

Measuring Attachment Security Directly: A Suggested Extension to the Two-Factor Adult Attachment Construct

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ABSTRACT - This study investigated a three-dimensional model of attachment based on the Relationship Questionnaire (Bartholomew & Horowitz, 1991) and the Relationship Scales Questionnaire (RSQ-R; Griffin & Bartholomew, 1994) in three different samples ($n=254$, $n=129$, $n=168$). Confirmatory factor analysis suggested a three-dimensional model to have better fit than a two dimensional one. The three factors were named Secure / Insecure, Avoidant / Dismissive, and Preoccupied / Anxious. Data from other tests supported the model as a viable alternative to a two-dimensional one. The model was discussed from the view that security/insecurity should be included in a complete measurement model of attachment.

John Bowlby introduced attachment theory (1969, 1973, 1980) as a way to understand the fundamental motives of human development, alternative to classical psychoanalytic and object-relations theories. The plethora of developmental, clinical, and social psychological studies that have followed during the past two decades represent an emerging theory of human development and personality. It has, however, inherent weaknesses that need to be addressed (for recent reviews see, Fraley & Shaver, 2000; Pietromonaco & Feldman Barrett, 2000; Waters, Crowell, Elliot, Corcoran, & Treboux, 2002). We believe that one such basic weakness lies in how to best define and measure the underlying dimensional construct of adult attachment. In the present paper, we reconsider the basic

construct used to measure adult attachment. In particular, we suggest that the concept of attachment security has been neglected, within the social/personality psychology branch of attachment research. We aim to present an extension of the prevailing two-factor models (Griffin & Bartholomew, 1994; Brennan, Clark, & Shaver, 1998) and present data that supports this extension based on confirmatory factor analysis.

Adult Attachment Theory and Measurement

According to Bowlby (1969; 1988), whenever an individual, for whatever reason, lacks or loses tacit trust in a significant other as a secure base, the affectionate bond becomes “corrupted” with anxiety, i.e., becomes an insecure attachment. Insecure attachment motivates a number of coping strategies meant to help the person to better deal with the insecurity (Bowlby, 1973, 1979, 1980). The degree of security experienced by a person, combined with his/her strategy for dealing with the possibility of insecurity, was understood to be embedded in the individual’s psyche as cognitive schemas, so called “internal working models” (Bowlby, 1973, 1980). Bowlby (1973) suggested that working models of attachment are formed during early childhood and continue to influence relationships later in life. Much research (e.g., Ainsworth, Blehar, Waters, & Wall, 1978; Main, Kaplan, & Cassidy, 1985) suggested that combinations of these working models made up individual differences and could be classified into attachment patterns/styles (see Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993 for a review). Three such major classifications were identified, Secure Attachment, Anxious-Avoidant Attachment, and Anxious-Ambivalent Attachment (e.g., Main, Kaplan, & Cassidy, 1985).

Hazan and Shaver (1987) applied the above-mentioned three patterns of attachment to the study of romantic relationships between adults, opening up a major paradigm of research focusing on adult attachment. Bartholomew (1990) and colleagues (Bartholomew & Horowitz, 1991) went a step further by distinguishing variations of the avoidant pattern, fearful-avoidant and dismissing-avoidant. In addition, Griffin and Bartholomew (1994) argued that adult attachment measurement should concentrate on capturing individuals’ scores on the dimensions of the internal working models (model of self and model of other) that are latent to their specific pattern/style (see Fraley & Waller, 1998 for convincing arguments on the advantage of using dimensional analysis rather than prototype measures). More recently, Brennan, Clark, and Shaver (1998) and Fraley, Waller, and Brennan (2000) suggested that the dimensions avoidance and anxiety best define adult attachment.

Today, there is some agreement among researchers that attachment can be conceptualised as a two-dimensional model (e.g., Bartholomew & Horowitz, 1994; Brennan, Clark, & Shaver, 1998), but alternatives to such models have been suggested. Collins and Read (1990) and Collins (1996) proposed that three dimensions best define the underlying construct of attachment (closeness, dependency, and anxiety). Becker, Billings, Eveleth, and Gilbert (1997) obtained three dimensions (secure, preoccupied, and fearful) from both an exploratory and a confirmatory factor analysis of a new adult attachment measure. Carver (1997) obtained four dimensions (avoidance, security, ambivalence-merger, and ambivalence-worry) from a factor analysis of a new instrument. Bäckström and Holmes (2001) found that three dimensions could be seen as a viable alternative to two based on both exploratory and confirmatory factor analysis of the Relationship Questionnaire (RQ) (Bartholomew & Horowitz, 1991) and the Relationship Scales Questionnaire (RSQ) (Griffin & Bartholomew, 1994).

These findings can be interpreted to indicate that that self-report instruments in the field of adult attachment partly overlap. The ambitious work done by Brennan, Clark, and Shaver (1998) attempted to solve this problem. They gathered data from a large number of subjects on almost every self-report attachment measure that had been used at that time. Based on exploratory factor analysis, they suggested a model with two almost uncorrelated dimensions, avoidance and anxiety. In addition, a new instrument (what has later come to be called Experiences in Close Relationships or ECR) was presented and compared to all other instruments. In favor of Brennan, Clark, and Shaver's (1998) model was the fact that a large part of the variance obtained in earlier employed instruments could be explained by the two proposed factors, that an uncorrelated model had several merits with regard to parsimony, and that it was rather simple to relate the model to previous research based on prototype measures. In addition, the new instrument had a substantially improved reliability compared to previous instruments. Later, Fraley, Waller, and Brennan (2000) presented a revised version of the test (ECR-R), enhanced by analyses based on item response theory. The present work does not negate this model; rather, we aim to present both theoretical and empirical arguments for why it may be useful to extend this or a similar model to include a more direct measurement of attachment security.

