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The Adult Attachment Interview and Self-Reports of Attachment Style: An Empirical Rapprochement

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Although 10 studies have been published on the empirical overlap of the Adult Attachment Interview (AAI) and measures of self-reported attachment style, results in this literature have been inconsistently interpreted in narrative reviews. This report was designed as a rapprochement of the AAI and attachment style literatures and includes 3 studies. Study 1 (combined $N = 961$) is a meta-analytic review showing that by J. Cohen's (1992) criteria (mean $r = .09$), the association between AAI security and attachment style dimensions is trivial to small. Study 2 ($N = 160$) confirms meta-analytic results with state-of-the-art assessments of attachment security and also examines attachment dimensions in relation to the Big 5 personality traits. Finally, Study 3 is an investigation of 50 engaged couples that shows that developmental and social psychological measures of attachment security predict somewhat distinct—though theoretically anticipated—aspects of functioning in adult relationships.

Keywords: Adult Attachment Interview, self-reported attachment style, meta-analysis, Big Five personality traits, romantic relationships

Bowlby's (1969/1982) attachment theory has been one of the most generative psychological theories of the last 40 years. It is regarded as one of the few remaining grand theories of social development and has become a guiding force in research in social and developmental psychology (Cassidy & Shaver, 1999). Despite having roots in a common theoretical tradition, social and developmental research on adult attachment is conducted in two distinct methodological cultures (see Simpson & Rholes, 1998). One culture, better represented in developmental psychology, is based on the Adult Attachment Interview (AAI), from which an individual's current state of mind regarding childhood experiences with caregivers is inferred from a semistructured interview (Hesse, 1999; Main & Goldwyn, 1998). The other culture, better represented in social and personality psychology, relies on self-reports of attachment-related thoughts and feelings in adult relationships (see Cassidy & Shaver, 1999).

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In the early years of adult attachment research, psychologists assumed that these alternative ways of assessing adult attachment had a lot in common. In the self-report measures used by social psychologists, constructs such as secure, dismissing, and preoccupied attachment styles resembled, at least on the surface, those constructs assessed by developmental psychologists using the AAI. As researchers began to compare alternative ways of assessing individual differences in attachment, however, it became apparent that the measures were not interchangeable, raising practical questions about why they may diverge as well as more controversial questions about which tradition "best" captures the constructs fundamental to attachment theory (see the special issue of *Attachment and Human Development*; Fraley, 2002b).

Indeed, some of the most pressing questions in contemporary attachment research concern the association between these measures and whether they are related to the same kinds of outcomes in adult relationships. Given the interdisciplinary nature of Bowlby's (1969/1982) theory and the burgeoning literatures in each culture, it is crucial to identify how these different measures converge and how they diverge and to reconcile both in a manner that is productive for the broader research enterprise. The objective of this article was to take some essential steps toward addressing these issues.

In Study 1, we report a quantitative review of the AAI–self-report literature in an attempt to establish the empirical overlap between these measures. Such an analysis is necessary because given the variation in empirical findings on the correspondence between the AAI and self-reports, scholars tend to focus on data that are most compatible with their perspective on the debate (Fraley, 2002b). For example, researchers wishing to emphasize the divergence between the AAI and self-reports can easily cite a few studies that have failed to identify statistically significant associations between the measures. Researchers wishing to highlight the convergence of the measures can also cite studies show-

ing their empirical overlap. Perhaps more disconcerting is the fact that scholars reviewing the same data can reach vastly different conclusions about the convergence between adult attachment measures. For example, the findings from one report (Shaver, Belsky, & Brennan, 2000) were interpreted by social psychologists as "robust" (Bartholomew & Moretti, 2002, p. 163), yet characterized by developmental scholars as "small" (Bernier & Dozier, 2002, p.173) and "modest" (Jacobvitz, Curran, & Moller, 2002, p. 208).

One of the challenges in resolving the debate is that the field lacks a good quantitative estimate of the extent to which the AAI and self-report measures of attachment converge. Such an estimate is essential before questions about why they do or do not converge can be meaningfully addressed. Thus, in Study 1, we report a meta-analysis of the bivariate associations between individual differences as assessed by the AAI and self-report measures of attachment style converted to the common metric of Pearson correlation coefficients. We then interpret these findings in light of Cohen's (1992) well-accepted criteria for characterizing effect sizes (trivial: $r < .10$, small: $r = .10$, medium: $r = .24$, and large: $r \geq .37$). In contrast to selective reviews of this literature, we made every attempt to meta-analyze all publications with relevant data. Moreover, we examined both whether attachment style dimensions were associated with the secure versus insecure distinction in the AAI and whether the self-report dimensions differentiated AAI insecure adults (i.e., dismissing vs. preoccupied; unresolved vs. not) in theoretically sensible ways.

Our goals in Studies 2 and 3 were to replicate the meta-analytic findings of Study 1 using state-of-the-art measures of attachment and to examine how these different measures of adult attachment are related to personal and interpersonal processes. Although previous researchers have studied the association between the AAI and self-reports, there is a dearth of research on how these different measures are related to other variables of interest. One of the obstacles to addressing this matter has been the amount of time and expense involved in administering and coding the AAI, in addition to the lack of cross-talk between social and developmental psychologists (but see Bouthillier, Julien, Dube, Belanger, & Hamelin, 2002; Creasey & Ladd, 2005; Simpson, Rholes, Oriña, & Grich, 2002). As a result, relatively little is known about whether these different ways of measuring attachment exhibit similar or distinct patterns of associations with other constructs of interest to social and developmental psychologists.

Should these two kinds of measures be related to the same outcomes? On one hand, it would seem as if they should, given that both measures were developed in traditions inspired by Bowlby's (1969/1982) theory. Indeed, some scholars, while acknowledging that the AAI and self-reports are only modestly related to one another, have argued explicitly that these measures should predict the same kinds of outcomes (e.g., Shaver & Mikulincer, 2002a). On the other hand, it is important to note that scholars in developmental and social psychology have emphasized different aspects of attachment theory in their empirical work. Therefore, their measures are designed to tap different aspects of security that may not have similar correlates. For example, self-report measures of attachment are based on the assumption that although the psychological processes underlying individual differences may operate in ways that are not always accessible to the conscious mind, these processes nonetheless have implications for the conscious beliefs and attributions that people make about themselves and their relationships (see Crowell, Fraley, & Shaver, 1999).[1] Indeed, one of the reasons that social psychologists have focused on self-report measures of attachment is that they place a premium on understanding how individuals appraise, interpret, and understand their experiences in close relationships (e.g., Collins, 1996). In contrast, the coding system for the AAI focuses on whether adults are able to produce coherent narratives about their childhood experiences with caregivers—irrespective of whether they currently evaluate such attachment experiences as positive or negative (Hesse, 1999). The fact that the AAI scoring system emphasizes coherence of mind rather than evaluations, whereas self-report measures of attachment emphasize conscious appraisals and evaluations rather than coherence, suggests that self-report measures of attachment should be good predictors of people's evaluations of the quality of their romantic relationships, whereas the AAI might not be (Bernier & Dozier, 2002).

Another crucial difference between the ways these traditions conceptualize individual differences in attachment is the assumptions made about the conditions under which individual differences are most likely to be revealed in interpersonal behavior. Much of the social-psychological research on attachment is guided by a variant of the classic diathesis–stress model in which working models of attachment are assumed to influence attachment-related behavior primarily under conditions of stress or threat (see Fraley & Shaver, 1997, 1998; Mikulincer, 1998; Simpson & Rholes, 1998). For example, in a study by Simpson, Rholes, and Phillips (1996), attachment-related anxiety predicted suboptimal interactions only for couples who had been randomly assigned to discuss a major area of disagreement rather than for those couples who had been randomly assigned to discuss a minor area of disagreement (cf. Bouthillier et al., 2002). In addition, Campbell, Simpson, Boldry, and Kashy (2005) recently replicated evidence that anxiety is associated with observer ratings of distress and escalation of conflict when long-term dating couples attempt to resolve their most salient area of disagreement. It is also noteworthy that the social cognitive models that have been widely adopted in social psychological research assume that the mental representations that people hold regarding attachment can vary in their accessibility

[1] Consistent with a dual-process perspective on adult attachment, some commentators have speculated that a primary distinction between the AAI and self-reports of attachment style is that the two measures tap variation in security at different levels of accessibility, with self-report assessments reflecting "conscious attachment styles" and the AAI referencing "internalized, often unconscious, working models" (Furman & Flanagan, 1997, p. 183; see also Jacobvitz, Curran, & Moller, 2002; Wilson, Lindsey, & Schooler, 2000). Although this sharp distinction is attractive in part because George, Kaplan, and Main (1985) have claimed that the AAI surprises the unconscious and because self-reports of attachment-related avoidance and anxiety clearly do reflect adults' appraisals of their own insecurity, we believe that it is problematic. First, there is in fact very little clear evidence that the AAI reflects cognitive or emotional processes that are unconscious per se (but see Maier, Bernier, Perkrun, Zimmermann, & Grossmann, 2004). Moreover, studies involving subliminal priming have produced consistent evidence that self-reports of attachment are associated with implicit attachment-related attitudes (see Shaver & Mikulincer, 2002a). We nonetheless regard this area as an important one for further explorations of the distinctions between AAI and self-report attachment dimensions.

and are more likely to guide behavior when highly accessible than when not (e.g., Collins & Read, 1990; Mikulincer, 1998).

AAI researchers have been less focused on attachment-related threat as a condition for the identification of associations between coherence of mind and interpersonal behavior. Indeed, those who have studied the links between adult attachment and romantic relationships using the AAI have routinely relied on marital interaction paradigms that either require couples to discuss both areas of agreement and disagreement in their relationships (e.g., Roisman, Madsen, Hennighausen, Sroufe, & Collins, 2001) or any ongoing, salient area of disagreement (e.g., Babcock, Jacobson, Gottman, & Yerington, 2000; Paley, Cox, Burchinal, & Payne, 1999). The use of such paradigms brings into sharp focus an assumption of such work—that the underlying quality of adults' romantic relationships is reflected in whether individuals are able to successfully negotiate normatively mild marital stressors. To be sure, some AAI researchers have recently focused their attention on couple behavior that is attachment specific (Crowell et al., 2002; Wampler, Riggs, & Kimball, 2004). However, given the relatively mild stressors used in this research, it cannot be concluded that AAI security is primarily reflected in interpersonal behavior under conditions of high attachment-related stress (see Kobak, 2002). Indeed, recent data showing associations between AAI security and observed collaboration among same-sex strangers (Roisman, in press) underscore the possibility that, rather than being elicited only by "high-stakes" attachment threats, AAI security may instead be a general interpersonal asset (i.e., one that provides a foundation for effective caregiving and collaboration in interpersonal contexts).

A final issue when considering the distinction between these methods and whether they should predict the same outcomes is that scholars in each tradition have different views on how these measures should be related to basic dispositional variables, such as the Big Five personality traits. AAI researchers have historically focused on showing the discriminant validity of the AAI categories against dispositional variables, such as narrative style and intelligence (e.g., Bakermans-Kranenburg & van IJzendoorn, 1993; Crowell et al., 1996; De Haas, Bakermans-Kranenburg, & van IJzendoorn, 1994; Sagi et al., 1994). Given that the AAI categories tend to be trivially associated with these dispositional variables, some have assumed that AAI constructs, such as coherence of mind, might be largely distinct from basic personality traits. Social psychological researchers, in contrast, have focused on highlighting the broad network of constructs that are related to attachment styles. This suggests that although attachment styles and basic dispositional variables such as the Big Five personality traits are distinguishable constructs, they should be associated with one another (see Noftle & Shaver, in press). Indeed, social and personality psychologists who study attachment have largely capitalized on the notion that attachment theory is a theory of personality development and dynamics; as such, the lack of associations between these measures would pose a number of problems for the social psychological framework.

