

Attachment Style as a Predictor of Adult Romantic Relationships

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Questionnaire measures of attachment style, attachment history, beliefs about relationships, self-esteem, limerence, loving, love addiction, and love styles were administered to 374 undergraduates. Attachment style was related in theoretically expected ways to attachment history and to beliefs about relationships. Securely attached Ss reported relatively positive perceptions of their early family relationships. Avoidant Ss were most likely to report childhood separation from their mother and to express mistrust of others. Anxious-ambivalent subjects were less likely than avoidant Ss to see their father as supportive, and they reported a lack of independence and a desire for deep commitment in relationships. The self-esteem measure and each of the scales measuring forms of love were factor analyzed separately. Analyses based on scale scores derived from the resulting factors indicated that attachment style was also strongly related to self-esteem and to the various forms of love discussed in other theoretical frameworks. The results suggest that attachment theory offers a useful perspective on adult love relationships.

Within psychology, the concept of attachment has been most fully explored in relation to infant behavior. Bowlby's pioneering work on attachment, separation, and loss (Bowlby, 1969, 1973, 1980) explained how infants become emotionally attached to their primary caregivers and emotionally distressed when separated from them. The focus on infant behavior continued with the classic research conducted by Ainsworth and her colleagues (Ainsworth, Blehar, Waters, & Wall, 1978; Bell & Ainsworth, 1972), linking the caregiver's responsiveness to the infant's signals during the first year of life with the infant's development of one of three attachment styles (*secure*, *avoidant*, and *anxious-ambivalent*). More recently, the literature has focused on the issue of continuity of attachment. A growing number of longitudinal studies provide evidence of such continuity from infancy to the early school years (e.g., Main, Kaplan, & Cassidy, 1985). In addition, there has been increasing speculation that attachment plays an important part in adult bonds, including romantic relationships (Morris, 1982; Weiss, 1982).

The attachment theory approach to adult love relationships has been developed most fully by Hazan and Shaver (Hazan & Shaver, 1987; Shaver & Hazan, 1988; Shaver, Hazan, & Bradshaw, 1988). According to this view, variations in early social experience produce relatively enduring differences in relationship styles, and the same three attachment styles described in the infant literature are manifested in adult romantic love. Continuity in attachment style is explained largely in terms of the persistence of inner working models of the self and of relationships ("mental models"), based on early social interaction. Hazan and Shaver have presented theoretical and empirical evidence for the relevance of attachment style to romantic love. Their theoretical work drew on the strong similarities between infant and adult attachments. The empirical research (Hazan

& Shaver, 1987), based on two adult samples, investigated the relationship between attachment style (measured by a single self-report item) and several aspects of childhood and adult relationships. The prevalence of the three attachment styles was similar to that reported in studies of infants. In addition, persons endorsing the different styles differed in attachment history (perceptions of early family relationships), endorsement of mental models, and romantic love experiences.

Shaver and Hazan (1988) have related their theory to previous formulations of love, including accounts of romantic love and of the different styles of love. The romantic love approach is exemplified by Tennov's (1979) theory of "limerence," or passionate love marked by intense emotion (e.g., acute longing for reciprocation and fear of rejection). Shaver and Hazan suggest that the approach to love described within theories of romantic love is similar to the concept of anxious-ambivalent attachment; they see the failure of these theories to deal with the avoidant style as a severe limitation.

Hazan and Shaver's discussion of the varieties of love has focused on the theory of love styles developed by Hendrick and Hendrick (Hendrick & Hendrick, 1986; Hendrick, Hendrick, Foote, & Slapion-Foote, 1984) and based on the typology proposed by Lee (1973). Lee's typology identified three primary love styles: *eros* (romantic, passionate love), *ludus* (game-playing love), and *storge* (friendship love); and three secondary styles (seen as compounds of the primaries): *mania* (possessive, dependent love), *pragma* (logical, "shopping-list" love), and *agape* (selfless, all-giving love). On the basis of the characteristics of these styles, Shaver and Hazan (1988) have argued that the typology can be reduced to an essential form corresponding to the three styles proposed by attachment theory: Specifically, *pragma* and *storge* fail to qualify as forms of romantic love; secure attachment should correspond to *eros* and to a less extreme version of *agape*, avoidant attachment to *ludus*, and anxious-ambivalent attachment to *mania*.

The attachment and love style approaches to romantic love have been compared in a study that focused also on relationship

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quality (Levy & Davis, 1988). Levy and Davis noted modest correlations between various love style and attachment style measures, lending partial support to the relationships proposed by Shaver and Hazan. They also reported empirical support for all three attachment styles: Secure attachment tended to be associated with positive relationship characteristics; avoidant attachment correlated with less satisfying and intimate relationships; and anxious-ambivalent attachment was negatively related to positive relationship characteristics, except for passion.