Attachment Security as a Focus of Measurement

As mentioned earlier, there are clear advantages with a two-dimensional model measuring anxiety and avoidance. However, there are weaknesses as well. The focus of the present paper is on the conspicuous absence of any direct measurement

of security. Brennan, Clark, and Shaver (1998) suggested that security should be defined as the absence of anxiety and avoidance (low anxiety and low avoidance in the ECR). However, we argue that this conceptualization is not in line with the original gist of attachment theory. At the very heart of attachment theory is the suggestion that a sense of secure attachment is a resource that enables the individual to flexibly deploy attention and to openly process information about the self and about significant others (Bowlby, 1973; 1980). Mikulincer and Florian (1998, p. 143) summed up this viewpoint well by pointing out that "... secure attachment is an inner resource that may help a person to positively appraise stressful experiences, to constructively cope with these events, and to improve his or her well-being and adjustment." Secure individuals deal with distress by acknowledging it, enacting instrumental and constructive actions, and by seeking social support to a higher degree than insecure individuals (e.g., Bowlby, 1979, 1988; Feeney & Kirkpatrick, 1996). Secure bonds function as safe havens in relationships (e.g., Bowlby, 1979; Collins & Feeney, 2000; Feeney, 1996; Fraley & Shaver, 1998; Mikulincer & Selinger, 2001). Experiencing a general sense of security has been connected to more positive self-views (e.g., Bartholomew & Horowitz, 1991) and more positive expectations of others (e.g., Collins & Read, 1990). In addition, there is a substantial body of literature showing the importance of individuals' attachment security for among other things couple relationships (see, e.g., Crowell & Treboux, 2001). It seems to us that it may not be entirely reasonable to define the qualitative content of this global sense or self-appraisal of security by simply measuring lack of anxiety and the lack of avoidance in an individual, as is implicated when measuring attachment with, e.g., the ECR. Lack of anxiety and avoidance seem to represent a neutral point, whereas secure attachment represents the positive content of attachment security (Bowlby, 1973, 1980).

In favor of a model that measures Security/Insecurity directly are among other things a large number of reports on romantic attachment suggesting that the secure group or the secure dimensions differs in the same direction from all other groups or dimensions. Some of these differences have already been mentioned but more are easily added. McCutcheon (1998) showed secure individuals to have less self-defeating personality compared to insecure; Levy, Blatt, and Shaver (1998) found that secure individual's parental representations was more characterized by differentiation, elaboration, benevolence, and nonpunitiveness, compared to insecure individuals. Young and Acitelli (1998) investigated married couples' perceptions of their romantic partners and found secure individuals to have a more positive appraisals of their partner. Miculincer (e.g. Miculincer & Florian, 1998), among others, suggested that secure subjects have more resources to handle affects

and situations in close relationships. These are just a few examples that illustrate how secure subjects differ from insecure subjects in qualitative ways and many more such examples exist.

From his early writing on, Bowlby regarded a sense of security or lack of security as something preceding the experiences of anxiety and avoidance. If the child was observed to be insecure, it was suggested that anxiety and avoidance were reactions to this predicament (e.g., Bowlby 1973, 1988). Based such an argument, it is quite clear that a model that directly measures security has a number of advantages. If individuals differ in their tendency to feel secure then it is important to have a single measure of this, in addition to measures of their reactions to eventual feelings of insecurity, e.g., anxiety and avoidance. A model of attachment that includes security/insecurity is more easily integrated with a view of attachment as both a state and trait phenomena. Romantic attachment theory has had its largest impact on the individual difference aspect of close relationships. However, a number of researchers have pointed out that attachment emotions and behavior is not consistent over all relationships but show substantial variation (e.g., Baldwin, et al, 1996; Ross & Spinner, 2001). A sense of security/insecurity between two specific partners is an important determining force to the quality of that relationship. Naturally, there is an individual difference aspect here too, with some individuals quite secure across different relationships and situations, some secure most of the time but not all, and others experiencing chronic insecurity across relationships and situations. We feel a model of attachment that integrates this notion of security/insecurity as primary to if the individual reacts with anxiety/preoccupation or avoidance to compensate for a lack of security, facilitates a more comprehensible understanding of how individual's can differ across situations while still maintaining some form of fundamental attachment orientation as a personality trait.

The Current Work

Bäckström and Holmes (2001) suggested that including a third factor was a viable alternative to measuring two. This third factor was named Security/Insecurity and was defined as negatively correlated to the other two factors, dismissive and preoccupied. The variance explained by this third supplementary factor could not be explained by the other two factors.

In the present work, we suggest that attachment measurement can benefit from measuring Security/Insecurity directly as a supplement to measuring the two dimensions of Avoidance and Anxiety. We aim to demonstrate that a Security/Insecurity dimension adds to the explained variance in attachment

measures and suggest that the additional variance measured by this extended model includes phenomena directly related to the experience of Security that is not covered by lack of avoidance and of anxiety.

Hypotheses. Based on previous findings (Bäckström & Holmes, 2001; Becker et al., 1997) and on the theoretical arguments perpetuated above, we hypothesized that a three-dimensional model would fit the data structure of attachment measures *better* than any alternative model (Hypothesis 1). Specifically, Security would constitute a factor of its own complemented with the two dimensions of Avoidance/Dismissing and Preoccupied/Anxiety. The last two dimensions were expected to be relatively *independent* of each other.

Subsequently, some preliminary data supporting a three dimensional model will be presented. In line with the reasoning above we hypothesized that adding Security, proposed to be one factor in a three-dimensional model, would improve our understanding of the interrelations obtained in the data (Hypothesis 2).

Method

Participants

Sample 1. This sample was composed of 254 young adults (115 men and 139 women). The average age was 20.4 years (*SD* 2.3). Forty-three percent of the participants were undergraduate students at Pennsylvania State University at the time of the study, 39% at the University of Massachusetts at Amherst, and 18% at Indiana University. Approximately half of the participants (49%) reported being involved in a romantic relationship. Approximately 2% of the total sample classified themselves as African American, 5% as Asian American, 3% as Hispanic, 80% as European American, and 10% as other.