The objectives of Studies 2 and 3 were to investigate the associations between the AAI, self-report measures of attachment, and a variety of personal and interpersonal outcomes. In Study 2, we examined individual differences in attachment security as assessed by the AAI and self-report measures in relation to one another and the Big Five personality traits. As we explain in more depth later, our goal was not to determine whether one kind of attachment measure was more highly associated with the Big Five traits than the other. (Indeed, one should expect higher associations between self-report measures of attachment and the Big Five because of shared method variance alone.) Instead, our goal was to examine whether the AAI is associated with Big Five personality dimensions and, if so, whether it is associated with the same traits as self-report measures of attachment style. In Study 3, we explored AAI and self-report attachment dimensions in relation to engaged couples' evaluations of their relationships and interactions with their romantic partners. Specifically, couples were asked both to evaluate the overall emotional tone of their relationships and to discuss areas of agreement and disagreement. The use of multiple methods allowed us to determine whether the AAI and self-report measures of attachment predict the same kinds of outcomes in close relationships and to study some of the nuanced ways in which they may differ. It is our hope that, taken together, these studies will advance our understanding of how different measures of adult attachment do and do not relate to one another and, more important, how those measures are situated within the broader context of research in personality and interpersonal relationships.

Study 1

Study 1 was designed as a comprehensive meta-analytic review of the literature on the convergence between individual differences in security and insecurity as assessed by the AAI and self-report measures of attachment style. Two distinct empirical issues were addressed. First, we sought to establish the relations between these measures by calculating bivariate associations between AAI security versus insecurity and all attachment style dimensions or categories presented in each publication and averaging these effect sizes across studies. Next, we examined whether self-reports of attachment distinguished between the different forms of insecurity identified by the AAI (e.g., dismissing vs. preoccupied state of mind; unresolved vs. not). As will be explained in more depth below, this latter analysis was guided by the theoretical expectation that even if AAI security is not associated with scores on self-report attachment dimensions, it is possible nonetheless that so-called hyperactivating (i.e., preoccupation and anxiety) and deactivating (i.e., dismissing and avoidance) insecure attachment strategies might covary.

Method

To identify data sources for this meta-analysis, we searched PsycINFO for relevant studies using the terms *attachment style, attachment security, attachment insecurity,* and *Adult Attachment Interview*. This process, in addition to a supplementary search on the same terms using the search engine Google.com, resulted in the identification of 10 empirical studies containing data on the convergence of the AAI with social psychological measures of self-reported attachment style (Bouthillier et al., 2002; Creasey & Ladd, 2005; Crowell, Treboux, & Waters, 1999; De Haas et al., 1994; Dykas, Woodhouse, Cassidy, & Waters, in press; Holtzworth-Munroe, Stuart, & Hutchinson, 1997; Shaver et al., 2000; Simpson et al., 2002; Stanojević, 2004; Treboux, Crowell, &

Waters, 2004).[2] Note that a subsample analysis of one dataset (Treboux et al., 2004) was presented in Waters, Crowell, Elliott, Corcoran, and Treboux (2002). We opted to include results drawn from the full sample (i.e., Treboux et al., 2004) for this meta-analysis.

In most of these studies, individuals were classified on the basis of interview transcripts into one of three primary AAI categories: (a) secure–autonomous, for individuals who provide coherent (i.e., believable and reasonably objective) accounts of their childhood experiences, whether described as supportive or malevolent in nature, (b) dismissing, for adults who defensively distance themselves from the emotional content of the interview by normalizing harsh early memories, for example, or by idealizing one or both caregivers, and (c) preoccupied, for individuals caught up angrily or passively in their prior relationship experiences (Main & Goldwyn, 1998). For a subset of studies, coders also categorized secure, dismissing, and preoccupied individuals as unresolved if their discourse became disorganized while talking about loss or abuse experiences.

In addition, single or multiple self-report measures of attachment style were administered in these studies. Although there is quite a bit of variability in the attachment style self-reports used in this literature, virtually all of these measures are based on the three- and four-category systems developed by Hazan and Shaver (1987) and Bartholomew and Horowitz (1991), respectively. More recent studies have relied on the two-dimensional model of individual differences in adult attachment that has become popular in the self-report literature (Brennan, Clark, & Shaver, 1998; Fraley & Shaver, 2000). This model is based on the assumption that variation in attachment-related anxiety (i.e., the extent to which people are worried about the availability and responsiveness of their significant others) and avoidance (i.e., the extent to which people are comfortable relying on their significant others for attachment-related functions) is crucial to organizing individual differences in adult attachment patterns.

We excluded all unpublished studies in this area, including dissertations (e.g., Grich, 2002), from this study in an attempt to maximize the quality of meta-analyzed data. We reasoned that this strategy would also create a more conservative threshold for concluding that the empirical overlap between the AAI and self-reported attachment style measures is trivial because this approach had the potential to bias our findings toward larger effects due to the "file drawer" problem (Rosenthal, 1979). Additionally, in an attempt to focus specifically on social psychological measures of attachment style, data from research examining associations between the AAI and self-report attachment questionnaires specific to experiences with primary caregivers (e.g., the Parental Bonding Instrument) were not included (e.g., Manassis, Owens, Adam, West, & Sheldon-Keller, 1999; Ricks, 1985). Similarly, studies comparing self-report measures of attachment style with attachment interviews other than the AAI were excluded (e.g., Davila & Cobb, 2003).

To facilitate the comparison of results across publications, we first converted all effects presented in each article to Pearson correlation coefficients, often through reanalysis of raw data provided in the primary sources and, in one case in which relevant statistics and raw data were not provided in the publication, through reanalysis of an original dataset provided by the authors (Bouthillier et al., 2002). One study claiming modest overlap between the AAI and self-reported attachment style measures did not provide enough data to compute an effect size (Stanojević, 2004). Because this dataset was not available for secondary analysis (T. S. Stanojević, personal communication, September 10, 2005) its results could not be included in this meta-analysis.

In our primary analysis, we examined the degree to which AAI security (vs. insecurity) was correlated with self-reported attachment style dimensions. For each study, we calculated the lowest, highest, and average effects that were reported (see Table 1). These effects were then averaged, weighting each effect by the sample size of the study. Note that prior to deriving correlations for this first analysis, we combined AAI insecure groups as necessary (unresolved/secure cases were treated as insecure in this primary analysis, although effects reported are virtually identical if such participants are viewed instead as secure or omitted altogether). In calculating the effects in Table 1, we assumed that AAI secure individuals (in contrast to AAI insecure individuals) could be expected to self-report higher levels of security and less insecurity (e.g., avoidance and anxiety) in their close relationships.

In a follow-up analysis, we examined whether (as might be expected) self-reported avoidance is specifically associated with a dismissing (vs. preoccupied) AAI state of mind and whether self-reported anxiety is specifically associated with a preoccupied (vs. dismissing) AAI state of mind (see Table 2). For studies in which categorical AAI data were presented, we examined only the subset of preoccupied and dismissing (i.e., insecure) participants in this secondary analysis. (For studies in which variation underlying the dismissing/preoccupied distinction was operationalized continuously [i.e., Simpson et al., 2002], we used the full sample.) When self-reported avoidance and anxiety were operationalized categorically, analyses were based on dummy-coded variables (e.g., anxious/resistant vs. not anxious/resistant; avoidant vs. not avoidant). Three studies (Dykas et al., in press; Shaver et al., 2000; Waters et al., 2002) did not provide data relevant to addressing the issue of whether self-reports of avoidance and anxiety are associated with dismissing versus preoccupied AAI states of mind. Finally, in Table 3 we present data from a subset of four studies (i.e., Creasey & Ladd, 2005; Crowell, Treboux, & Waters, 1999; Holtzworth-Munroe et al., 1997; Shaver et al., 2000) in which data on AAI unresolved states of mind were examined in relation to self-reports of attachment style.

To facilitate interpretation in Tables 1 and 2, we coded effects such that positive correlations reflected associations in the direction expected on the basis of theory. For example, a correlation of −.15 between AAI security and self-reported avoidance (a theory-consistent effect) would be coded as +.15. Negative values reflect counterintuitive effects. Finally, note that (a) to the extent that correlated attachment style dimensions were used in analyses within any particular study, the average effect should be regarded as a biased estimate (Rosenthal & Rubin, 1986), and (b) in three studies in which AAI security was not examined per se (Dykas, Woodhouse, Cassidy, & Waters, in press; Shaver et al., 2000; Waters et al., 2002), we focused on bivariate associations between

[2] After this article was accepted for publication, another report (Riggs et al., 2007) was published with data relevant to this meta-analysis. This new study, which focused on 80 inpatient survivors of trauma, reached conclusions similar to those presented here.

Table 1
Study 1: Correlations Between Adult Attachment Interview (AAI) Secure Versus Insecure States of Mind and Self-Report Attachment Style Dimensions by Study

Studies (in order of publication)	AAI coding	Attachment style measure	*N*	Effect size		
				Low	Average	High
De Haas, Bakermans-Kranenburg, & van IJzendorn (1994)	M & G class[a]	H & S scales	83	−.04	.00	.04
Holtzworth-Munroe, Stuart, & Hutchinson (1997)	M & G class	RQ class	56	.08	.08	.08
Crowell, Treboux, & Waters (1999)	M & G class	RQ class	52	.25	.25	.25
Shaver, Belsky, & Brennan (2000)	M & G scales	AAS_1	135	.19	.26	.33
Simpson, Rholes, Oriña, & Grich (2002)[b]						
Men	Ad hoc scales	AAQ	81	.09	.13	.16
Women	Ad hoc scales	AAQ	85	−.08	−.05	−.02
Bouthillier, Julien, Dubé, Bélanger, & Hamelin (2002)[b]						
Men	M & G class	AAQ/AAS_2	40	.07	.16	.21
Women	M & G class	AAQ/AAS_2	40	−.11	.06	.27
Treboux, Crowell, & Waters (2004)	M & G scales	ECR	215	.03	.13	.23
Creasey & Ladd (2005)	M & G class	RSQ Avoid/Anx	130	−.15	−.04	.08
Dykas, Woodhouse, Cassidy, & Waters (in press)	M & G scales	ECR	44	−.07	.02	.11
Mean effect size weighted by sample size of each study				.02	.09[c]	.17

Note. Positive coefficients are effects in the predicted direction; negative coefficients are counterintuitive effects. M & G class = Main and Goldwyn (1998) classifications; H & S scales = Hazan and Shaver (1987) scales; RQ class = Relationship Questionnaire classifications; M & G scales = Main and Goldwyn (1998) inferred life experience and state of mind scales (*coherence of mind* is used in analyses above); AAS_1 = Collins and Read's (1990) Adult Attachment Scale; Ad hoc scales = ad hoc Adult Attachment Interview (AAI) security/activation scales based on the Main and Goldwyn (1998) classification system; AAQ = Simpson, Rholes, & Phillips (1996) Adult Attachment Questionnaire; AAS_2 = Hazan & Shaver (1987) Adult Attachment Styles (three-way categories); ECR = Brennan, Clark, & Shaver's (1998) Experiences in Close Relationships Questionnaire; RSQ Avoid/Anx = factor analytically derived anxiety and avoidance dimensions based on Griffin & Bartholomew's (1994) Relationship Scales Questionnaire.
[a] This study also reported data from a small subset of AAI inferred life experience and state of mind scales, including coherence of transcript. With coherence of transcript, the smallest, average, and highest effects on H & S scales in this study were .00, .05, and .12, respectively. The substitution of these values in Table 1, however, would only shift the meta-analytic high effect size value to .18. [b] To the extent possible, we report data from men and women in dyadic studies separately. [c] The mean meta-analytic effect remains .09 with the inclusion of AAI Q-Set data from Studies 2 and 3 from this report.

the continuous AAI scale coherence of mind (theoretically and empirically the single best indicator of AAI security) and attachment style dimensions.

