with the interaction revealing that this was particularly true among autonomous as compared to insecure women.

After controlling for participant sex, $F(1, 101) = 1.94$, $ns$, and age, $F(1, 101) = 0.12$, $ns$, attachment classification emerged as a main effect in a one-way ANCOVA model examining negative emotion words, $F(3, 101) = 2.65$, $p < .05$, $\eta^2 = 0.08$. A least significant difference (LSD) post hoc test revealed that dismissing adults used fewer negative emotion words than autonomous adults, $p < .01$, and preoccupied adults, $p < .05$.

Finally, after controlling for participant sex, $F(1, 101) = 0.06$, $ns$, and age, $F(1, 101) = 0.24$, $ns$, attachment classification emerged as a main effect in a one-way ANCOVA model examining angry words, $F(3, 101) = 3.81$, $p < .01$, $\eta^2 = 0.11$. An LSD post hoc test revealed that preoccupied adults used more angry words than all other participants, $p < .001$. Hypothesis 1 was supported—emotion word use varies among organized attachment categories.
Table 1. Means (standard deviations) of study variables by attachment classification

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Dismissing</th>
<th>Autonomous</th>
<th>Preoccupied</th>
<th>Disorganized^a</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N = 102)</td>
<td>(n = 26)</td>
<td>(n = 42)</td>
<td>(n = 6)</td>
<td>(n = 28)</td>
</tr>
<tr>
<td>Word count^b</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affect words</td>
<td>3.30 (0.55)</td>
<td>3.32 (0.60)</td>
<td>3.37 (0.59)</td>
<td>3.26 (0.38)</td>
<td>3.21 (0.48)</td>
</tr>
<tr>
<td>Negative emotion</td>
<td>1.32 (0.29)</td>
<td>1.19 (0.23)</td>
<td>1.36 (0.28)</td>
<td>1.46 (0.40)</td>
<td>1.33 (0.30)</td>
</tr>
<tr>
<td>words</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anger words</td>
<td>0.29 (0.15)</td>
<td>0.27 (0.14)</td>
<td>0.27 (0.13)</td>
<td>0.47 (0.20)</td>
<td>0.30 (0.14)</td>
</tr>
<tr>
<td>Death/dying words</td>
<td>0.17 (0.12)</td>
<td>0.13 (0.11)</td>
<td>0.15 (0.10)</td>
<td>0.11 (0.03)</td>
<td>0.23 (0.14)</td>
</tr>
<tr>
<td>Second-person</td>
<td>0.35 (0.45)</td>
<td>0.11 (0.18)</td>
<td>0.35 (0.44)</td>
<td>0.29 (0.18)</td>
<td>0.57 (0.56)</td>
</tr>
<tr>
<td>pronouns—loss^c</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second-person</td>
<td>0.32 (0.82)</td>
<td>0.50 (1.26)</td>
<td>0.21 (0.71)</td>
<td>0.10 (0.24)</td>
<td>0.35 (0.46)</td>
</tr>
<tr>
<td>pronouns—trauma^d</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immediacy^e</td>
<td>0.00 (0.28)</td>
<td>-0.10 (0.14)</td>
<td>-0.03 (0.20)</td>
<td>-0.02 (0.29)</td>
<td>0.15 (0.40)</td>
</tr>
<tr>
<td>Brief Symptom</td>
<td>17.15 (13.17)</td>
<td>16.08 (11.39)</td>
<td>15.55 (11.43)</td>
<td>11.00 (15.26)</td>
<td>21.82 (16.06)</td>
</tr>
<tr>
<td>Inventory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

^a Participants coded as unresolved and cannot classify are considered part of the disorganized group in this table and all other analyses. ^b All word count variables are presented as a proportion of total words spoken. ^c Frequency of second-person pronouns used during the discussion of loss. ^d Frequency of second-person pronouns used during the discussion of trauma. ^e Immediacy is a composite based on the following Linguistic Inquiry and Word Count system variables: first-person singular pronouns (I, me, my), present tense verbs, discrepancy words (e.g., would, should, could), articles (a, the; reverse scored), and words of more than six letters (reverse scored); because it is based on standardized variables, it has a mean of 0.

Hypothesis 2: Association of verbal immediacy with attachment classification

After controlling for participant sex, $F(1, 101) = 0.01, \text{ns}$, and age, $F(1, 101) = 1.11, \text{ns}$, attachment classification emerged as a main effect in a one-way ANCOVA model examining verbal immediacy, $F(3, 101) = 4.69, p < .01, \eta^2 = 0.13$. The results of an LSD post hoc test revealed that disorganized individuals had greater verbal immediacy than autonomous and dismissing participants, $p < .001$ (Figure 1). In order to probe this effect, we reran the analyses using the same covariates and examining attachment as a predictor of immediacy during loss only, immediacy during trauma only, and immediacy during nonloss/nontrauma sections of the interview only. Disorganized attachment was associated with greater immediacy during loss, $F(3, 101) = 7.69, p < .001, \eta^2 = 0.20$, and with greater immediacy during nonloss/nontrauma discussions, $F(3, 101) = 3.63, p < .05, \eta^2 = 0.10$, but not with greater immediacy during trauma discussion,

Figure 1. Verbal immediacy on the Adult Attachment Interview (AAI; n = 102).