Sample 2. This sample was composed of 129 young adults from the University of Massachusetts, Amherst (36 men and 93 women). The average age was 20 years (*SD* 1.9). All participants were awarded class extra credit for participation.

Sample 3. This sample was composed of 84 dating couples (*N*=168). The average age of the participants was 20.3 (*SD* 2.2). Thirty-two percent of the couples had been dating for at least two years at the time of the study, 32% between one and two years, and 36% for less than a year but no less than three months. Fourteen percent of the couples lived together at the time of the study, eight percent were engaged, and no couple was married. At least one member of each couple was a student at the University of Massachusetts at Amherst at the time of the study and received class extra credit for participation.

Instruments

Sample 1. The Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991) consists of four short paragraphs describing different attachment prototypes that apply to close peer relationships. Participants were asked to rate how well they match each prototype on a scale of one to seven.

The Relationship Scales Questionnaire (RSQ; Griffin & Bartholomew, 1994) is an indirect measure of Bartholomew and Horowitz' (1991) four attachment prototypes. It consists of 30 phrases drawn from the paragraph descriptions of Hazan and Shaver's (1987) Adult Attachment Questionnaire (AAQ), Bartholomew and Horowitz' (1991) Relationship Questionnaire (RQ), and Collins and Read's (1990) Adult Attachment Scale (AAS). Participants rated how well each item fit their characteristic style in close relationships.

Sample 2. The RQ and RSQ were administered to this sample. See Sample 1, Instruments section above for a description.

The Adult Attachment Scale (AAS; Collins & Read, 1990) was administered. The AAS is an adult attachment measure that consists of three subscales composed from 22-items. The *close* subscale measures the extent to which an individual is comfortable with closeness and intimacy ($\alpha = .85$), and the *depend* subscale measures the extent to which a person is comfortable depending on others ($\alpha = .85$). These two dimensions reflect the degree to which a person tends to avoid or approach intimacy with others. The *anxiety* subscale measures the extent to which an individual is worried about being rejected ($\alpha = .88$).

We administered an instrument that has come to be known as the Multi-Item Measure of Adult Romantic Attachment (MIMARA; Brennan & Shaver, 1995). The MIMARA measures seven subscales related to attachment experiences in close relationships: *frustration with partners* ($\alpha = .88$), *proximity seeking* ($\alpha = .89$), *self-reliance* ($\alpha = .88$), *ambivalence* ($\alpha = .87$), *trust* ($\alpha = .89$), *jealousy* ($\alpha = .85$), *clinging* ($\alpha = .78$). Subjects were asked to rate on a seven-point scale the extent to which each item characterizes their experiences in close relationships.

Sample 3. Both the RQ and the MIMARA were administered to this sample. See Sample 1, Instruments for a description of the RQ and Sample 2, Instruments for a description of the MIMARA.

The Experiences in Close Relationships (ECR; Brennan, Clark, & Shaver, 1998) measure was also administered to this sample. The ECR is an adult attachment measure based on a factor analysis of most of the existing self-report measures of adult romantic attachment. The measure consists of two subscales composed from 36 items. The *avoidance* subscale ($\alpha = .94$) reflects discomfort with closeness and

discomfort depending on others and the *anxiety* ($\alpha = .91$) subscale reflects a fear of rejection and abandonment. Subjects were asked to rate on a seven-point scale the extent to which each item characterizes their experiences in close relationships. Attachment security is defined as the lack of anxiety and avoidance.

The Dyadic Adjustment Scale (DAS) (Spanier, 1976) was also administered. The DAS is a well-known instrument often used for assessing the quality of marriage and other similar dyads. It consists on 32 items measuring three subscales, Dyadic Consensus, Dyadic Satisfaction, and Dyadic Cohesion. It has high scale reliability and construct validity (Spanier, 1976).

Procedure

Data gathering. Sample 1 data was obtained from a diary type study in which individuals in relationships kept daily records of various social interactions. The data used for the current analysis are from an initial session in which all subjects filled out a questionnaire package. Sample 2 data was collected by the second author in a number of small groups solely for the purpose of this study. The second author, as part of a larger laboratory interaction study, collected the sample 3 data. The data used for the current analysis are from an initial session in which all subjects filled out a questionnaire package.

Statistical analysis. Confirmatory factor models were estimated (Samples 1 & 2) using LISREL (Jöreskog & Sörbom, 1996). A primary advantage with confirmatory factor analysis is the possibility to compare different models. It is possible to directly compare models with different numbers of factors and in addition with different loading structures. It is then possible to conclude if one model fits the data better than another. In this analysis, the fit of various hypothesized models were estimated, and the covariance structure was used to compare solutions with each other in order to determine which model best represented the structure of the data in the samples. The fit between data and a model was estimated by χ^2 , by the fit index Root Mean Square Error of Approximation (*RMSEA*), and the Goodness of Fit Index (*GFI*). All are well known and recommended fit indexes (Jöreskog & Sörbom, 1993). The *RMSEA* estimates the lack of fit in a model compared to a perfect model; low values indicate good fit. The *GFI* estimates the proportion of variance accounted for by the estimated population covariance matrix and indicates good fit when it is close to 1. We compared models in some models and, accordingly, used $\Delta\chi^2$, i.e., the difference in χ^2 between models. All presented statistics were estimated with the Maximum Likelihood method. The STREAMS program (Gustavsson & Stahl, 1997) aided in creating the LISREL models.

Results

Confirmatory Factor Analysis

We predicted in Hypothesis 1 that a three-dimensional model would fit the data structure better than any alternative. Using the Relationship Scale (RQ) (Bartholomew & Horowitz, 1991) and the Relationship Scales Questionnaire (RSQ) (Griffin & Bartholomew, 1994) data from Sample 1 (see Method, Participants), we tested five different types of models in order to thoroughly scrutinize this hypothesis. The analysis started with one factor, followed by two and three-factor models. Two-factor models came in two alternatives, the one contrasting secure against fearful and preoccupied against dismissive and the other representing the suggested structures Model of Self and Model of Others (e.g., Griffin & Bartholomew, 1994). Two three-factor model variations were tested and the first two-factor and both of the three-factor models both with and without co-variation between factors.