Results and Discussion

As indicated in Table 1, the meta-analytic association between AAI security versus insecurity and self-reported attachment was equivalent to an $r = .09$ (range = .02–.17), suggesting trivial to small empirical overlap between these measures by Cohen's (1992) criteria. Similarly, self-reported anxiety did not discriminate between AAI preoccupied and dismissing states of mind ($r = .06$, a trivial effect in the predicted direction). In contrast, self-reported avoidance was associated with AAI dismissing (vs. preoccupied) states of mind ($r = .15$, a small effect). The overall sample size for analyses focused on variation among AAI insecure participants was modest, however, and sample-specific effects were heterogeneous (see Table 2). Finally, Table 3 describes associations between AAI unresolved status (classifications or rating scales) and self-reports of attachment style. All effects were trivial to small, although unresolved states of mind appear to be somewhat more strongly associated with self-reported anxiety ($r = .07$), fearfulness ($r = .07$), and security ($r = -.13$) than with avoidance ($r = .00$).

Because several studies were composed of distinguishable samples (or subsamples) of male (Bouthillier et al., 2002; Holtzworth-Munroe et al., 1997; Simpson et al., 2002) and female (Bouthillier et al., 2002; Crowell, Treboux, & Waters, 1999; De Haas et al., 1994; Shaver et al., 2000; Simpson et al., 2002) participants, we examined whether effects described above differed by sex. Effects reported in Tables 1 (AAI security vs. insecurity) and 3 (AAI unresolved status) did not differ significantly by sex (all *r-to-z* comparisons of male vs. female effect sizes were nonsignificant, $p > .10$). Regarding the results of Table 2, we found that AAI dismissing (vs. preoccupied) adults were more likely to report higher levels of avoidance only if they were male (male $r = .26$, $n = 120$; female $r = -.01$, $n = 119$; *r-to-z* $p < .05$). In addition, dismissing (vs. preoccupied) adults reported less anxiety if they were male ($r = -.17$, $n = 100$, a theory-consistent small effect) but more anxiety if they were female ($r = .12$, $n = 156$; *r-to-z* $p < .05$).

Study 2

Study 1 highlights two limitations of the literature on the convergence of the AAI and self-reports of attachment style: (a) several self-report attachment style measures have been used in studies examining the AAI–self-report issue, many of which are now viewed as psychometrically dated (see Tables 1–3 for details), and (b) with only a few exceptions (Dykas et al., in press; Shaver et al., 2000; Simpson et al, 2002; Treboux et al., 2004), variation in AAI security and insecurity has been operationalized categorically in these studies, an approach that can seriously compromise predictive validity (Fraley & Waller, 1998; MacCallum, Zhang, Preacher, & Rucker, 2002). To address these issues, in Study 2, we used a state-of-the-art model for the assessment of self-reported

Table 2
Study 1: Correlations Between Adult Attachment Interview (AAI) Dismissing Versus Preoccupied States of Mind and Self-Reported Avoidance/Anxiety by Study

Studies (in order of publication)	AAI coding	Attachment style measure	*N*	Reported dismissing avoidance	Reported anxiety/ preoccupation
De Haas, Bakermans-Kranenburg, & van IJzendoorn (1994)	M & G class	H & S scales[a]	37	—	.16
Holtzworth-Munroe, Stuart, & Hutchinson (1997)	M & G class	RQ class	20	.32	—[b]
Crowell, Treboux, & Waters (1999)	M & G class	RQ class	18	.09	.50
Simpson, Rholes, Oriña, & Grich (2002)[c]					
Men	Ad hoc scales	AAQ	81	.22	−.16
Women	Ad hoc scales	AAQ	85	−.06	.00
Bouthillier, Julien, Dubé, Bélanger, & Hamelin (2002)[c]					
Men	M & G class	AAQ/AAS[a]	19	.36	−.23[d]
Women	M & G class	AAQ/AAS[a]	16	.16	.25[d]
Creasey & Ladd (2005)	M & G class	RSQ Avoid/Anx	41	.27	.43
Mean effect size weighted by sample size of each study				.15	.06

Note. Positive coefficients are effects in the predicted direction; negative coefficients are counterintuitive effects. Unless otherwise noted, dashes indicate no relevant data were presented in the study. M & G class = Main and Goldwyn (1998) classifications; H & S scales = Hazan and Shaver (1987) scales; RQ class = Relationship Questionnaire classifications; Ad hoc scales = ad hoc Adult Attachment Interview (AAI) activation scales based on the Main and Goldwyn (1998) classification system; AAQ = Simpson, Rholes, & Phillips (1996) Adult Attachment Questionnaire; AAS = Hazan & Shaver (1987) Adult Attachment Styles (three-way categories); RSQ Avoid/Anx = factor analytically derived anxiety and avoidance dimensions based on Griffin & Bartholomew's (1994) Relationship Scales Questionnaire.
[a] Because there is now consensus that avoidance in the original Hazan and Shaver (1987) three-category/dimensions system is best conceptualized as fearful avoidance rather than as dismissing avoidance (Shaver & Mikulincer, 2002b), measures of avoidance operationalized based on the Hazan and Shaver (1987) system are omitted from Table 2. The inclusion of these effects, however, would not increase or decrease the meta-analytic effect reported. [b] No effect could be calculated because no participants were preoccupied on the RQ in this study. [c] To the extent possible, data from men and women in dyadic studies are reported separately. [d] These effects are the average obtained from analyses of AAQ anxiety and AAS ambivalence. Nonetheless, meta-analytic results were identical only if AAQ or AAS effects are presented.

attachment style dimensions and examined the ways in which those dimensions are associated with the key dimensions underlying the AAI (including Main and Goldwyn's [1998] state of mind and inferred life experiences scales) and more recent refinements of that system (i.e., Kobak's [1993] security vs. insecurity and hyperactivating vs. deactivating Q-sort dimensions). Study 2 also addresses the issue of conceptual and empirical overlap of AAI and self-report attachment dimensions with Big Five personality traits, one of the best-validated models for characterizing variation in personality.

As suggested above, an important issue confronted by personality and social psychologists in studying adult attachment is the number of different self-report assessments of attachment style commonly used in the literature (see Brennan, Clark, & Shaver,

Table 3
Study 1: Correlations Between Adult Attachment Interview (AAI) Unresolved States of Mind and Self-Reported Attachment Dimensions by Study

Studies (in order of publication)	AAI coding	Attachment style measure	*N*	Dismissing avoidance	Reported anxiety/ preoccupation	Fearful	Security
Holtzworth-Munroe, Stuart, & Hutchinson (1997)	M & G class	RQ class	56	−.02	—[a]	.22	−.19
Crowell, Treboux, & Waters (1999)	M & G class	RQ class	52	.01	.11	−.09	−.06
Shaver, Belsky, & Brennan (2000)	M & G scales	AAS	135	.09[b]	.09[b]	—	—
Creasey & Ladd (2005)	M & G class	RSQ Avoid/Anx	130	−.10	.04	—	—
Mean effect size weighted by sample size of each study				−.00	.07	.07	−.13

Note. Positive coefficients indicate that the self-report dimension is positively associated with AAI unresolved status; negative coefficients indicate that the self-report dimension is negatively associated with AAI unresolved status. Unless otherwise noted, dashes indicate no relevant data were presented in the study. M & G class = Main and Goldwyn (1998) classifications; RQ class = Relationship Questionnaire classifications; M & G scales = Main and Goldwyn (1998) unresolved loss and abuse scales (coherence of mind is used in analyses above); ASS = Collins and Read's (1990) Adult Attachment Scale; RSQ Avoid/Anx = factor analytically derived anxiety and avoidance dimensions based on Griffin & Bartholomew's (1994) Relationship Scales Questionnaire.
[a] No effect could be calculated as no participants were preoccupied on the RQ in this study. [b] Effects of AAI unresolved loss and unresolved trauma scales on self-report dimensions were averaged in these analyses. In addition, results obtained for the AAS close and depend scales were averaged and reverse-coded to represent self-reported avoidance.

1998, for a review). To examine empirically the best approach for operationalizing self-report attachment style dimensions, in our research we have routinely administered Griffin and Bartholomew's (1994) Relationship Scales Questionnaire (RSQ), an omnibus measure containing all items from several commonly used adult attachment style assessments. Following the lead of Kurdek (2002), we began by identifying the most psychometrically sound approach for operationalizing self-report dimensions from the RSQ using confirmatory factor analysis (see Study 2 *Method*).

As Shaver et al. (2000) point out, a second challenge for work in this area is that the AAI classification system (Main & Goldwyn, 1998) might by its very nature work to attenuate findings in the literature focused on convergence with self-reported attachment style because important information can be lost when dimensionalized ratings are consolidated into discrete categories. In Study 2, we dealt with this issue in two ways. First, AAIs were coded in a dimensional fashion using the well-validated AAI Q-set (Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993), an approach that we view as superior to categorical coding in light of new taxometric evidence for the dimensionality of AAI-related variation (Roisman, Fraley, & Belsky, in press). More specifically, Kobak et al.'s (1993) system was used to score adults with respect to two primary AAI state of mind dimensions: (a) security versus insecurity and (b) deactivation versus hyperactivation. The security versus insecurity dimension is used to capture the coherence of a person's discourse, as reflected in an adult's ability to freely and flexibly evaluate his or her childhood experiences. In contrast, the deactivation versus hyperactivation dimension is used to represent the degree to which participants use deactivating strategies (such as defensively distancing oneself from the emotional content of the interview either by normalizing harsh early memories or by idealizing one's caregivers) or hyperactivating strategies (as marked by an inability to discuss childhood experiences without becoming caught up in these memories). In Main and Goldwyn's (1998) original classification system, deactivation maps conceptually onto a dismissing state of mind and hyperactivation onto a preoccupied state of mind regarding earlier attachment experiences. We were able to examine in Study 2 whether self-reported attachment style dimensions were associated with AAI security versus insecurity as well as whether these individual differences discriminated hyperactivating (prototypically preoccupied) from deactivating (prototypically dismissing) adults.[3]

For a subset of participants, we also examined the complete set of rating scales used by trained coders to assign adults into AAI classifications in relation to self-reported avoidance and anxiety (De Haas et al, 1994; Shaver et al., 2000). Two kinds of scales are quantified by AAI coders. The first reflects participants' inferred experiences with caregivers during childhood and includes assessments of maternal and paternal love, rejection, neglect, pressure to achieve, and role reversal. Although such information is conceptually orthogonal to the assessment of security versus insecurity in the AAI, several investigators have made use of a subset of these scales to distinguish between secure individuals with putatively negative early relationship experiences with at least one parent (i.e., earned secures) and secure adults with largely positive experiences with their caregivers (i.e., continuous secures; Pearson, Cohn, Cowan, & Cowan, 1994; Roisman, Padrón, Sroufe, & Egeland, 2002; Roisman, Fortuna, & Holland, 2006).

The second set of ratings made by AAI coders reflects the coherence of participants' discourse regarding their childhood attachment experiences (i.e., their state of mind). In Main and Goldwyn's (1998) coding system, 9-point scales are used to rate the participant's tendency to idealize or normalize childhood experiences with caregivers (mother idealization and father idealization), insistence on being unable to recall events from childhood (lack of memory), the extent to which one or both caregivers are derogated (derogation), the expression of unreasonable fears that their child may die (fear of loss), current active resentment toward parents (mother anger and father anger), and passive or rambling attachment-related discourse (passivity, which includes the use of overtly vague expressions, failure to complete sentences, departure into irrelevant topics).