Note. Error bars represent standard deviations.

$F(3, 101) = 0.58, \text{ns}$. Thus, our second hypothesis was supported in part—disorganized, but not preoccupied attachment was associated with greater verbal immediacy, and dismissing attachment was not associated with lower immediacy.
Hypothesis 3: Linguistic correlates of disorganized attachment

After controlling for participant sex, \( F(1, 101) = 0.01, \ ns \), and age, \( F(1, 101) = 1.11, \ ns \), attachment classification emerged as a main effect in a one-way ANCOVA model examining second-person pronouns during loss, \( F(1, 101) = 11.06, \ p < .001, \ \bar{\eta}^2 = 0.10 \). Disorganized participants used a greater proportion of second-person pronouns when discussing loss experiences (Figure 2, Panel A). Follow-up analyses comparing disorganized participants with only those organized participants who had experienced a loss revealed that the effect still held, \( F(1, 94) = 8.16, \ p < .01, \ \bar{\eta}^2 = 0.08 \)—disorganized adults used more second-person pronouns during loss discussion than organized participants who reported a loss.

After controlling for participant sex, \( F(1, 101) = 0.07, \ ns \), and age, \( F(1, 101) = 0.02, \ ns \), attachment classification emerged as a main effect in a one-way ANCOVA model examining death words, \( F(1, 101) = 4.16, \ p < .05, \ \bar{\eta}^2 = 0.08 \). Disorganized participants used a greater proportion of death/dying words (Figure 2, Panel B). Follow-up analyses comparing disorganized participants only with those organized participants who had experienced a loss revealed that the effect still held, \( F(1, 94) = 7.94, \ p < .01, \ \bar{\eta}^2 = 0.08 \)—disorganized adults used more death/dying words than organized participants who reported a loss.

Hypothesis 3, which probed for linguistic evidence of avoidance–intrusion in disorganized attachment, was supported.

Hypothesis 4: Incremental validity of AAI language in predicting psychiatric distress

Preliminary analysis indicated that after controlling for participant sex, \( F(1, 101) = 24.11, \ p < .001, \ \bar{\eta}^2 = 0.21 \), and age, \( F(1, 101) = 1.52, \ ns \), disorganized attachment was associated with greater self-reported distress, \( F(1, 101) = 5.08, \ p < .05, \ \bar{\eta}^2 = 0.05 \). In order to evaluate our hypothesis, we reran the model including language variables in addition to attachment as predictors of self-reported distress. After controlling for participant sex, \( F(1, 101) = 19.05, \ p < .001, \ \bar{\eta}^2 = 0.19 \), and age, \( F(1, 101) = 0.19, \ ns \), the four-category attachment variable was not significantly associated with self-reported distress, \( F(3, 101) = 0.57, \ ns \), nor was second-person pronoun use, \( F(1, 101) = 0.41, \ ns \); death word use, \( F(1, 101) = 1.77, \ ns \); or affect\(^3\) word use, \( F(1, 101) = 1.04, \ ns \), but immediacy, \( F(1, 101) = 16.15, \ p < .001, \ \bar{\eta}^2 = 0.16 \), emerged as a significant predictor. Greater verbal immediacy and being male

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3. Because in this analysis we included all linguistic variables as predictors within one model (to provide a more rigorous examination of the incremental validity of each word count category), we included only the superordinate “affect” category and not the subordinate “negative emotion” and “anger” word categories.
were associated with more self-reported psychiatric distress. Hypothesis 4 was supported in part—verbal immediacy on the AAI predicted BSI scores after controlling for AAI group membership.

Discussion

Although the attachment state of mind and word count methodologies emerge from different research traditions, both are used to study variability in adults’ psychological functioning. The purpose of this study was to evaluate differences in the use of language related to emotional content and emotional processing in adults’ attachment narratives. The results suggest that people with different attachment classifications use language related to emotional content and processing in distinct, theoretically expectable ways. In addition, we observed that specific patterns of language use during the AAI were associated with affective distress above and beyond attachment classification. Taken together, the findings help reveal specific behavioral differences in how variability in IWMs of attachment are represented in language.