Table 1
Standardized Factor Loadings from Model 1, 2a, 2b, and 2c

	Mod 1 F1	Mod 2a F1	Mod 2b F2	Mod 2b F1	Mod 2b F2	Mod 2c Self	Mod 2c Other
RSQ secure	.73	.72		.73		.50	.49
RSQ fearful	-.86	-.85		-.86		-.35	-.33
RSQ preoccupied	-.22		.96		.99	-.49	.36
RSQ dismissive	-.31		-.36		-.34	.44	-.46
RQ secure	.79	.79		.78		-.68	.45
RQ fearful	-.85	-.86		-.86		.52	.12
RQ preoccupied	-.29		.73		.71	-.77	-.75
RQ dismissive	-.17		-.48		-.47	.29	-.74

The one factor-model (Model 1, see Table 1) yielded a χ^2 value of 397.92 ($df = 20$; $p < .00$), a Goodness of Fit (*GFI*) value of .68, and a Root Mean Square Error of Approximation (*RMSEA*) value of .277 (see Methods, Statistical analysis section for explanation of how to use these indexes). As indicated in Table 1, the variables RQ-Secure and RSQ-Secure contrasted against all other variables. As revealed by the fit indexes, some of the loadings were rather low and we therefore decided to continue by testing models with more than one factor.

The next model consisted of two orthogonal factors (Model 2a, see Table 1). We contrasted the secure variables against the fearful variables and the dismissing

against the preoccupied variables. This model resulted in a χ^2 of 202.27 ($df = 20$; $p < .00$), a *GFI* of .84, and a *RMSEA* of .192. The fit was improved in comparison with the one-factor model (Model 1), $\Delta\chi^2 -195.65$. However, the fit indexes indicated that this two-factor model was far from perfect. In particular, the analysis revealed that the factor loading (see Table 1) for the dismissive variables had lower values.

The same model (Model 2a) was tested with freed co-variation between the latent factors (Model 2b), which resulted in a marginally better fit; $\Delta\chi^2$ was 10.36. With one *df* less ($p < .05$), 2b was a significant improvement over the orthogonal model (2a). The fit indexes for 2b were precisely the same as for 2a, i.e., *GFI* was .84 and *RMSEA* was .192. The covariance of the factors was -.22. The relation between RQ dismissing and the first factor accounted for the highest modification index.

The second two-factor model tested was the one suggested by Griffin and Bartholomew (1994), depicting Model of Self and Model of Other. This model was tested without covariation between the dimensions since it was originally defined this way. It was not possible to get convergence without specifying some of the parameters in the model. RSQ-preoccupied and RSQ-fearful was forced to load -1.0 to Factor 1. RSQ-dismissive and RSQ-fearful was forced to load -1.0 to Factor 2. Using these restrictions, the model converged with a fit, a bit worse, but comparable to the previous two-factor models ($\chi^2 = 200.42$; *GFI* = .82; *RMSEA* = .22). Note that the degrees of freedom were lower for this model due to a larger number of estimated parameters. Coefficients (see Table 1) were generally moderately high, but some of them were low, e.g., RSQ-secure in the Model of Other factor and RSQ-dismissing in the Model of Self factor.

We continued by testing two different three-factor models. The first model contrasted the fearful and secure variables in one factor, and defined the dismissing and preoccupied variables to load on one factor each (Model 3a, not shown in table format). This model resulted in a χ^2 of 225.25, a *GFI* of .84, and a *RMSEA* of .176, suggesting a somewhat better fit (based on the *RMSEA*) compared with the two-factor model above (Model 2b).

We suggested in Hypothesis 1 that allowing co-variation between the factors would significantly increase the fit. Indeed, when co-variation between the three factors was permitted (Model 3b, see Table 2), the χ^2 value decreased to 103.25, the *GFI* increased to .91, and the *RMSEA* decreased to .14. This was a considerable improvement in fit compared to the orthogonal (2a) and oblique (2b) two-factor models described above ($\Delta\chi^2 = 88.66$; $\Delta df = 3$; $p < .001$).

Table 2*Standardized Factor Loadings from Model 3 and 4 with Within Factor Correlation*

	Mod 3b F1	Mod 3b F2	Mod 3b F3	Mod 3c F1	Mod 3c F2	Mod 3c F3
RSQ Secure	-.73			-.61	-.32	-.14
RSQ Fear	.86			.86		
RSQ Preoccupied		.94			.93	
RSQ Dismissive			.74			.66
RQ Secure	-.79			-.72	.00	-.24
RQ Fearful	.85			.85		
RQ Preoccupied		.75			.75	
RQ Dismissive			.72			.72
Factor correlation	F1-F2	F1-F3	F2-F3	F1-F2	F1-F3	F2-F3
	Mod 3b	Mod 3b	Mod 3b	Mod 3c	Mod 3c	Mod 3c
	.26	.35	-.60	.27	.31	-.61

Yet one further possibility was to include the secure variables in all factors (Model 3c; See Table 2), i.e., to contrast the insecure attachment types against the secure. Once again, we allowed co-variation between the factors. Using this model, χ^2 was further decreased to 58.49, the *GFI* increased to .95, and the *RMSEA* value decreased to .12. In order to further improve the model fit, we defined, based on the modification indexes, the error between RSQ-dismissing and RSQ-fearful as correlated (Model 3d). This step resulted in an even better fit, with χ^2 decreasing to 25.06, a *GFI* of .98, and a *RMSEA* value of .072. Correlation between the factors in this model was F1-F2 = -.25, F1-F3 = -.24, and F2-F3 = -.62.