These state-of-mind scales are in turn used to assist the coder in classifying participants into one of the two major insecure categories. Main and Goldwyn (1998) contend that a dismissing state of mind is reflected in any combination of high scores on scales that tap a participant's tendency to idealize parents, derogate them, show failures of memory, or fear the loss of their child. Preoccupation is identified through signs of anger or passivity. Security, in contrast, is defined not only by the relative absence of high scores on these indicators but by clear signs that an adult is able to explore his or her thoughts and feelings about childhood experiences without becoming angrily or passively caught up in discussing them. By definition, such an ability to freely evaluate one's experiences is reflected in the overall coherence of mind and coherence of transcript scales. Adults who are able to flexibly modify their current outlook on their early life experiences during the interview receive high scores on metacognitive monitoring, another indicator of security. Note that participants receive a primary unresolved classification (irrespective of whether they are classified as secure, dismissing, or preoccupied) if they score at or above the midpoint on either the Unresolved Loss or Unresolved Abuse Scales, which reflect the degree to which an individual's discourse becomes disorganized while discussing loss or abuse experiences, respectively.

As described in the introduction, we also examined both AAI and self-report attachment style dimensions in relation to the Big Five traits. We know of no prior study that has examined correlations between AAI dimensions and the Big Five traits (but see De Haas et al., 1994, for AAI-temperament analyses). In contrast, a number of studies have clearly shown that self-report attachment style measures and the Big Five are correlated in theoretically sensible ways. In particular, a recent review of this literature shows consistent associations between attachment-related anxiety and the Big Five trait of neuroticism; in contrast, attachment-related avoidance has been shown to be most strongly associated with extroversion and agreeableness (negatively; see Table 1 in Noftle & Shaver, in press).

[3] More recently, two additional AAI Q-Set prototypes (dismissing, preoccupied) have come into use in research on the AAI (e.g., Roisman, Tsai, & Chiang, 2004). These dimensions involve a 45° rotation of the security/insecurity and deactivation/hyperactivation axes. However, because we obtained identical results for Studies 2 and 3 with these prototypes, we do not include data relevant to them in this report.

One of our goals in this study was to determine whether the AAI and self-reports of attachment style have similar or divergent patterns of associations with the Big Five personality traits. Because the Big Five traits have come to play a central role in the study of personality over the past 20 years, it seems essential to determine how alternative measures are situated within the Big Five framework. Nonetheless, a few caveats are in order: First, we did not address this issue because we believe that attachment-related constructs are redundant with the Big Five. Indeed, with respect to self-report measures, there is now a large body of work showing that, although attachment styles are related to basic personality traits in ways that are compatible with intuitions, they are not redundant constructs. In addition, attachment styles predict a variety of affective and interpersonal outcomes even when basic personality traits are assessed and statistically controlled (Noftle & Shaver, in press). Second, we are not seeking to establish which kind of attachment measure is more strongly associated with the Big Five. Clearly, self-report measures of attachment should correlate more strongly with self-report measures of personality traits because of shared method variance. Our objective was to determine whether the two kinds of attachment measures correlate with the same kinds of personality traits or whether they are related to distinct personality profiles.

Method

Participants

Toward the goal of integrating the developmental and social psychological literatures on adult attachment, we also administer self-report measures of attachment style in all of our studies of the AAI. The current analysis is based on all such data collected on college populations to date in our laboratory,[4] combining AAI and self-report attachment-style data from two sources: (a) a published study focused on 60 college students (Roisman, Tsai, & Chiang, 2004) and (b) new data on a group of 100 undergraduates seen in our laboratory as part of a study of stranger interactions (Roisman, in press). Thus, the full sample for this analysis was 160 participants (51% female). Note that although the Q-sort ratings were available for all participants, AAI scale ratings drawn from Main and Goldwyn's (1998) classification coding system were available only for the 100 undergraduates from the Roisman (in press) study.

The two studies aggregated for this analysis involved the recruitment of participants between 18 and 30 years old from two large midwestern universities (combined age $M = 19.9$ years, $SD = 2.5$, range = 18–30) and included ethnically diverse samples (the aggregate sample was 61% White). Within a week prior to visiting our laboratory, all participants completed a packet of self-report measures, including the RSQ and Costa and McCrae's (1992) NEO Five-Factor Inventory (NEO–FFI). Upon arriving at the laboratory, participants were administered the AAI by research assistants trained by the first author, who is a trained and reliable AAI coder. Participants received either a $20 honorarium or course credit for participating in these studies.

Measures

The AAI Q-Set. The Adult Attachment Interview Q-Set (AAI Q-Set; Kobak, 1993) consists of 100 descriptive cards that are sorted into a forced normal distribution across nine piles from least to most characteristic. Eighty-one percent (130/160) of the AAIs from this study were double-sorted, and reliability of .6 or greater (Spearman–Brown formula) was achieved for 80% of these transcripts. A third coder rated transcripts for which initial coders were discrepant, and the most highly correlated sorts were ultimately averaged to increase reliability (reliabilities of composited sorts ranged from .60 to .93, $M = .78$).

In the final step of data reduction, Pearson correlations were computed between each of the composited sorts (completed by research assistants) and both a prototypic secure/insecure and a prototypic deactivation/hyperactivation sort developed by Kobak and his colleagues (see Kobak et al., 1993, for details). Cards for prototypically secure (in contrast to insecure) individuals include phrases such as "responds in a clear, well-organized fashion" and "is credible and easy to believe." Cards for prototypically deactivating (in contrast to hyperactivating) individuals include phrases such as "subject persistently does not remember" and "provides only minimal responses." On the basis of this analysis, participants were assigned continuous scores ranging from −1.00 to 1.00 on each construct, with higher scores indicating greater resemblance to the prototypically secure (vs. insecure) and deactivating (vs. hyperactivating) individual, respectively. Note that a negative correlation with the deactivation/hyperactivation dimension indicates that a given variable is associated with a hyperactivating (vs. deactivating) state of mind regarding attachment. In contrast, a positive correlation with the deactivation/hyperactivation dimensions indicates that a given variable is associated with a deactivating (vs. hyperactivating) state of mind regarding attachment. As anticipated given that most insecure adults are dismissing, the security/insecurity and deactivation/hyperactivation dimensions were strongly negatively correlated $r = -.68$, $p < .001$. The range of scores for security was −.67 to .86 ($M = .28$, $SD = .49$) and for deactivation −.45 to .63 ($M = .03$, $SD = .26$).

AAI Scales. According to established protocol, AAIs were transcribed verbatim, and all personally identifying information was removed before transcripts were rated by judges trained in AAI coding through the laboratory of Mary Main. As part of the AAI classification and coding system (Main & Goldwyn, 1998), two trained coders characterized the narrative coherence of each AAI transcript from the ($n = 100$) undergraduate subsample along a set of 9-point attachment state of mind rating scales (i.e., mother and father idealization, mother and father anger, mother and father derogation, overall derogation, insistence on lack of memory, passivity of speech, metacognitive monitoring, fear of loss, unresolved loss, unresolved trauma, coherence of transcript, and coherence of mind). In addition to rating participants' states of mind with respect to attachment, AAI raters also provided an overall depiction of participants' experiences with their primary caregivers in childhood using a set of 10 inferred experience scales. These scales included mother and father love, rejection, neglect, role reversal, and pressure to achieve.

[4] Data from Roisman, Fortuna, & Holland (2006) were excluded from Study 2 because most undergraduate participants in this study ($n = 68$ of 100 total) were part of a longitudinal follow-up of participants in Roisman (in press).

Because subscales are viewed only as guides for making a categorical judgment and are rarely presented in articles, AAI coders do not receive reliability testing at the level of the ratings. In fact, in one of the few articles to present AAI scale data (Shaver et al., 2000), reliability was not ascertained because a single coder completed all ratings. Nonetheless, in this study intraclass correlations (ICCs) for the AAI inferred life experience (range = .66–.91, $M = .77$) and the primary state of mind scales of mother and father idealization, mother derogation, insistence on lack of memory, passivity, unresolved loss, unresolved abuse, coherence of transcript, and coherence of mind (range = .60–.92, $M = .70$) were adequate. Interrater reliabilities were not adequate (ICCs < .60), however, for several extremely low base rate manifestations of preoccupation (i.e., mother and father anger), dismissing states of mind (i.e., father derogation, highest derogation, and fear of loss), and security (i.e., meta-cognitive monitoring). Because all discrepancies were resolved through consensus by trained AAI coders, we present data from all AAI subscales. Nevertheless, it is important to remember that analyses pertinent to mother and father anger, father derogation, overall derogation, fear of loss, and meta-cognitive monitoring are based on constructs for which coders were unable to achieve adequate levels of interrater reliability.

RSQ. Within a week prior to arriving at the laboratory, participants completed Griffin and Bartholomew's (1994) RSQ with respect to their experiences in close relationships (see Table 4 for RSQ items). An omnibus assessment of adult attachment, the RSQ contains items used to operationalize several measurement models for assessing self-reported adult attachment dimensions, including schemes proposed by Hazan and Shaver (1987; Model 1, secure items: 10, 13, 15, 23, 30; avoidant items: 1, 12, 24, 29; anxious–ambivalent items: 4, 11, 18, 21, 25), Collins (1996), as a revision to Collins and Read (1990; Model 2, dependency items: 1, 7, 10, 12, 17, 27; anxiety items: 4, 11, 18, 21, 23, 25; closeness items: 13, 15, 20, 24, 29, 30); Simpson, Rholes, and Nelligan (1992; Model 3A, avoidance items: 10, 12, 13, 15, 20, 24, 29, 30; anxiety items: 11, 18, 21, 23, 25); Feeney and Hohaus (2001; Model 3B, avoidance items: 1, 2, 3, 4, 6, 8, 10, 14, 26, 30; anxiety items: 5, 7, 9, 11, 12, 13, 16, 17, 18, 21, 23, 25, 28); Fraley and Bonanno (2004; Model 3C, avoidance items: 1, 2, 3, 6, 8, 10, 12, 13, 14, 15, 19, 20, 22, 24, 26, 30; anxiety items: 7, 9, 11, 16, 17, 21, 23, 27, 28); Creasey and Ladd (2005; Model 3D, avoidance items: 2, 3, 4, 8, 10, 14, 29, 30; anxiety items: 5, 9, 11, 12, 16, 17, 18, 21, 23, 25, 28); and Griffin and Bartholomew (1994; Model 4, secure items: 3, 9, 10, 15, 28; fearful items:1, 5, 12, 24; preoccupied items: 6, 8, 16, 25; dismissing items: 2, 6, 19, 26; item 6 is expected to load on two factors). The Simpson et al. (1992), Feeney and Hohaus (2001), Fraley and Bonanno (2004), and Creasey and Ladd (2005) models are labeled 3A, 3B, 3C, and 3D, respectively, because they are different operationalizations of the same underling model positing two attachment-related dimensions: avoidance and anxiety (i.e., Brennan et al., 1998). Note also that the Fraley and Bonanno (2004) model is one that makes use of items inspired by the dimensional structure of the Experiences in Close Relationships—Revised (ECR–R) measure, a widely used assessment of attachment-related avoidance and anxiety (Fraley, Waller, & Brennan, 2000).