A recent study (Hendrick & Hendrick, 1989) assessed a number of measures of love, including the attachment items used by Hazan and Shaver (1987). Reliable relationships were obtained among the subscales of these measures. Secure attachment was generally related to positive relationship characteristics, and the two forms of insecure attachment also showed theoretically meaningful patterns of correlations (e.g., avoidant attachment and ludus, anxious-ambivalence and mania). Factor analysis of all subscales together yielded five factors, reflecting common themes among the measures.

Further exploration is required of the links between attachment styles and other theoretical formulations of love. It has been assumed (Shaver & Hazan, 1988) that limerence and mania can be equated with anxious-ambivalence; however, several questions warrant attention. First, the proposed link between limerence and attachment style has not been examined empirically. Second, because the correlations between such constructs are likely to be far from perfect, it may be important to study the relationships at a finer level of analysis. In particular, where a construct is multidimensional (as limerence appears to be), the relationship of particular factors to attachment style is of interest. Third, the above theorizing may be usefully extended to other constructs, such as love addiction, discussed in theories of romantic love. Love addiction (Cowan & Kinder, 1985; Peele, 1975) is the obsessive search for love, characterized by extreme dependency; partners are bonded together by self-deprivation and overinvolvement. Can love addiction also be equated with anxious-ambivalent attachment?

The relationship between ludus and avoidant attachment also requires closer examination. Some support for this link has been reported (Hendrick & Hendrick, 1989; Levy & Davis, 1988), but the strength of the relationship may be questionable. Two items of the ludus scale focus on the issue of multiple partners; although this may be an important aspect of "game-playing" love, there is no compelling reason why it should be a strong feature of avoidant attachment (because this may be only one of a number of ways of avoiding intimacy).

Finally, the role of storge within a model of romantic love needs to be clarified. Levy and Davis found little empirical support for their hypothesis that storge is a feature of secure attachment. Shaver and Hazan (1988) suggested that storge may not constitute a form of romantic love. Even if storge is not considered as a romantic love style in its own right, the literature on companionate love and companionate marriage suggests the importance of knowing how friendship love relates to attachment style.

A study of the relationships between attachment theory and other formulations of love offers the possibility of achieving some integration of theoretical approaches in this area. Such an integration may be enriched by a clarification of the role of self-

esteem in various forms of love. Attachment theory emphasizes the influence of interrelated mental models of the self and of relationships in the continuity of attachment style; hence, it seems likely that self-esteem is closely linked to attachment style. Self-esteem is also likely to be related to attitudes toward love, although the relationships among self-esteem, self-actualization, and forms of romantic love are complex (Dion & Dion, 1985, 1988; Hendrick & Hendrick, 1986). Some theorists have suggested a negative relationship between self-esteem and the more extreme forms of love (e.g., love addiction and limerence), but this remains an empirical question (Tennov, 1979).

Integrative studies are hampered by the paucity of valid and reliable measures of some forms of love. Within theories of love addiction (Cowan & Kinder, 1985; Peele, 1975) and limerence (Steffen, McLaney, & Hustedt, 1984; Tennov, 1979), little attention has been paid to measurement issues. Measures that have been devised lack psychometric data or are subject to criticism concerning item specification or factorial complexity. Other conceptualizations of love have yielded more fully researched measures. Rubin (1970, 1973) emphasized the distinction between liking and loving, seeing the Love Scale as comprising three components (affiliative-dependent need, predisposition to help, and exclusiveness-absorption). A scale to measure the love styles proposed by Lee (1973) has been developed (Hendrick & Hendrick, 1986; Hendrick et al., 1984). Although this instrument possesses satisfactory reliability, empirical data suggest possible problems with the scale itself and with the underlying theory: The theoretical model of six independent love styles is argued against by the tendency of some styles to correlate with each other and to merge in factor-analytic studies (e.g., Thompson & Borrello, 1987). Shaver and Hazan (1988) have also criticized the strong theme of self-sacrifice in the wording of items of the agape scale.

The present study, based on self-report methodology, was designed to assess the utility of attachment style as a predictor of adult romantic relationships. The goals of the study were to replicate the findings of Hazan and Shaver concerning the relationships among attachment style, attachment history, and mental models and to investigate attachment style differences on a number of measures of love. The latter investigation addresses the links between attachment theory and other formulations of love and provides information about the approaches to love adopted by the three attachment styles. The questionnaires employed reflect a range of theoretical perspectives (loving, as measured by Rubin's Love Scale; love styles; limerence; and love addiction) and included a self-esteem inventory. The measures of limerence and love addiction were developed by Feeney for this study, based on previous attempts at scale development by researchers in this area. On the basis of the literature on love and attachment, the following hypotheses were derived.