For the purpose of replication, we conducted the same analyses as above using RQ and RSQ data from Sample 2. Generally, the estimations from this sample also suggested a three-factor model with correlation between factors as the one with the best fit. The analysis showed a $\Delta\chi^2$ of 42.32 ($df = 2$; $p < .001$) when Model 2a and Model 3a were compared to each other and a $\Delta\chi^2$ of 63.43 ($df = 4$; $p < .001$) when Model 2b was compared with Model 3c.

Table 3
Loadings for the Exploratory Factor Analyses

Rotated Component Matrix					
	F1-2	F2-2	F1-3	F2-3	F3-3
RQ Fear	.82	.10	.87		
RQ Secure	-.83		-.86	-.12	
RQ Preoccupied		.70			1.00
RQ Dismiss	.55	-.32	.14	.99	

Note. F1-2 and F2-2 were from the two-factor model and F1-3, F2-3, and F3-3 were from the three-factor model. Loadings below .1 are not shown

Sample 3 data only included the RQ and not the RSQ. In order to further replicate the above findings, we conducted an exploratory factor analysis of this instrument. Principal component analysis suggested that a two-factor solution did not represent the data well. The RQ-dismissing communality was rather low (.4) and even after rotation the loading of the dismissing variable was higher to the secure-fearful factor dimension (see Table 3) compared to the factor with loading to the RQ-preoccupied variable. To the contrary, a three-factor solution suggested good agreement with the confirmatory factor analyses described above (see Table 3).

Construct Validation

The next step in the analysis was to compare a three-factor model with data measuring different aspects of attachment. The goal was to provide some validation of a three-factor model as an extension of a two-factor model. We suspected that these aspects would correlate differently with the three-factor model when compared to two factor models, but we also predicted the proposed model to add explanatory power when compared to two-factor models (Hypothesis 2).

In order to measure the two-factor model, we created one variable contrasting the secure and the fearful measures from the RQ and RSQ (we will refer to this factor as Security/Insecurity). We created the three-factor model by contrasting all negative attachment variables against the secure. The Security/Insecurity (secure-fearful) variable was weighted 1.0 against the secure variable, -1.0 against the fearful variable, and -0.3 against both the preoccupation and dismissing variables. These variables will be called Preoccupation/Anxiety and Avoidance/Dismissing.

Take special note that the Security/Insecurity factor was exactly the same in both models.

Our first comparison was with the instrument called Experiences in Close Relationships (ECR; Brennan, Clark, & Shaver, 1998), a questionnaire measuring two variables related to attachment, viz., avoidance and anxiety. Take note that only the RQ (and not the RSQ) was available in this comparison and that all data came from Sample 3. Table 4 shows correlation between the RQ models and the ECR. Clearly, both ECR-variables seem to be correlated to the Security/Insecurity factor from the attachment models we created (see above). The relationship was strongest with avoidance (21% common variance), while the correlation with anxiety was rather weak (9% common variance). In addition, ECR-avoidance and the created Avoidance/Dismissing factor were related, as well as ECR-anxiety and the created Preoccupation/Anxiety factor. We found that the Avoidance/Dismissing and Preoccupation/Anxiety factors included in the suggested three-factor model explained a significantly larger amount of the variance in the ECR variables when compared to the single bipolar variable measuring these constructs in the two-factor model. This result remained the same even after controlling for the Security/Insecurity factor.

Factor analyzing the ECR and RQ together provided some insight into the relationship between these measures. Table 5 shows the loadings from an exploratory oblique factor analysis and it is apparent that ECR-anxiety and RQ-preoccupied, as well as ECR-avoidance and RQ-dismissive, measure the same constructs. Important to note was the rather low loading for ECR-anxiety on Factor 1 (Security/Insecurity factor) and the low loading of RQ-secure on Factor 2 (Preoccupation/Anxiety factor). The ECR was not included in all samples, but the correlation structure and the factor analysis above suggest that our proposed Avoidance/Dismissing and Preoccupation/Anxiety factors correspond to the ECR-variables.

Our next comparison was made with a questionnaire that has come to be known as the Multi-Item Measure of Adult Romantic Attachment (MIMARA) (Brennan & Shaver, 1995), an instrument that measures seven variables related to close relationships. All data for this part of the analysis came from Sample 2. We predicted that the factors created from the RQ and RSQ would basically measure the same constructs as the MIMARA.

Table 6 presents the results. Note that the pattern of correlation was the same for many variables, e.g., Compliance, Self-reliance, Ambivalence, and Trust had opposite correlations to the Secure/Insecure factor compared to the two other factors in the three-factor model. Only one variable, Jealousy, was correlated in

different directions for the Avoidance/Dismissive and Preoccupation/Anxiety factors. In addition, one variable, Proximity, was related to the Security/Insecurity and Avoidance/Dismissive factor, but not significantly to the Preoccupation/Anxiety factor. One variable, anxiety clinging, was related to the Security/Insecurity factor and the Avoidance/Dismissive factor. To summarize, all variables measuring experiences in attachment relationships were related to the first factor (Security/Insecurity). Some of the variables were related to all factors, while others were only related to two.

Table 4

Correlation between the RQ-RSQ Factor Models (F2 and F3) and ECR

	ECR-Avoidance	ECR-Anxiety
Secure/Insecure (F13)	-.46	-.30
Preoccupied-Dismissive (F2-2)	-.31	.38
Preoccupied/Anxiety (F3-3)		.50
Avoidant/Dismissive (F3-3)	.47	

Table 5

Loadings from Exploratory Factor Analysis of ECR and RQ

Variable	Factor		
	1	2	3
ECR-Avoidance	.60		.66
ECR-Anxiety	.35	.82	-.18
RQ-Secure	-.83		-.26
RQ-Fearful	.86	.19	.15
RQ-Preoccupied		.89	
RQ-Dismissive	.20		.92

Note. Loadings below .1 are not shown.