As described in Kurdek (2002), prior to conducting any other analyses, we subjected the raw data from Studies 2 and 3 (combined $N = 260$) to a set of confirmatory factor analyses (CFAs) using LISREL (Version 8.7, Scientific Software International, Lincolnwood, IL) to test the plausibility of each of the models described above (reported in Table 5). More specifically, we applied Hu and Bentler's (1998) criteria for interpreting fit indices, whereby a good fit of the data to the models is indicated when the standardized root-mean-square residual is less than .05 and the comparative fit index is close to .95. Consistent with analyses by Kurdek (2002), only Model 3A (Simpson et al., 1992), which results in assessments of avoidance and anxiety, yielded a marginally acceptable fit to the data (see Table 4). As such, this method of operationalizing self-reported attachment style dimensions was used in Studies 2 and 3. For Study 2, the internal consistencies of unit-weighted avoidance and anxiety dimensions were acceptable for the full sample (avoidance $\alpha = .85$, anxiety $\alpha = .81$). In the Study 2 sample ($N = 160$), avoidance and anxiety were correlated, $r = .44$, $p < .001$. The scores for avoidance ranged from 1.0 to 4.5 ($M = 2.5$, $SD = .74$) and for anxiety from 1.0 to 4.6 ($M = 2.1$, $SD = .77$)

Table 4
Items From Griffin and Bartholomew's (1994) Relationship Scales Questionnaire

Item no.	Item
1	I find it difficult to depend on other people.
2	It is very important to me to feel independent.
3	I find it easy to get emotionally close to others.
4	I want to merge completely with another person.
5	I worry that I will be hurt if I allow myself to become too close to others.
6	I am comfortable without close emotional relationships.
7	I am not sure that I can always depend on others to be there when I need them.
8	I want to be completely emotionally intimate with others.
9	I worry about being alone.
10	I am comfortable depending on other people.
11	I often worry that romantic partners don't really love me.
12	I find it difficult to trust others completely.
13	I worry about others getting too close to me.
14	I want emotionally close relationships.
15	I am comfortable having other people depend on me.
16	I worry that others don't value me as much as I value them.
17	People are never there when you need them.
18	My desire to merge completely sometimes scares people away.
19	It is very important to me to feel self-sufficient.
20	I am nervous when anyone gets too close to me.
21	I often worry that romantic partners won't want to stay with me.
22	I prefer not to have other people depend on me.
23	I worry about being abandoned.
24	I am somewhat uncomfortable being close to others.
25	I find that others are reluctant to get as close as I would like.
26	I prefer not to depend on others.
27	I know that others will be there when I need them.
28	I worry about having others not accept me.
29	Romantic partners often want me to be closer than I feel comfortable being.
30	I find it relatively easy to get close to others.

Big Five personality traits. Participants also completed the well-validated 60-item NEO–FFI (Costa & McCrae, 1992), a measure of the Big Five dimensions of personality (i.e., neuroticism, extroversion, openness, agreeableness, and conscientious-

Table 5
Standardized Loading of Each Item on Its Hypothesized Factor for Each of the Models Derived From Confirmatory Factor Analyses of Relationship Scales Questionnaire Items (Combined N = 260 from Studies 2 and 3)

Item/fit	Model 1	Model 2	Model 3A	Model 3B	Model 3C	Model 3D	Model 4
1	.70	.75	—	.75	.72	—	.75
2	—	—	—	.31	.28	.18	.52
3	—	—	—	−.74	−.66	−.87	.59
4	−.00	.01	—	−.29	—	−.26	—
5	—	—	—	.68	—	.64	.65
6	—	—	—	.25	.23	−.44	−.20/.42[a]
7	—	.72	—	.59	.57	—	—
8	—	—	—	−.44	−.31	—	−.00
9	—	—	—	.65	.66	.66	−.48
10	.63	−.65	.55	−.69	−.65	−.58	.63
11	.87	.87	.88	.76	.77	.80	—
12	.79	.79	−.71	.73	.72	.68	.79
13	−.69	.77	−.77	.49	.71	—	—
14	—	—	—	−.35	−.30	−.35	—
15	.40	−.39	.40	—	−.43	—	.32
16	—	—	—	.65	.65	.64	.82
17	—	.60	—	.50	.50	.46	—
18	.44	.45	.45	.39	—	.43	—
19	—	—	—	—	.20	—	.48
20	—	.86	−.85	—	.76	—	—
21	.92	.91	.91	.79	.80	.82	—
22	—	—	—	—	.54	—	.48
23	−.52	.64	.64	.72	.73	.73	—
24	.72	.78	−.77	—	.75	—	.68
25	.42	.44	.44	.44	—	.46	.48
26	—	—	—	.61	.58	—	.83
27	—	−.63	—	—	−.49	—	—
28	—	—	—	.57	.58	.59	−.45
29	.53	.59	−.59	—	—	.35	—
30	.60	−.55	.54	−.68	−.63	−.78	—
SRMR	.09	.08	.06	.13	.12	.12	.12
CFI	.93	.95	.96	.86	.86	.86	.82

Note. Dashes indicate coefficient was not calculated. Model 1 tests the Hazan and Shaver (1987) model; Model 2, the Collins and Read (1990) model; Model 3A, the Simpson, Rholes, & Nelligan (1992) model; Model 3B, the Feeney and Hohaus (2001) model; Model 3C, the Fraley and Bonanno (2004) model; Model 3D, the Creasey and Ladd (2005) model; and Model 4, the Griffin and Bartholomew (1994) model. SRMR = standardized root-mean-square residual; CFI = comparative fit index.
[a] Item 6 loads on both preoccupied and dismissing according to Griffin and Bartholomew (1994).

ness). The average reliability of the NEO scales is .78, as reported by Costa and McCrae (1992). For the Study 2 sample, the average Cronbach's standardized alpha across the five dimensions was .82 (range = .75–.88). The absolute value of correlations among the Big Five traits ranged from .01 to .38, with a mean of .24 (regression analyses below show the unique effects of each Big Five dimension). Descriptive data for the Big Five traits were as follows: (a) neuroticism range = 1.0–4.8 (M = 2.7, SD = .72), (b) extroversion range = 2.2–4.9 (M = 3.5, SD = .54), (c) openness range = 1.7–4.7 (M = 3.4, SD = .58), (d) agreeableness range = 2.3–4.8 (M = 3.7, SD = .48), and (e) conscientiousness range = 1.9–4.8 (M = 3.6, SD = .61).

Results and Discussion

Consistent with meta-analytic results reported in Study 1, in the full Study 2 sample (N = 160), AAI security versus insecurity as assessed by the Kobak (1993) AAI Q-Set was weakly correlated with RSQ avoidance, $r = -.08$ ($p = .30$) and anxiety $r = -.05$ ($p = .53$), effects considered trivial by Cohen's (1992) criteria. Self-reported anxiety was likewise trivially associated with AAI deactivation/hyperactivation, $r = -.01$ ($p = .95$). In contrast, yet consistent with meta-analytic results, a small effect was identified between deactivation/hyperactivation and avoidance, $r = .17$ ($p < .05$), indicating that adults who defensively discuss their childhood experiences with caregivers are incrementally more likely to report an unwillingness to rely on others in their close relationships. (None of these effects significantly differed by sex.)

Bivariate results related to associations between self-reported avoidance and anxiety and AAI subscales, as well as descriptive data on the AAI inferred life experience and state of mind ratings, are presented in Table 6 (these analyses are based on the subset of 100 cases with AAI subscale data). In general, very few nontrivial ($r \geq .10$) associations emerged, although effects were modestly stronger for inferred life experience as compared with state of mind scales. (Note that in contrast to Shaver et al.'s [2000] findings, which focused on mothers only, both maternal and paternal pressure to achieve were positively associated with RSQ avoidance and anxiety. In Shaver et al.'s report, these variables

Table 6
Study 2: Correlations Between Adult Attachment Interview (AAI) Inferred Life Experience and State of Mind Scales and Relationship Scales Questionnaire (RSQ) Avoidance and Anxiety Dimensions, With Descriptive Data for AAI Subscales (N = 100)

AAI subscale	Descriptive data				RSQ dimensions	
	M	*SD*	Min	Max	Avoidance	Anxiety
Life Experience						
Mother loving	5.0	1.4	1	8	−.17†	.05
Father loving	3.9	1.5	1	7	−.12	−.16
Mother rejecting	2.3	1.3	1	8	.01	.02
Father rejecting	2.6	1.4	1	7	−.07	.04
Mother neglecting	1.5	0.9	1	4	.08	−.05
Father neglecting	2.4	1.5	1	6	.10	.23*
Mother role reversal	2.3	1.3	1	6	.05	.11
Father role reversal	2.2	1.1	1	6	−.05	.05
Mother pressure to achieve	1.7	1.2	1	7	.19†	.19†
Father pressure to achieve	1.8	1.4	1	8	.09	.20†
Mean effect (adjusting for counterintuitive associations)					.07	.09
State of Mind						
Mother idealization	3.4	1.4	1	7	.11	−.02
Father idealization	3.2	1.2	1	7	.10	.09
Mother anger	1.3	0.7	1	5	−.05	−.16
Father anger	1.3	0.7	1	5	−.03	−.01
Mother derogation	1.2	0.7	1	4	.03	.05
Father derogation	1.1	0.5	1	3	−.05	−.06
Overall derogation	1.4	0.8	1	4	−.05	−.04
Lack of memory	2.8	1.7	1	7	.15	−.07
Metacognitive monitoring	1.2	0.4	1	3	−.12	−.07
Passivity of discourse	2.8	1.0	1	6	−.01	−.04
Fear of loss of one's child	1.1	0.4	1	4	.14	.02
Unresolved loss	1.7	1.0	1	6	.04	−.08
Unresolved trauma	1.3	0.9	1	6	−.09	.20*
Coherence of transcript	5.2	1.4	2	8	−.15	.03
Coherence of mind	5.2	1.4	2	8	−.17†	.04
Mean effect (adjusting for counterintuitive associations					.05	−.01

Note. Min = minimum; Max = maximum.
† $p < .10$. * $p < .05$.

were negatively correlated with insecurity.) Consistent with meta-analytic results, avoidance (but not anxiety) shared a small association ($r = .17$, $p < .10$) with AAI coherence of mind.[5] Of 50 post hoc regressions computed to identify potential sex interactions, only three sex interactions were statistically significant. More specifically, the association between avoidance and father anger was negative for males ($r = -.19$; $p = .19$) and positive for females ($r = .22$, $p = .13$) and the correlation between avoidance and coherence of transcript was trivially positive for males ($r = .06$, $p = .68$) and negative (i.e., in the predicted direction) for females ($r = -.35$, $p < .05$, a result that contrasts with one of the few sex differences identified in the Study 1 meta-analysis). Finally, the association between anxiety and meta-cognitive monitoring was negative for males ($r = -.23$, $p = .11$) and positive for females ($r = .27$, $p = .06$).

To quantitatively summarize AAI subscale results, we calculated mean associations of the AAI inferred life experience and state of mind scales with RSQ avoidance and anxiety separately. All mean effects were trivial in magnitude (see Table 6). Note that for mean effects described in Table 6, we adjusted for counterintuitive associations by assuming that all positive indicators of inferred life experience (e.g., loving) and state of mind (e.g., coherence of mind) should be associated with lower levels of self-reported avoidance and anxiety and that all negative indicators of these subscales (i.e., poorer childhood experiences, state of mind scales indicative of insecurity) should be associated with higher levels of avoidance and anxiety (greater insecurity). A case can be made, however, that only the AAI state of mind scales that are analogous to avoidance and anxiety (i.e., those that tap dismissing and preoccupied states of mind, respectively) should be considered to examine potential overlap between the AAI state of mind and self-report dimensions. Using Main and Goldwyn's (1998) description of AAI state of mind indicators of the dismissing classification (mother and father idealization, mother and father derogation, overall derogation, lack of memory, feared loss of child, coherence of transcript, and coherence of mind) and preoccupation (mother and father anger, passivity, coherence of transcript, and coherence of mind), the mean association for avoidance

[5] Because the vast majority of the insecure participants in this study were dismissing (see Roisman, in press), this result is compatible with the view that there is a small association between self-reported avoidance and incoherent discourse distinctive of dismissing states of mind in the AAI.

with dismissing state of mind scales was .08, and the mean association of anxiety with indicators of preoccupation was −.06 (evidence of divergence).

Follow-up regressions produced virtually identical results. Neither the full set of inferred life experience nor state of mind scales (entered as a block in separate regressions) produced models that were either significant overall or had positive adjusted R^2s. (Note that adjusted R^2s penalize unnecessarily complex linear models and can thus be negative). Likewise, the adjusted R^2 for a regression model predicting anxiety from the full set of state of mind indicators was slightly negative. In one exception, anxiety regressed on all 10 inferred life experience scales produced a marginally significant ($p = .06$) model (adjusted $R^2 = .08$). However, a number of the betas in this analysis ran contrary to prediction. Results were identical for state of mind scales when only AAI subscales specific to dismissing and preoccupied discourse were examined in relation to avoidance and anxiety, respectively. (The details of these regression analyses are available on request).