Hypothesis 1. In accordance with the concept of secure attachment, secure subjects will have higher self-esteem than the two nonsecure styles. Given the possibility that some of the conceptions of love reflected in the questionnaires may be somewhat extreme (e.g., the wording of the agape items), no predictions were made concerning secure subjects' pattern of scores on forms of love.

Hypothesis 2. The essential feature of the avoidant style should be the avoidance of intimacy; therefore, the avoidant

group will obtain low scores on loving, as measured by Rubin's Love Scale.

Hypothesis 3. Because the key features of mania, limerence, love addiction, and anxious-ambivalent attachment are similar (i.e., dependence and possessiveness), anxious-ambivalent subjects will score most highly on mania, limerence, and love addiction. No specific predictions were made concerning particular scales of these measures.

As outlined earlier, previous research has shown that the six love styles do not always emerge as independent styles. In light of this fact, and in view of the preliminary nature of the research concerning possible links between secure attachment and eros and agape and between avoidant attachment and ludus, no predictions were made concerning attachment style differences on particular love styles (with the exception of mania).

Method

Subjects

Three hundred seventy-four undergraduates (162 males and 212 females) who were enrolled in first-year psychology or in a preservice teacher training (mature entry) course completed the set of questionnaires for course credit. Subjects ranged in age from 17 to 58, although just over two thirds were between 17 and 19. Most of the subjects were single (4 were cohabiting, 3 divorced, and 22 married).

Measures and Procedure

A set of questionnaires was administered, which included measures as outlined in Table 1.

All items except attachment style and attachment history were rated on a Likert-type scale, with scores ranging from *strongly agree* (1) to *strongly disagree* (5). A dichotomous measure was obtained for each of the parental history variables, with subjects being asked to endorse those items seen as applying to themselves (items were scored in such a way that 1 = *no* and 2 = *yes*).

The questionnaires were administered in different orders to prevent the items of one scale from systematically affecting responses to subsequent scales. Counterbalancing was achieved by using six orders of questionnaire presentation and rotating the sequential position of questionnaires in a Latin square design (each of the major questionnaires—love addiction, Rubin's Love Scale, limerence, Love Attitudes Scale [Hendrick & Hendrick, 1986], and the attachment style measures—occurred at every position, with the background items always appearing first). The questionnaires were administered in group sessions, which lasted approximately 1 hr.

For scales measuring forms of love (mental models, love addiction, loving, love styles, limerence), item scores were reflected, except for those items with reversed wording; thus, high scores indicate agreement in all cases. Scores were also reflected for the attachment history items, but not for the Coopersmith Self-Esteem Inventory (Coopersmith, 1967).

Results

Attachment Style, Attachment History, and Mental Models

Fifty-five percent of subjects endorsed the secure attachment style, 30% endorsed the avoidant style, and 15% described themselves as anxious-ambivalent. No sex differences were obtained in the prevalence of the three attachment styles.

A discriminant analysis was performed, investigating the re-

lationship between attachment style and responses to the attachment history checklist. The results were highly significant and similar to those of Hazan and Shaver (1987). Discriminant analysis was also used to assess the relationship between attachment style and the items tapping mental models. These results were also highly significant, with the patterns of mean scores similar to those from the undergraduate sample reported by Hazan and Shaver. (Because these results are replications of the work of Hazan and Shaver, they are not presented in detail here.)

Analyses of variance (ANOVAs) were conducted to investigate the relationship between attachment style and responses to three items dealing with early family separations: occurrence of childhood separation from the mother, childhood separation from the father, and parental separation or divorce. Only the item dealing with separation from mother yielded a significant *F* test; the means indicated that avoidant subjects were most likely to report separation from their mother. Although the *F* test for "separation from father" was not statistically significant, the pattern of means was similar to that of the "separation from mother" item. These analyses are summarized in Table 2.

Background Questions

No sex differences were obtained for any of the background questions. In contrast, all these items yielded significant attachment style effects. An ANOVA showed a significant effect of attachment style on length of longest love relationship, $F(2, 371) = 3.29, p < .05$. (Because the distribution of raw scores was skewed, this analysis was based on log-transformed scores.) The only significant pairwise difference (using the Tukey B post hoc test) occurred between secure and anxious-ambivalent subjects (raw score means were 23.6 and 15.2 months, respectively). For the remaining background questions, response categories were combined as required to increase cell sizes, and attachment style differences were investigated by frequency comparisons. The significant effects were based primarily on the pattern of scores of the avoidant subjects, who were more likely to report never having been in love, to report not being in love at the time of the study, and to rate their love experiences as not intense or only slightly intense. These results are summarized in Table 3.