Table 6*Correlation between the RQ-RSQ Factor Models (F3-2 and F3-3) and MIMARA*

	Com-plain	Proxi-mity	Self-reliance	Ambi-valence	Trust	Jelous-ness	Anxiety
Secure/Insecure (F-1)	-.45	.34	-.58	-.41	.70	-.23	-.32
Preoccupied-Dismissive(F2-2)		.23	-.24		.20	.50	.23
Preoccupied/Anxiety (F3)	.36		.22	.25	-.20	.43	.43
Avoidant/Dismissive (F3)	.24	-.47	.53	.31	-.43	-.30	

Note: Only significant correlation are shown

Correlation to the first factor (Security/Insecurity) was generally higher than to the other factors and the lowest correlation was generally found to the Preoccupation/Anxiety factor. Using multiple regression analysis, we found that the MIMARA explained 55.1% of the variance in the Security/Insecurity factor, 38% of the Preoccupied-Dismissive factor (two-dimensional model), 28% of the Preoccupation/Anxiety factor, and 54% of the Avoidance/Dismissing factor. Using the factor models as predictors of the MIMARA, the proposed three-factor solution explained a significantly larger amount of variance in three out of seven variables, compared to two-factor models (see Table 7).

In a series of hierarchical regression analyses using the variables from the three-factor model as predictors, we found that the suggested Security/Insecurity factor contributed unique variance, i.e., controlling for the two other variables, on MIMARA-complain ($\Delta R^2 = .053$; $p = .005$), MIMARA-self reliance ($\Delta R^2 = .084$; $p < .001$), MIMARA-ambivalence ($\Delta R^2 = .04$; $p = .017$), MIMARA-trust variable ($\Delta R^2 = .278$; $p < .001$), and MIMARA-Jealousy ($\Delta R^2 = .061$; $p = .001$). Reversing the analyses, controlling for Security/Insecurity, we found that the Avoidance/Dismissing factor (three-dimensional model) contributed unique variance to MIMARA-proximity-seeking ($\Delta R^2 = .122$; $p < .001$), MIMARA-self reliance ($\Delta R^2 = .085$; $p < .001$), and MIMARA-jealousy ($\Delta R^2 = .235$; $p = .001$). In addition, the Preoccupation/Anxiety factor contributed unique variance to MIMARA-complain ($\Delta R^2 = .03$; $p = .04$) and MIMARA-jealousy, after controlling

for Security/Insecurity and Avoidance/Dismissing ($\Delta R^2 = .056$; $p = .002$) and MIMARA anxiety ($\Delta R^2 = .103$; $p < .001$). These results further support the suggested extension with the Security/Insecurity factor since it makes a significant contribution in relation to MIMARA.

Table 7

Correlation between the RQ-RSQ Factor Models (F2 and F3) and AAS

	AAS Dependence	AAS-Anxiety	AAS-Closeness
Secure/Insecure (F-1)	.80	-.28	.68
Preoccupied-Dismissive (F2-2)		.59	.25
Preoccupied/Anxiety (F3-2)	.39	.70	-.21
Avoidant/Dismissive (F3-3)	-.55	-.20	-.52

Note: Only significant correlation are shown

Our next comparison was with the Adult Attachment Scale (AAS; Collins & Read, 1990), a questionnaire that traditionally measures the three dimensions closeness, dependency, and anxiety. All data for this part of the analysis came from Sample 2. We predicted that the traditional three dimensions of the AAS would basically measure the same constructs as our suggested three-dimensional model. Correlation between the AAS and the two and three factor models created are presented in Table 7. It is apparent that the AAS-dependency and AAS-closeness scales measure the same constructs as our proposed Security/Insecurity and Avoidance/Dismissing factors. Using hierarchical multiple regression methods, we found that AAS-dependency and AAS-closeness both contributed unique variance to the Secure/Insecurity factor. The correlation between AAS-dependency and AAS-closeness was rather high ($r = .554$). The AAS-anxiety measure seemed to correspond to the suggested Preoccupation/Anxiety factor. Correlation was higher to this factor (three-dimensional model), compared to the preoccupied-dismissive factor (two-dimensional model).

Next, we made comparisons using the Dyadic Adjustment Scale (DAS; Spanier, 1976), a widely used measure that explores the quality of adjustment to one's partner. All data for this analysis was taken from Sample 3 and the factors are solely based on RQ data since the RSQ was not available for this sample. We predicted that the proposed Security/Insecurity factor would correlate positively with all three measures and that the proposed Avoidance/Dismissive and Anxiety/Preoccupation factors would correlate in different directions or on different

variables of the DAS. Correlational analyses revealed the Security/Insecurity factor and the Avoidance/Dismissing factor were related to DAS-Consensus interaction. DAS-Satisfaction was also significantly related only to the Avoidance/Dismissive factor. DAS-Affectional expression was Positively related to Security/Insecurity and negatively correlated to the Avoidance-Dismissing factor. The factor contrasting preoccupied and dismissive attachment (two factor) showed no significant correlation to these relationship variables.

Table 8

Correlation between the RQ-RSQ Factor Models (F2 and F3) and DAS

	Consensus	Satisfaction	Affectional expression
Security/Insecurity (F-1)	.279**	.050	.147**
Preoccupied-Dismissive (F2-2)	.074	.045	.118
Preoccupied/Anxiety (F3-2)	-.149	-.127	-.100
Avoidant/Dismissive (F3-3)	-.241**	-.182*	.252**

* $p < .05$ ** $p < .01$ (two-tailed).

Using multiple regression analysis, we found that Security/Insecurity and the Avoidant/Dismissing factor separately predicted the amount of DAS-Consensus and DAS-Affectional expression. Note that correlation with the three-factor model, even if not always significant, is the same for all variables, i.e., positive to the Secure/Insecure factor and negative to the others.

Discussion

In accordance with our prediction in Hypothesis 1, we conclude from the Confirmatory Factor Analysis that the construct underlying the Relationship Questionnaire (RQ) (Bartholomew & Horowitz, 1991) and the Relationship Scales Questionnaire (RSQ) (Griffin & Bartholomew, 1994) is best defined by three correlated factors, one factor measuring Security/Insecurity (secure-fearful items) and the other two measuring Preoccupation/Anxiety (preoccupied items) and Avoidance/Dismissing (dismissing items). Thus, secure and fearful variables were defined to measure the same factor, while the preoccupied and dismissing variables were defined as belonging to separate factors.