In terms of findings specific to unresolved states of mind, anxiety was significantly associated with unresolved trauma ($r = .20$, $p = .05$) but not unresolved loss ($r = -.08$, $p = .43$). Avoidance, in contrast, was only trivially associated with unresolved trauma ($r = -.09$, $p = .36$) and loss ($r = .04$, $p = .69$). Forty-seven participants had losses that would qualify them for scores greater than 1 on unresolved loss; 11 participants had traumatic experiences that would qualify them for scores greater than 1 on unresolved trauma. Two exploratory regressions were conducted to follow up on the possibility that fearful orientations (individuals high on both self-reported anxiety and avoidance) are more likely to be unresolved (Shaver & Mikulincer, 2002b). In both regressions, unresolved loss and unresolved trauma rating scales were (separately) regressed on avoidance, anxiety, and their interaction. The unresolved loss analysis produced a slightly negative adjusted R^2 and a nonsignificant model. In contrast, the unresolved trauma regression revealed nontrivial βs for anxiety ($\beta = .32$, $p < .05$), avoidance ($\beta = -.19$, $p < .10$), and their interaction ($\beta = -.17$; $p < .10$; adjusted $R^2 = .07$, $p < .05$). When the marginally significant interaction term was decomposed, however, it was clear that the association between anxiety and unresolved trauma was strongest for individuals low on avoidance, contrary to the prediction that fearful orientations would be associated with unresolved AAI states of mind. Combined with meta-analytic data in Study 1, we therefore tentatively conclude that although there is little evidence that high levels of (co-occurring) avoidance and anxiety are linked to unresolved states of mind in the AAI, there is some reason to believe that attachment-related anxiety may be associated with unresolved status, a bivariate effect that is small by Cohen's (1992) criteria.

The only prior study in which the complete set of AAI subscales were examined in relation to self-reported attachment style dimensions was Shaver et al.'s (2000) study of mothers. Because coherence of mind (the single best dimensional predictor of security vs. insecurity) was associated in bivariate analyses with Collins and Read's (1990) Close, Depend, and Anxiety subscales from the Adult Attachment Scale (AAS), this investigation has been cited (e.g., Shaver & Mikulincer, 2002a) as providing evidence for moderate overlap between the AAI and attachment style dimensions. As has already been detailed in Study 1, the bivariate effects between AAI coherence of mind and attachment style dimensions identified by Shaver et al. (2000) are an overestimate of the meta-analytic association. Study 2 additionally suggests that AAI subscales in general share trivial to small (in some cases counterintuitive) associations with self-reported avoidance and anxiety.

Finally, to examine the empirical overlap of the Big Five personality traits with AAI Q-Sort and RSQ attachment dimensions, we estimated a set of regressions using the full sample ($N = 160$), regressing each attachment-related variable in turn on all NEO–FFI Big Five personality dimensions simultaneously (see Table 7). Overall, results showed that the AAI dimensions (adjusted R^2s = .05 and .08) and the RSQ dimensions (adjusted R^2s = .24 and .31) were associated with self-reported personality. Consistent with a review of the self-report attachment and personality literature (Noftle & Shaver, in press), the strongest personality predictors of avoidance and anxiety were extroversion and neuroticism, respectively. In contrast, AAI security was the only attachment dimension uniquely associated (but marginally so) with conscientiousness (the bivariate association was statistically significant, $r = .19$, $p < .05$). Security was also marginally associated with extroversion. The addition of the set of five Sex × Personality Trait interaction terms in each regression revealed no evidence that findings were moderated by sex.

In sum, results of Study 2 converged with meta-analytic findings in Study 1, suggesting trivial to small overlap of AAI dimensions and self-reported attachment style. In addition, attachment-related avoidance and anxiety were associated most strongly with the Big Five traits of extroversion and neuroticism, respectively, whereas AAI security was the only attachment dimension associated with conscientiousness (deactivating adults reported being significantly less neurotic and open and marginally less extroverted than hyperactivating adults, a result consistent with evidence that dismissing adults self-report suspiciously low levels of psychopathology, whereas preoccupied adults self-report relatively high levels of personal distress; e.g., Pianta, Egeland, & Adam, 1996). In other words, the AAI and self-report measures of adult attachment security are associated with somewhat different Big Five personality profiles. A final point of interest is that both the AAI Q-Sort and the self-report attachment style dimensions were more strongly associated with the Big Five personality traits (in aggregate) than the attachment measures were associated with one another.

Table 7
Study 2: Results of Simultaneous Regressions of Adult Attachment Interview (AAI) and Relationship Scales Questionnaire (RSQ) Attachment Dimensions on NEO Five Factor Personality Inventory—Short Form (N = 160)

	AAI dimensions		RSQ dimensions	
Big Five	Security	Deactivation	Avoidance	Anxiety
Neuroticism	.08	−.23**	.11	.30**
Extroversion	.15†	−.17†	−.40**	−.07
Openness	.10	−.20*	−.16*	−.05
Agreeableness	.10	−.11	−.17*	−.24**
Conscientiousness	.16†	−.10	−.02	−.07
Total adjusted R^2	.05*	.08**	.31**	.24**

Note. Effects reported above are standardized betas.
† $p < .10$. * $p < .05$. ** $p < .01$.

Study 3

The results of Studies 1 and 2 provide compelling evidence that the kinds of variation in adult security identified by self-report attachment style measures and the AAI are psychometrically distinct. What is less clear, however, is the degree to which social psychological and developmental measures of attachment security predict common or distinct outcomes in adults' close relationships. To our knowledge, Study 3 is the first to examine the predictive significance of both AAI and RSQ dimensions for self-reported and observed relationship quality indicators simultaneously. As discussed in the introduction, we hypothesized that self-reports of attachment style but not AAI dimensions would be correlated with individuals' evaluations of their relationships. Second, we expected that AAI security would be associated with skilled collaboration in the context of a mild relationship stressor involving couples discussing areas of disagreement and agreement in their relationships. Finally, we hypothesized that associations between self-reports of attachment style and suboptimal interactions would emerge but primarily under conditions of attachment-related threat. Because prior studies have generally examined relevant stressors indirectly by focusing on conditions expected to activate the attachment system (i.e., separation, loss, discussions of the most salient area of disagreement in one's relationship), in this study we acquired data on adults' emotional appraisals of their laboratory interactions as a potential moderator of the association between self-reported attachment style dimensions and observed collaboration.

In Study 3, we tested the predictions articulated above in the context of a study of engaged couples drawn from the community. Note that this study is one of the only investigations of attachment security in the literature in which effects of self and partner have been investigated, examining the differential correlates of the AAI and reported attachment style in the same research design (see also Bouthillier et al., 2002; Creasey & Ladd, 2005; Simpson et al., 2002). Given the empirical overlap of AAI and RSQ attachment dimensions with Big Five personality traits identified in Study 2, as well as evidence that the Big Five are associated both with adults' perceptions of and behavior in their romantic relationships (Caspi, Roberts, & Shiner, 2005; Donnellan, Larsen-Rife, & Conger, 2005), we controlled for these personality dimensions in our analyses. Note that self-report attachment dimensions have provided incremental prediction of important relationship outcomes above and beyond the Big Five traits in a number of studies (e.g., Campbell et al., 2005; Noftle & Shaver, in press; Shaver & Brennan, 1992). Nonetheless, this remains a controversial issue because some investigations have concluded that Big Five traits partly mediate effects of self-reported attachment style (Davila, Bradbury, & Fincham, 1998; Kurdek, 2002).

Method

Participants

Fifty engaged couples between 18 and 30 years old who had not previously been married were recruited for this study from a small community in the Midwest. In line with the inclusion criteria described above, the average age of the engaged men was 22.7 years (SD = 2.7, range = 19–29) and the average age of the engaged women was 22.2 years (SD = 3.0, range = 18–30). In addition, the sample was homogeneous in terms of ethnicity (88% of male and 86% of female participants were White). Couples received $50 ($25 per participant) as compensation for their considerable contributions to this study (laboratory sessions lasted approximately 3–4 hr).

Procedure

All participants underwent a comprehensive assessment battery including (a) a packet of questionnaires including the RSQ, NEO–FFI, and Emotional Tone Inventory (ETI), which they completed within a week prior to arriving at the laboratory; (b) the audiotaped AAI; and (c) a videotaped couple interaction with their partner. Each participant completed the AAI separately from his or her partner. Research assistants then administered several additional self-report measures, including a questionnaire listing 11 common problem areas in marital relationships (e.g., money, communication, in-laws). Participants were instructed that this form would be the only questionnaire that their partner would see and that they should use it to describe the degree to which each domain listed was currently a problem area in their relationship.

Upon finishing the relationship problem questionnaire, participants were reunited with their partners to complete the last part of the session, a standard dyadic interaction task. A research assistant entered the room with the problem inventories participants had completed previously and instructed couples to identify an area of disagreement in their relationship. After couples decided on a problem to discuss using the problem inventories, participants were given approximately 10 min to attempt to resolve this problem in their relationship. Couples were next instructed to take 5 min to talk about areas of agreement in their relationship.

Measures

The AAI Q-Sort. Each AAI was Q-sorted by at least one of three judges trained through the laboratory of Mary Main in her classification-based coding system. To estimate interrater reliability, we double-sorted 25% (25/100) of the AAIs from this study and achieved a reliability of .6 or greater (Spearman–Brown) for 84% of these AAIs. A third coder rated AAIs for which initial coders were discrepant, and sorts that were most highly correlated were ultimately averaged (reliabilities of composited sorts ranged from .60 to .91, M = .79). As in Study 2, in the final step of data reduction, Pearson correlations were computed between each of the composited sorts (completed by the trained coders) and both a prototypic secure/insecure and a prototypic deactivation/hyperactivation sort, resulting in continuous scores on security and deactivation. Results of Level I hierarchical linear modeling (HLM; Bryk and Raudenbush [1992]) regressions showed that standardized security/insecurity and deactivation/hyperactivation variables were associated, $b = -.54$, $p < .001$. Consistent with Study 2, the scores for security ranged from −.66 to .82 (M = .24, SD = .48) and for deactivation from −.60 to .64 (M = .00, SD = .33).

RSQ. As in Study 2, we used Griffin and Bartholomew's (1994) RSQ to operationalize Simpson et al.'s (1992) model of individual differences in self-reported attachment, yielding continuous measures of avoidance and anxiety. For Study 3, the internal consistency of unit-weighted avoidance and anxiety dimensions

was acceptable (avoidance $\alpha = .85$, anxiety $\alpha = .81$). We conducted a series of HLM analyses in which we took into account the nonindependence of observations within dyads and found the association between standardized avoidance and anxiety was $b = .42$, $p < .001$. Consistent with the Study 2 sample, the scores for avoidance ranged from 1.0 to 4.4 ($M = 2.1$, $SD = .69$) and for anxiety, from 1.0 to 4.6 ($M = 1.9$, $SD = .79$)

Big Five personality dimensions. As in Study 2, participants completed the 60-item NEO-FFI (Costa & McCrae, 1992). In Study 3, the average Cronbach's standardized alpha across the five dimensions was .81 (range = .72–.90). We computed Level I regressions in HLM (Version 6.02) to examine intercorrelations among the Big Five dimensions (standardized). In these analyses, the absolute value of *b*s ranged from .06 to .41 ($M = .19$) Descriptive data for the Big Five traits were as follows: (a) neuroticism range = 1.0–4.8 ($M = 2.8$, $SD = .78$), (b) extroversion range = 2.0–4.8 ($M = 3.5$, $SD = .54$), (c) openness range = 2.0–4.7 ($M = 3.6$, $SD = .51$), (d) agreeableness range = 2.5–4.8 ($M = 3.6$, $SD = .53$), and (e) conscientiousness range = 2.1–4.8 ($M = 3.6$, $SD = .61$).