As predicted, emotional content language use varied within the organized attachment categories. Autonomous individuals used more affect words than insecure individuals, which fits with the characterization of autonomous adults as having the freedom to openly explore their emotional attachment experiences in the context of the AAI (Allen & Manning, 2007; Hesse, 2008). Consistent with the observation that dismissing individuals deny or downplay the negative impact of adverse experiences on the AAI (Hesse, 2008), we found that these participants used fewer negative emotion words during the AAI than both autonomous and preoccupied adults. The finding is even more robust in light of the fact that LIWC does not differentiate between negative emotion words that are preceded by a negation and those that are not (e.g., “I was not afraid” vs. “I was afraid” each has one negative emotion word). Finally, as predicted, preoccupied individuals used more frequent anger words. This should be interpreted with caution due to the small number of preoccupied adults in this sample (n = 6). The low base rate of preoccupied participants in nonclinical samples is a problem that plagues much of attachment research (e.g., Cassidy & Berlin, 1994) and may be addressed by evaluating these questions in larger high-risk samples. However, this finding is consistent with the tendency of preoccupied adults to become actively angry during the AAI (Hesse, 2008). If replicated, these findings regarding organized attachment and variability in emotional content language would provide cross-method confirmation of the central features of Main’s state of mind coding system (Main et al., 2002).

In addition, we found that disorganized adults had higher verbal immediacy scores than dismissing and autonomous adults. How can we explain the fact that a disorganized attachment classification is related to a marker of greater putative experiential connectedness throughout the entire interview? To evaluate the finding that disorganized adults had the greatest immediacy, we reran the analyses without the cannot-classify participants; findings were nearly identical. As previous research with children found that preoccupied youth had the highest immediacy (Borelli et al., 2011), we also investigated the potential role of preoccupation. That is, in order to evaluate whether the disorganized finding was confounded by the fact that disorganized participants had a secondary preoccupied classification, we conducted follow-up tests to evaluate verbal immediacy by secondary organized attachment classification (meaning that unresolved individuals were placed into their best fitting organized classification). There were no statistically significant differences among the groups, although an examination of the group means suggests that findings were in the expected direction, with preoccupied individuals showing the largest immediacy mean, followed by autonomous and then dismissing individuals.

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4. When testing this hypothesis, we elected to use the four-category (dismissing, autonomous, preoccupied, disorganized) attachment variable based on the notion that individuals with certain types of insecure attachment (e.g., preoccupied, unresolved) may endorse more psychiatric symptomatology than autonomous individuals, whereas dismissing adults may actually endorse less (see Dozier & Lee, 1995; Pianta, Egeland, & Adam, 1996, for a discussion of reporting differences). However, because verbal immediacy was associated with the disorganized category, we then decided to rerun the analyses using a disorganized versus organized attachment grouping variable, and attachment still was not a significant predictor in the model.
show greater immediacy than all other attachment groups during the loss and nonloss/non-trauma (but not trauma only) sections of the interview. Indeed, recognized forms of disorganized “transient breakdowns” (see Hesse, 2008) involve discussing loss or trauma in excessive detail, discussing loss or trauma out of context, showing sensory intrusion, and making slips to the present tense when discussing events that occurred in the past (Main et al., 2002). That disorganized speakers also showed greater immediacy during the portions of the interview when they were not discussing loss and trauma suggests that they also may be more activated even when discussing general, non-loss-related aspects of their attachment history. Attachment-related stimuli like the AAI may increase activation of the attachment behavioral system throughout the interview (Abrams, Rifkin, & Hesse, 2006), and this may be especially true for disorganized adults. Although a number of questions remain, if replicated, these findings suggest that individuals with disorganized attachment differ from organized adults in language use throughout the interview as a whole, rather than solely during discussions of loss and trauma.

We also found that disorganized individuals use second-person pronouns more frequently during their discussions of loss and trauma, which may be an indicator of attempts to distance or depersonalize. This, coupled with the fact that disorganized adults used death/dying words more frequently on the AAI, provides partial support for an emotion regulation model of avoidance—intrusion similar to that observed in PTSD (Fearon & Mansell, 2001). In other words, disorganized individuals show the greatest signs of depersonalizing while discussing loss and trauma, which may be a linguistic sign of avoidance, while simultaneously showing evidence of death/dying words leaking throughout the interview, which may be interpreted as intrusion. Interestingly, disorganized adults also show the greatest verbal immediacy and the most frequent second-person pronouns when discussing loss experiences, which provide linguistic support of contradictory emotion regulatory strategies occurring within the discussion of loss itself. At the level of language, disorganized individuals show signs of ambivalence in their linguistic style on the AAI—when explicitly directed to discuss loss experiences, they show linguistic distancing and heightened experiential connectedness, and yet throughout the interview they show greater frequency of loss-related words.