Correlated Factors

The interpretation of oblique models (with correlated factors) can sometimes be

complicated. Correlation between two factors suggests that one determines the other or that both are determined by a third unknown variable. However, in the present context, correlation between factors seems to have some interpretative advantages. It is likely that the proposed Security/Insecurity dimension is somewhat related to the two other dimensions, i.e., it seems plausible that a person's mode of appraising attachment situations is related to how she or he usually reacts to them.

The names of the factors were chosen to represent different constructs of attachment previously used within attachment research. Our construct assumption is that Security/Insecurity is an essential part of attachment theory; thus, a measurement model that does not include this factor is incomplete. The names of the other two dimensions are directly derived from the ones most often used in the adult attachment literature. The difference between preoccupation, ambivalence and anxiety, and avoidance and dismissing, respectively, seems to be somewhat arbitrary.

Why is Security/Insecurity such an important factor? Security is described within developmental attachment theory-as primary to avoidance and anxiety. Indeed, from the start, attachment research focused on showing the importance of the security factor in infant development (Ainsworth & Bowlby, 1991). One example of this primacy occurs in the Strange Situation Test, where insecurity is induced to measure its behavioral consequences, i.e. anxiety/clinginess and/or avoidance. In addition, Bowlby (e.g., 1973) suggested that subjects, based on their early attachment experiences and possibly on some genetic determinates such as temperament, differed with regard to their experienced level of Security/Insecurity. In light of the primacy and importance of the Security factor within attachment theory, we propose that it should be measured and conceptualized relatively independently of the strategies the individual may use to deal with potential insecurity. Naturally, this Security/Insecurity can then be used either as a trait or a state concept, representing either general or specific experiences in close relationships. Given this, a person could identify himself or herself as in general having problems with close relationships and may in general use an Avoidant/Dismissing strategy to deny their importance. However, the same person could describe himself or herself as fairly secure at the present time and with his or her current partner and can then not be expected to show or report preoccupation or avoidance behavior (see, e.g., Baldwin, et al., 1996; Ross & Spinner, 2001).

The Suggested Extension in Relation to Bartholomew's Model

It is important to recognize that the suggested model relies heavily on previous work done by Bartholomew and colleagues. When Bartholomew and Horowitz

(1991) created their scale (The Relationship Questionnaire or RQ), they added a new question to the three used in Shaver's (1987) original instrument (The Adult Attachment Questionnaire or AAQ), viz., the one representing a dismissing orientation. This addition was based on theoretical reasons. Their main aim was to complete the fourfold table based on the two constructs, Model of Self and Model of Others (Bowlby, 1973). The confirmatory factor analysis in the present study suggests that these concepts, as they have been defined, fit these attachment data quite well. However, they do not explain all the variance between and within the measures. This said, the concepts (Model of Self and Model of Others) are obviously relevant and interesting and have resulted in a large number of research reports (for a recent review of the current status of these concepts see Pietromonaco & Feldman Barrett, 2000). The new dismissing question suggested some subjects to be uninterested in or avoiding relationships (low Model of Others), but not necessarily in an anxious way (high Model of Self). It was defined as the opposite of preoccupied attachment (high Model of Others and low Model of Self). Obviously, including the dismissing variable in the factor analysis in the present study had a significant impact on the confirmatory factor models presented. Indeed, without it we would end up with two factors. Brennan, Clark, and Shaver (1998) found a rather weak correlation between their two factors (avoidance and anxiety) and questions depicting the dismissing attachment style in Bartholomew's instruments (e.g., the RSQ). Explorative factor analysis, as used in their study, is dependent on what variables are included. If there had been more questions targeting the construct of dismissing attachment, as defined by Bartholomew, it is quite probable that their conclusion would have been more in line with the one suggested here.

Security Defined As Lack of Anxiety and Avoidance

We are suggesting that simply defining attachment security as the lack of anxiety and avoidance (e.g., Brennan, Clark, and Shaver, 1998) may not be entirely sufficient in capturing the essence of security as originally conceived by Bowlby (e.g., 1973, 1981). How attachment security relates to avoidance and to anxiety is problematic in several ways, e.g., the strength of the avoidance or anxiety measured does not necessarily have to correspond to how insecure one feels. A subject showing tendencies towards both avoidance and anxiety, to a certain degree, does not have to feel more insecure than a subject showing only avoidance to the same degree. In addition, to define security as the absence of insecurity, if equality between the constructs is regarded, only holds if anxiety and avoidance, as defined in the ECR (Brennan, Clark, & Shaver, 1998), includes all information that

previously has been included in the concept of Security (e.g., in the AAS and RQ). Further, our correlation suggests that the relationship between Security/Insecurity and anxiety is rather low compared with the correlation to Avoidance/Dismissive. We suggest that using the ECR to measure security will have the effect of changing the concept of attachment security to more encompass the concept of anxiety, compared to earlier work. If this is a desirable outcome is beyond the scope of this paper, but it is worth pointing out and worth pondering upon the implication for how we define attachment security within adult attachment research.

State and Trait Attachment

One advantage of the suggested extension with a separate Security/Insecurity factor is that the situation as a determinant of attachment is easily integrated. If an individual feels secure in the situation, there is no need to avoid or cling, but if s/he feels insecure, attachment theory suggests that preoccupation and avoidance (with possible variants) are the main emotional coping behavior options available to help reduce the experience of insecurity (e.g., Bowlby, 1979).