Reported emotional tone. Berscheid, Snyder, and Omoto's (1989) ETI was used to assess the frequency with which respondents rated experiencing 27 different emotions in their romantic relationships using 7-point scales. Twelve positive and 15 negative emotions are included in the ETI, with both intense and less intense feeling states represented. We computed differences between each participant's average rating on the positive ($\alpha = .88$) and the negative ($\alpha = .89$) emotions to derive the relative frequency with which adults experienced positive and negative emotions in their relationships. The scores for emotional tone (combining male and female ratings) ranged from −0.3 to 5.7 ($M = 4.0$, $SD = 1.2$).

Observed collaboration. Observed collaboration in the couple interactions was coded from videotapes by two trained graduate research assistants using the Interactional Dimensions Coding System (IDCS; Kline et al., in press), which focuses on the individual behavior of both the man and the woman. More specifically, all nine individual IDCS ratings (positive affect, negative affect [reversed], problem-solving skills, denial [reversed], dominance [reversed], support/validation, conflict [reversed], withdrawal [reversed], and communication skills) were made separately along a 9-point scale (coders rated all videos separately and arrived at final scores through consensus). Because results of principal components analyses suggested that all scales loaded on a common component, a simple unit-weighted composite of these scales was used in all analyses. Interrater reliability (i.e., intraclass *r*s) for scales based on all 50 cases averaged .72 (range = .60–.80), and the internal consistency of the composited rating scale was .90. The scores for observed collaboration (combining male and female ratings) ranged from 2.9 to 8.0 ($M = 5.9$, $SD = 1.0$).

Emotional appraisals of interaction. After the couple interaction was videotaped, both participants separately completed the Emotional Experiences Questionnaire, a measure consisting of 25 emotion terms. More specifically, participants used an anchored 9-point Likert scale (0 = *no emotion*, 4 = *moderate emotion*, and 8 = *the most emotion you have felt in your life*) to describe the degree to which they experienced each emotion during their interaction. Although principal components analyses have revealed that these emotion terms can be reduced to various combinations of positive and negative mood state composites (see, e.g., Roisman et al., 2004), for simplicity in the current study we created a single index by averaging all positive emotions (happiness, love, contentment, satisfaction, interest, and amusement; $\alpha = .85$) and subtracting an average of all negative emotion ratings (anger, shame, sadness, anxiety, tension, disgust, contempt, surprise, fatigue, confusion, and boredom; $\alpha = .88$). Eight emotion terms that cross-loaded on positive and negative emotion components were dropped. The scores for these emotional appraisals of the couple interactions (combining male and female ratings) ranged from −4.3 to 3.1 ($M = 0.0$, $SD = 1.4$).

Results and Discussion

Because observations drawn from couples are potentially correlated, researchers have developed statistical tools that explicitly take into account this nonindependence. One such analytic approach is known as the actor–partner interdependence model (APIM; Campbell & Kashy, 2002; Kashy & Kenny, 2000). Within this statistical model, the influence that an individual has on his or her own outcome is described as an *actor* effect. In contrast, the influence an individual has on his or her partner's outcome is referred to as a *partner* effect. Although there are a number of analytic strategies for estimating actor and partner effects, including pooled multiple regression procedures and structural equation modeling, one of the most computationally straightforward and flexible approaches involves multilevel modeling (for details, see Campbell & Kashy, 2002).

For this study, we used Bryk and Raudenbush's (1992) HLM (Version 6.02) to estimate simultaneously actor and partner effects of participants' attachment dimensions on observed behavior during the premarital interactions and on reported emotional tone. A dyadic analysis of this kind estimates the parameters of a Level I regression equation in which the relationship outcome is regressed on participants' and their partners' attachment dimensions. In essence, results reflect an aggregate of the effects estimated within each dyad. Note that these analyses are conservative in that they estimate the unique effects of participants' attachment dimensions on relationship outcomes, controlling for all other attachment dimensions (self and partner). In addition, we standardized all dependent and independent variables prior to analysis to make the coefficients easier to interpret.

Consistent with results of Studies 1 and 2, self-reported attachment style and AAI dimensions were weakly correlated among male participants in Study 3 (in two instances [AAI security and RSQ anxiety; AAI deactivation/hyperactivation and RSQ avoidance] in a counterintuitive direction). Specifically, correlations between AAI security and RSQ avoidance ($r = -.01$, $p = .94$), AAI security and RSQ anxiety ($r = .12$, $p = .40$), AAI deactivation/ hyperactivation and RSQ avoidance ($r = -.02$, $p = .92$), and AAI deactivation/hyperactivation and RSQ anxiety ($r = -.19$, $p = .18$) were trivial to small in magnitude. For women, correlations between AAI security and RSQ avoidance ($r = -.19$, $p = .19$), AAI security and RSQ anxiety ($r = -.26$, $p = .07$), AAI deactivation/hyperactivation and RSQ avoidance ($r = .17$, $p = .23$), and AAI deactivation/hyperactivation and RSQ anxiety ($r = .27$, $p = .06$) were somewhat larger in magnitude than for men, although none significantly so (i.e., *r-to-z* $p < .05$) except the

association between deactivation and anxiety (an effect for women that was counterintuitive).

Also consistent with Study 2, the Big Five personality dimensions of neuroticism and extroversion were significantly associated with RSQ avoidance and anxiety, respectively. Level 1 HLM regressions, in which all AAI and RSQ attachment dimensions were separately regressed on the entire set of personality dimensions, indicated that avoidance had unique associations with extroversion ($b = -.28$, $p < .05$) as well as neuroticism ($b = .22$, $p < .05$). RSQ anxiety was uniquely associated with neuroticism ($b = .44$, $p < .05$). None of the Big Five dimensions was uniquely associated with either AAI security or deactivation in this sample, although the coefficient for conscientiousness and AAI security was comparable in magnitude to the effect identified in Study 2 ($b = .11$). No statistically significant sex differences emerged in HLM models that included the main effects of sex and Sex × Personality Dimension interaction terms for any AAI or RSQ attachment dimension.

Next, to test the hypotheses advanced above regarding the differential predictive significance of self-reports of attachment style and AAI security and deactivation, we conducted four APIM analyses using HLM in which each outcome (observed collaboration, reported emotional tone) was separately regressed on self and partner AAI or RSQ attachment dimensions. Note that two models are presented in relevant tables: Model 1 includes only attachment predictors, and Model 2 includes NEO personality dimensions as covariates.

Results of HLM analyses (presented in Tables 8, 9, 10, and 11) were consistent with hypotheses. AAI security (both self and partner) predicted higher levels of collaboration as observed in the interactions, suggesting that both being able to talk coherently about one's childhood experiences and having a partner who is able to do so are associated with more skilled negotiation of mild conflict in one's relationship. Likewise, RSQ avoidance (self but not partner) was associated with lower emotional tone scores, indicating more negative relative to positive reported emotion. (Note that although RSQ anxiety was not significantly associated with emotional tone in these analyses in which self and actor attachment dimensions were controlled, a simple bivariate effect of anxiety was reflected in these data, $b = -.31$, $p < .05$.) Of importance, all significant effects of AAI and RSQ dimensions reported above held after we controlled for personality dimensions. In contrast, AAI dimensions were not associated with self-reported

Table 8
Results of Level 1 Actor–Partner Interdependence Model Analyses in Predicting Observed Collaboration From Self and Partner Adult Attachment Interview Attachment Dimensions and Self-Reported Personality

Fixed effect	*b*	*SE*	*t* ratio	*df*[a]	*p*
Model 1					
Security (A)	0.206	0.098	2.01	95	.04
Deactivation (A)	−0.076	0.088	−0.86	95	.39
Security (P)	0.237	0.110	2.15	95	.03
Deactivation (P)	0.024	0.105	0.22	95	.82
Model 2					
Neuroticism (A)	0.040	0.131	0.30	90	.76
Extroversion (A)	0.067	0.098	0.69	90	.49
Openness (A)	0.115	0.106	1.08	90	.28
Agreeableness (A)	0.089	0.075	1.18	90	.24
Conscientiousness (A)	−0.022	0.085	−0.26	90	.80
Security (A)	0.207	0.097	2.14	90	.04
Deactivation (A)	−0.062	0.092	−0.67	90	.50
Security (P)	0.239	0.113	2.11	90	.04
Deactivation (P)	0.007	0.105	0.07	90	.95

Note. Convergence criterion = .000001. A = actor effect; P = partner effect.
[a] Approximate values.

Table 9
Results of Level 1 Actor–Partner Interdependence Model Analyses in Predicting Observed Collaboration From Self and Partner Attachment Style Dimensions and Self-Reported Personality

Fixed effect	*b*	*SE*	*t* ratio	*df*[a]	*p*
Model 1					
Avoidance (A)	−0.069	0.144	−0.48	95	.63
Anxiety (A)	−0.052	0.122	−0.43	95	.67
Avoidance (P)	−0.081	0.127	−0.64	95	.53
Anxiety (P)	0.054	0.140	0.39	95	.70
Model 2					
Neuroticism (A)	0.050	0.128	0.39	90	.70
Extroversion (A)	0.081	0.098	0.83	90	.41
Openness (A)	0.064	0.109	0.58	90	.56
Agreeableness (A)	0.143	0.081	1.77	90	.08
Conscientiousness (A)	−0.016	0.096	−0.17	90	.87
Avoidance (A)	−0.001	0.138	−0.01	90	.99
Anxiety (A)	−0.060	0.112	−0.54	90	.59
Avoidance (P)	−0.089	0.123	−0.73	90	.47
Anxiety (P)	0.066	0.137	0.48	90	.63

Note. Convergence criterion = .000001. A = actor effect; P = partner effect.
[a] Approximate values.

Table 10
Results of Level 1 Actor–Partner Interdependence Model Analyses in Predicting Emotional Tone From Self and Partner Adult Attachment Interview Attachment Dimensions and Self-Reported Personality

Fixed effect	*b*	*SE*	*t* ratio	*df*[a]	*p*
Model 1					
Security (A)	0.144	0.113	1.27	95	.21
Deactivation (A)	−0.027	0.115	−0.23	95	.82
Security (P)	−0.013	0.110	−0.12	95	.91
Deactivation (P)	−0.022	0.117	−0.19	95	.85
Model 2					
Neuroticism (A)	−0.195	0.113	−1.72	90	.09
Extroversion (A)	0.201	0.096	2.09	90	.04
Openness (A)	0.010	0.067	0.15	90	.88
Agreeableness (A)	0.119	0.072	1.66	90	.10
Conscientiousness (A)	0.141	0.085	1.66	90	.099
Security (A)	0.028	0.111	0.25	90	.80
Deactivation (A)	−0.043	0.104	−0.42	90	.68
Security (P)	−0.057	0.108	−0.53	90	.60
Deactivation (P)	−0.051	0.107	−0.48	90	.63

Note. Convergence criterion = .000001. A = actor effect; P = partner effect.
[a] Approximate values.