The final goal of our study was to evaluate whether linguistic behavior on the AAI is associated with meaningful outcomes in addition to attachment classifications. We found that immediacy was associated with increased self-reported affective stress. This is unsurprising—we had hypothesized that a moderate level of experiential connectedness would be associated with optimal outcomes (e.g., autonomous attachment) and that higher levels would be indicative of an inability to emotionally separate or disengage from the narration of one’s attachment history (Lee et al., 2011). Low levels of immediacy, on the other hand, may be associated with complete disengagement from the topic and, like dismissing attachment, would therefore likely be related to underreporting of distress (Borelli et al., 2011; Dozier & Lee, 1995). Surprisingly, attachment classification was not significantly associated with affective distress after accounting for language use (though disorganized attachment was associated with greater self-reported distress in preliminary statistical models). This may be due to the restriction in range represented in the BSI scores in this sample, which was selected to exclude individuals with psychopathology and therefore included BSI averages well below the clinical cutoff of 60 (Derogatis, 2004), or to the small sample size of several of the insecure groups. That the language variables were associated with BSI scores when attachment classification was not, however, bolsters their validity, suggesting that in addition to being associated with attachment classification, emotional processing language also is uniquely predictive of psychiatric distress. Therefore, aside from its association with attachment, linguistic behavior on the AAI may be an important variable to examine for its association with psychiatric symptoms.
Implications and limitations

The current findings have important implications for relationship research. Language is central to the way in which we communicate our thoughts, feelings, and intentions to others. Our findings suggest that language use when describing attachment experiences varies by IWM, which raises several questions for future research. For example, does disorganized adults’ use of distancing language (i.e., more frequent second-person pronouns) when discussing loss communicate their discomfort to others, thus discouraging much-needed exposure to frightening topics and maintaining avoidance? In general, what do these subtle linguistic behaviors communicate to interaction partners—do they influence initial attraction or elicit certain reactions from others? Future research in this area has the potential to reveal exciting insights about the relational implications of micro-behaviors associated with IWMs, which themselves are thought to be the relatively enduring by-products of early relationships (e.g., Bowlby, 1980). Furthermore, findings regarding patterns of language use may also serve as a guidepost to clinicians as they try to more fully understand the verbalized and emotional experiences of survivors of abuse and trauma.

Several limitations of the study design deserve consideration. First, in the current investigation we collapsed two samples into one. Although both were collected using undergraduate students, they were collected at different institutions. The Northeast sample included both sexes while the Western sample only included men. Although both samples derived from studies of adult attachment, stress, and cognition, their procedures varied. For example, the time at which they completed the assessment of affective distress varied. Although we attempted to control for this variation by including sample as a covariate in analyses, the error introduced by this variability in procedures should be considered. Second, this study was correlational, precluding causal inference. Although the theoretical model presumed in this investigation suggests that attachment organizations lead to the development of emotion regulation patterns observable in language, it could also be that individuals’ emotion regulation tendencies result in different types of attachments. Third, this sample was low risk and entirely composed of college students. It remains to be seen whether language on the AAI is associated with AAI classification and psychiatric distress within clinical samples. Despite the fact that research suggests the AAI classification is unrelated to verbal intelligence (Bakermans-Kranenburg & van IJzendoorn, 1993), researchers should evaluate these hypotheses in less well-educated samples. Fourth, the sample size was relatively small and resulted in small numbers for the different insecure groups (including an n of 6 for the preoccupied group), limiting our statistical power and our ability to draw strong conclusions about some classifications. Subsequent research should evaluate these hypotheses using larger and more heterogeneous samples.

Conclusion

This study is the first to examine emotion language during the AAI. We found that emotion word use varies by organized attachment classification. Further, disorganized adults use more frequent second-person pronouns when discussing loss experiences, and more frequent death/dying words throughout the interview. Disorganized participants also have the highest verbal immediacy throughout the interview, which we interpret as a sign of attachment hyperactivation (see Lee et al., 2011), and higher verbal immediacy predicts greater self-reported distress after controlling for attachment classification.

The findings add to a growing literature providing cross-method validation of distinct patterns of emotion regulation for adults of varying attachment organizations on the AAI (e.g., Roisman et al., 2004). They also raise important questions regarding the nature of emotion regulation during relational challenges like the AAI. Do the linguistic strategies observed here function to strengthen or compromise regulatory capacities? If explicitly directed to use fewer second-person pronouns when discussing loss,
would disorganized adults become more distressed by the AAI? It is clear that future research will benefit by examining linguistic behavior as the AAI progresses—for example, do disorganized adults begin the AAI using more verbally immediate language or does their language become more verbally immediate only after answering certain questions that trigger networks involving memories of death and/or abuse?

In summary, our hope is that this study serves as a springboard for researchers interested in understanding the links between attachment and emotion. The intersection of these approaches is a promising area of inquiry and has the potential to generate novel insights into the structure of IWMs and emotion regulation strategies in general.

References