We suggest that the factors Avoidance/Dismissing and Preoccupation/Anxiety are not end-points on a single dimension, as suggested by Griffin and Bartholomew (1994), and not totally independent dimensions, as suggested by Brennan, Clark, and Shaver (1998). Rather, they are negatively correlated. In other words, these two secondary coping components of attachment do not mutually exclude each other. If an individual is clinging, then he or she is certainly not avoiding at that specific moment; on the other hand, he or she may find avoidance behavior an option if clinging does not bring an end to the attachment related threat. That an individual may find avoidance an effective strategy in one relationship does not necessarily mean he or she will use it in every relationship. If a person uses avoidance to a higher degree, she or he will use clinging to a less degree, therefore the negative correlation. This type of argument, suggesting people to have multiple attachment models activated by different situations and partners, has been put forward by several previous researchers (e.g., Baldwin et al., 1996; La Guardia, Ryan, Couchman, & Deci., 2000; Ross & Spinner, 2001). We propose that adding Security/Insecurity as a separate dimension better facilitates this way of understanding adult attachment.

Correlation Between the Three-Factor Model and Other Attachment Data

The correlation part of the present study aimed at showing that the suggested three-factor extension has some advantages over two-factor models when compared to other instruments in the genre. We are well aware that the presented results are

not enough to establish our point, but it is a starting point.

The measure known as the Multi-Item Measure of Adult Romantic Attachment (MIMARA) (Brennan & Shaver, 1995) is an important instrument since it aims at measuring a vast number of experiences in close relationships and one could reasonably expect it to be highly related to the factors presented in the extended model. Indeed, we found a high correlation with the three-factor model, generally highest to the Security/Insecurity factor. More importantly, all variables except MIMARA-Jealousy showed the same pattern of correlation, i.e., the correlation was the opposite for the Security/Insecurity factor compared with both of the other factors (Avoidance/Dismissing and Preoccupation/Anxiety). This indicates a closer correspondence between Security/Insecurity and several MIMARA variables than to the other two dimensions. It is more parsimonious to explain this correlation pattern as dependence between Security/Insecurity and the MIMARA variables, compared to dependence with the other factors, e.g. Avoidance/Dismissing and Preoccupation/Anxiety. The existence of an independent Security/Insecurity factor was yet further supported by a hierarchical regression analyses suggesting that it contributed unique variance to the MIMARA.

An interesting pattern of correlation was found between the extended model and the Adult Attachment Scale (AAS) (Collins & Reed, 1990). The Security/Insecurity factor was highly related to AAS-Dependency and AAS-Closeness, but only weakly related to AAS-Anxiety. The Avoidance/Dismissing factor had almost the same magnitude of correlation to AAS-Dependence and AAS-Closeness as the Security/Insecurity factor, while the Preoccupation/Anxiety factor was found to relate especially to AAS-Anxiety. The Security/Insecurity factor, when controlling for the two other factors, contributed unique variance to AAS-Dependence and AAS-Closeness. In other words, the suggested Security/Insecurity factor taps qualities within attachment that simple two-dimensional models run the risk of ignoring.

The analysis of the Dyadic Adjust Scale (DAS) and the extended model revealed a similar pattern of correlation. Again, the Security/Insecurity factor was found to contrast against the other two factors. In addition, the Security/Insecurity factor added explanatory power in the regression analyses.

Attachment Scales and Other Personality Dimensions

Arguments based on exploratory factor analysis of attachment scales are limited with the possible caveat that such a method could replicate more general personality factors. Adherents of the five-factor model within personality theory (e.g., Costa & McCrae, 1985) suggest that stable traits are restricted to behaviors stemming from

only five uncorrelated dimensions that are relativity context free (Shaver & Brennan, 1992). If measures used within attachment theory are interchangeable with factors from the Big Five (or rotations of such factors), then the discriminate validity of these measures is questionable. We argue that it is in the particular context of attachment behavior activation (Bowlby, 1973; 1979) that a model of attachment, distinguished from general personality models, becomes extremely relevant. Attachment theory deals with how particular personalities act and react in particular attachment relevant situations. This, as we see it, is the strength of attachment theory, not a weakness. Thus, the goal, from our point of view, is to create attachment measures that add explanatory power within the specific context of attachment relationships and situations.

Methodological Limitations and Conclusion

From a methodological point of view, there were some problems with this study. The empirical materials were gathered from studies conducted for other aims than to investigate the present model. Because of this, all hypotheses could not be tested; e.g., the ECR could not be included in the primary confirmatory factor analyses. Further, direct comparisons of our model with the ECR were not made. However, such direct comparisons would be rather unfair to the present model since the reliability of the ECR is higher than that of the RQ and RSQ. A logical next step therefore, is to develop an instrument that measures the present model more directly, i.e., with three correlated scales including a larger number of questions than in the present RQ and RSQ.

The aim of the present study was to investigate the structure behind measures of romantic attachment and to scrutinize the two-dimensional model depicting Anxiety and Avoidance suggested. We suggested, based on a theoretically and empirically driven confirmatory factor analysis, that an extended measurement model of adult attachment could preferably be based on three factors. The suggested Security/Insecurity factor represents a person's appraisal and understanding of an attachment situation, both cognitively and affectively. This appraisal should be an essential part of every study of attachment (attachment behavior activation), since without it, differences between subjects could be more easily explained by other personality constructs such as those constituting the Big-Five. We argue that anxiety and avoidance both have cognitive, affective, and behavioral components that are dependent on a person's level of Security/Insecurity. From such a perspective, it follows that anxiety, or some other negative affect, is an outcome of a situation appraised as threatening. Some persons acknowledge the threat, experience the anxiety, and behave accordingly, often with attempts to repair the

relationship. Others deny the threat, repress the anxiety, and avoid the situation or the relationship in order to uphold these defences. Yet others mix these attempts and may change strategies depending on the development of the situation and on how they perceive their success. We submit that the extended model suggested here is more in line with a flexible and dynamic model of attachment, as proposed by the original attachment theorists (see, e.g., Bowlby, 1979, Lecture 7) and developmental theorists (e.g., Kobak, et al., 1993; Main, 1991). The question we pass on to all interested researchers in this area is: What do we lose in content validity by not directly measuring adult attachment security?

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