Table 11
Results of Level 1 Actor–Partner Interdependence Model Analyses in Predicting Emotional Tone From Self and Partner Attachment Style Dimensions and Self-Reported Personality

Fixed effect	*b*	*SE*	*t* ratio	*df*[a]	*p*
Model 1					
Avoidance (A)	−0.417	0.212	−3.24	95	.001
Anxiety (A)	−0.091	0.145	−0.63	95	.53
Avoidance (P)	−0.125	0.117	−1.07	95	.29
Anxiety (P)	−0.039	0.103	−0.38	95	.71
Model 2					
Neuroticism (A)	−0.097	0.104	−0.93	90	.35
Extroversion (A)	0.118	0.088	1.34	90	.18
Openness (A)	0.007	0.065	0.10	90	.92
Agreeableness (A)	0.059	0.065	0.91	90	.37
Conscientiousness (A)	0.158	0.083	1.90	90	.06
Avoidance (A)	−0.300	0.125	−2.41	90	.02
Anxiety (A)	−0.068	0.135	−0.50	90	.62
Avoidance (P)	−0.096	0.116	−0.83	90	.41
Anxiety (P)	−0.032	0.099	−0.33	90	.74

Note. Convergence criterion = .000001. A = actor effect; P = partner effect.
[a] Approximate values.

emotional tone nor were RSQ dimensions directly associated with observed collaboration (i.e., controlling for personality, all of these coefficients were trivial, *b*s $< .10$). Note that we identified few significant sex differences by entering the main effect of sex and Sex × Attachment Dimension interaction terms in Model 1 for each analysis. However, it does appear that men (but not women) whose partners self-reported high levels of avoidance evidenced lower levels of observed collaboration in their interactions ($r = -.30$, $p < .05$ for men; $r = .10$, $p = .48$ for women). In addition, hyperactivating (vs. deactivating) men (but not women) were observed to be significantly less collaborative in their interactions ($r = -.29$, $p < .05$ for men; $r = -.01$, $p = .96$ for women).

Finally, we examined whether effects of the AAI and RSQ attachment dimensions on collaborative behavior were moderated by participants' appraisals of their interaction as positive versus negative (i.e., stressful). We did so by computing a set of four Level 1 HLM regression models (one for each AAI/RSQ attachment dimension) in which positive/negative appraisal, each attachment dimension, and their interactions were entered simultaneously. Emotional appraisals did not moderate the associations between AAI security and collaborative behavior documented earlier. However, consistent with the diathesis–stress model outlined in the general introduction, the effects of both self-reported RSQ avoidance and anxiety on collaborative behavior were moderated by emotional appraisals of the interactions. As predicted, for individuals who appraised their interactions as emotionally negative and stressful, RSQ anxiety and avoidance were negatively associated with observed collaboration (interaction term for avoidance, $b = .21$, $p < .05$; interaction term for anxiety, $b = .17$, $p < .05$). In short, when couple observations were perceived as emotionally negative, highly insecure individuals (as assessed through self-reports) had less harmonious interactions with their partners than secure individuals. When interactions were not perceived as stressful, however, the associations between self-reported attachment and observer ratings of collaboration were diminished in magnitude.

We followed this analysis with a set of within-sex regressions examining the main effects of each RSQ dimension and the emotional appraisal variable, as well as their interaction, on observed collaboration. For both avoidance and anxiety, the associated interaction term (RSQ Dimension × Emotional Appraisal) was statistically significant for women ($\beta = .39$, $p < .01$ for avoidance; $\beta = .44$, $p < .01$ for anxiety) but not for men ($\beta = .07$, $p = .64$ for avoidance; $\beta = -.07$, $p = .67$ for anxiety). This finding suggests that under conditions of attachment-related threat, it was primarily insecure women who were less collaborative (the three-way interaction of Sex × Attachment × Emotional Appraisal could not be examined within the framework of HLM because of the multicollinearity introduced by the complete set of two-way interactions and main effects).

General Discussion

One of the key debates in contemporary adult attachment research concerns the overlap (or lack thereof) of developmental and social psychological measures of individual differences in security. The primary goals of this article were (a) to provide meta-analytic data on the association between the AAI and self-report measures of attachment and (b) to examine the similarities and differences in their relations to the Big Five personality traits and crucial interpersonal processes (i.e., appraisals of emotional tone and constructive conflict resolution). In summary, both meta-analytic and new data presented in this article demonstrate trivial to small overlap between self-reported attachment style dimensions and AAI security. Additionally, analyses focused on the empirical overlap of attachment measures with Big Five personality traits showed that AAI security and attachment styles appear to be associated with somewhat different personality dimensions. AAI security was the only attachment dimension associated with the Big Five trait of conscientiousness, whereas self-reported security was most strongly associated with extroversion and low levels of neuroticism. Most important, however, new data presented in this article suggest that assessments of attachment security drawn from the social psychological and developmental literatures appear to be associated with somewhat distinct—though theoretically anticipated—aspects of functioning in adult romantic relationships, even after accounting for the Big Five personality dimensions.

We began this article by presenting a quantitative synthesis of the entire literature on the convergence between individual differences in adult attachment, as assessed by the AAI and social psychological measures of attachment style. In doing so, the Study 1 meta-analysis is a significant improvement on the selective narrative reviews that have characterized this area of research. The study also sheds light on the risks inherent in such partial reviews: We note with some surprise that the research groups that have offered the strongest and often contradictory conclusions with respect to the degree of convergence between the AAI and measures of self-reported attachment style (e.g., Crowell, Treboux, & Waters, 1999; Shaver et al., 2000) had in fact identified associations between these measures that were virtually identical (see Table 1). Ironically, both of these research teams produced overestimates of the meta-analytic effects identified in this report. We estimate that combined with AAI Q-Sort data drawn from Studies 2 and 3, the mean association between AAI security and the attachment style dimensions of avoidance and anxiety is $r = .09$ (combined $N = 1{,}221$). Although such overlap is trivial in magnitude,

our overview of the literature does point to two small but reliable associations between AAI and self-report attachment dimensions: (a) self-reported anxiety and AAI unresolved states of mind and (b) self-reported avoidance and dismissing discourse in the AAI.

In Study 2, we found further evidence for distinctions between AAI and self-report attachment dimensions with respect to their associations with the Big Five personality dimensions. As Shaver and Mikulincer (2002b) pointed out, Bowlby's attachment theory is in large part a theory of personality development. As such, it would be strange indeed if measures of adult security were uncorrelated with personality. Study 2 showed that both AAI Q-Sort and RSQ attachment style dimensions were linked to personality, albeit in somewhat different ways. Specifically, coherence of mind was correlated with conscientiousness[6] (but self-report attachment dimensions were not), and attachment-related anxiety and avoidance were related to neuroticism, extroversion, and agreeableness. Even more intriguing, perhaps, is the fact that AAI and RSQ dimensions were more strongly associated with personality dimensions (at least in aggregate) in Study 2 than they were with one another, a pattern of results that deserves attention in future research.

Finally, in Study 3 we showed that when it comes to understanding functioning in adult romantic relationships, AAI security and attachment style dimensions in some instances predicted different outcomes (e.g., evaluations of one's relationship) and in some cases predicted the same domain differently (e.g., observed collaboration). Consistent with much data in the social psychological literature (Feeney, 1999), attachment style dimensions were associated with adults' appraisals of the emotional tone of their relationships, whereas AAI security was only trivially related to self-reports of relational functioning. More critically, Study 3 also provided evidence that measures of adult security predict observed interpersonal collaboration differently. Consistent with our discussion of these issues in the general introduction, it appears that AAI security is a general interpersonal asset, whereas self-reported avoidance and anxiety may be best conceptualized as underlying diatheses in romantic relationships that are most influential under conditions of attachment-related threat (see, e.g., Fraley & Shaver, 1998; Simpson et al., 1996).

We acknowledge that these latter analyses in particular are likely to raise more questions than they answer regarding the conditions under which self-reports of attachment style and the AAI are associated with the quality of adults' relationships. Our own view is that research on adult attachment in developmental psychology would be advanced considerably through greater attention to the role of attachment-related threat (see Kobak, 2002). At least one reviewer of an early version of this article argued further that evidence that self-reported attachment style (but not the AAI) is associated with interpersonal behavior principally under conditions of attachment-related threat speaks to the fidelity of the social psychological measurement tradition with Bowlby's account of the conditions under which insecurity would be expected to be revealed in interpersonal behavior. However, also compelling are (a) arguments that attachment-related variation ought to be reflected both in ordinary and emergency conditions (Waters & Cummings, 2000), (b) the fact that simply interacting with another person represents at least a modest interpersonal challenge, and (c) as we have emphasized throughout this report, the AAI is not intended to measure security in the context of one's current relationships but rather coherence of discourse regarding earlier attachment-related experiences. In addition, we caution that the pattern of results obtained with respect to this issue may very well vary as a function of outcome. For example, we (Fortuna & Roisman, 2007) have recently analyzed data indicating that AAI insecurity is associated with self-reports of psychiatric symptomatology principally for individuals experiencing high levels of life stress (consistent with a diathesis–stress model), whereas self-reports of avoidance and anxiety correlate robustly with psychopathology under conditions of both relatively high and low life stress (consistent with a risk model).

As the significance of these data are debated, we hope that scholars will keep at the fore of their discussion the fact that this work speaks to the critical utility of both methodological traditions of adult attachment research in comprehensively accounting for functioning in adults' interpersonal relationships. We believe that this report also emphasizes that Bowlby's theoretical account is in fact a broad framework, capable of inspiring generative research focused on adults' appraisals of attachment-related concerns, as it has done in social psychological research, as well as the ways in which early life experiences are integrated in the discourse of adults, a key focus in developmental psychology. In our view, both methodological traditions in adult attachment research have proved excellent stewards of Bowlby's theoretical legacy.

Nonetheless, there are areas in which much work remains. First, the generally trivial-to-small overlap identified here between the two attachment measurement traditions suggests results from the AAI and self-report literatures should not be cited and discussed in narrative reviews as if the measures were interchangeable. Even more fundamental given Bowlby's emphasis on the roots of attachment security in early experiences, is the critical need to understand more fully the childhood origins of individual differences in adult attachment. Although some promising data exist with respect to the AAI (meta-analyzed in Fraley, 2002a), an adequate examination of whether individual differences in adult attachment security emerge from childhood experiences will require going beyond the notion that very early attachment experiences in infancy, in particular as assessed by the strange situation procedure (Ainsworth, Blehar, Waters, & Wall, 1978), are the key criteria against which adult attachment measures should be judged. In fact, attachment theory claims only that adults' working models are tolerably accurate reflections of experiences in the years prior to maturity, meaning that infant, childhood, and adolescent experiences are all relevant in examining the developmental foundations of adult attachment states of mind and styles (see, e.g., Fraley, 2002a; Roisman et al., 2002). Given this state of affairs, a premium must be placed by social and developmental scholars on further developing a body of literature on the antecedents of individual differences reflected in the AAI and attachment style

[6] Until the finding is replicated, we are not yet inclined to substantively interpret the small association between AAI security and conscientiousness identified in Study 2, especially given the failure to unambiguously replicate this result in Study 3. It is possible, for example, that this correlation will prove to be sample specific (i.e., adults who produce coherent attachment-related discourse make for somewhat more conscientious students). Of importance, in Study 3, results were controlled for all of the Big Five trait dimensions. As such, Study 3 associations between AAI security and observed collaboration cannot be attributed to the effects of conscientiousness.

self-reports (Belsky, 2002). Such research has the potential to reveal exciting results, including the possibility that self-reports of attachment style and AAI security may be associated with distinct antecedents.

It would be a disservice to suggest that the issues explored in this article are largely specific to the social psychological and developmental traditions of attachment research. Overly literal readings of the Campbell and Fiske (1959) multimethod–multitrait framework have in a number of instances led to a misguided search for, as Roberts, Harms, Smith, Wood, and Webb (2006) so aptly described it, "the methodological holy grail—the one method that deserves our ultimate attention" (p. 322). Indeed, several subdisciplines within social and personality psychology in which different methodological traditions focus on putatively overlapping constructs fail to converge empirically, yet combined they have uniquely informed our understanding of concepts central to social psychology (for a prototypic example related to explicit and implicit motivation, see Spangler, 1992).

In our view, this research provides a much-needed empirical response to questions from both within and outside attachment scholarship about convergence and divergence of measurement in adult attachment research across the social and developmental psychological divide. In explicitly quantifying the overlap between the social psychological and developmental assessment traditions, we hope that we have laid the foundation for a secure, empirically informed base from which to explore Bowlby's theory from an interdisciplinary perspective. Such an enterprise will necessarily involve the administration of the AAI and self-reports of attachment style in tandem, as well as creative research designs drawing on the distinctive strengths of both social and developmental psychology.

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