Factor Analyses of Self-Esteem and Love Scales

Each of the scales was factor analyzed, using principal-components analysis followed by varimax rotation. Oblique rotations were also performed, but generally made little difference in interpretability or factorial complexity.

Replication of Previous Factor-Analytic Studies

Coopersmith Self-Esteem Inventory. A three-factor solution was retained, which accounted for 35.06% of the total variance. The factor structure obtained resembles closely that reported by Noller and Shum (1988), with the factors measuring Social, Family, and Personal Self-Esteem.

Love Scale. As in previous research, factor analysis of Rubin's Love Scale showed the scale to be unidimensional, with all items loading higher than .35 on the first factor.

Love Attitudes Scale. Confirmatory factor analysis of this

Table 1
Summary of Measures

Construct	Measure	Sample item (where applicable)
Background questions	—number, length, and intensity of love experiences —whether currently in love	
Self-esteem	Coopersmith Self-Esteem Inventory, adult form (1967)	
Attachment style	Single-item trichotomous measure used by Hazan and Shaver (1987)	
Attachment history	Checklist adapted from Hazan and Shaver (1987)	
Mental models	Items from Hazan and Shaver (1987) (a) course of love over time (b) self and others	It's rare to find someone you can really fall in love with. People almost always like me.
Loving	Rubin's 9-item Love Scale (1973)	I feel responsible for _____'s well-being.
Love addiction	13 items; from criteria of Peele (1975), and items adapted from Cowan and Kinder (1985)	I feel the happiest and most alive when I am involved with a partner.
Limerence	42 items; from work of Tennov (1979), and scale by Steffen, McLaney, and Hustedt (1984)	I feel awkward, confused, and shy when I am around someone to whom I am strongly attracted.
Love attitudes	Love Attitudes Scale (Hendrick & Hendrick, 1986) 1. Eros 2. Agape 3. Ludus 4. Mania 5. Storge 6. Pragma	My lover and I really understand each other. Whatever I own is my lover's to use as he/she chooses. I believe that what my lover doesn't know about me won't hurt him/her. When my lover doesn't pay attention to me, I feel sick all over. Our friendship merged gradually into love over time. It is best to love someone with a similar background.

scale was performed, forcing the extraction of six principal-component factors. It was not possible to reproduce the exact pattern of factor loadings reported by Hendrick and Hendrick (1986), although the best solution was a six-factor solution that explained 42.10% of the total variance. The pragma and ludus items each formed factors, as predicted by the theory of love styles (hence, the original labels have been retained for these factors). All mania items, together with one ludus item ("I can

get over love affairs quickly and easily"); negative loading), formed a factor consistent with the label of Mania. A factor comprising five storge items and two eros items (both dealing with rapid involvement in relationships, and loading negatively) was labeled Friendship. The eros and agape items did not conform neatly to the expected pattern of loadings. All agape items except "I try to help my lover through difficult times" loaded on one factor (labeled Agape). However, this item and two other agape items (dealing with the sharing of possessions and with unconditional love) joined with five eros items to form a Romantic Love Ideal factor. (The eros items missing from this factor deal with rapid involvement and with continuing friendships with past lovers.) The rotated factor loadings and communalities for this analysis are shown in Appendix A.

Table 2
Analyses of Variance of Childhood Separation Items

Variable	F(2, 371)	M		
		Secure	Avoidant	Ambivalent
Separation from mother	5.55*	1.10 _a	1.21 _b	1.05 _a
Separation from father	2.25	1.17	1.27	1.21

Note. 1 = no; 2 = yes. Within each row, means with different subscripts differ at the .05 level of significance according to a Tukey B test.
* $p < .01$.

Factor Analyses of New Questionnaires

Love addiction. Two orthogonal factors explained 34.90% of the total variance. They were interpreted as Reliance on Partner and Unfulfilled Hopes. The rotated factor loadings and communalities are shown in Appendix B.

Limerence. Given the extreme complexity of the factor structure reported by Steffen et al. (1984) in their attempts to develop

Table 3
Frequencies of Responses to Background Questions

Attachment style	Item											
	Ever in love?				In love now? ^a				Intensity of love ^a			
	Yes		No		Yes		No		Quite-extreme		Not-slight	
	Response	%	Response	%	Response	%	Response	%	Response	%	Response	%
Secure	178	87.3	26	12.7	126	70.8	52	29.2	147	82.6	31	17.4
Avoidant	87	76.3	27	23.7	44	50.6	43	49.4	60	69.0	27	31.0
Ambivalent	51	91.1	5	8.9	38	74.5	13	25.5	50	98.0	1	2.0
	$\chi^2 = 8.85^*$				$\chi^2 = 12.65^{**}$				$\chi^2 = 18.32^{***}$			

^a Based on the 316 subjects who reported at least one love experience.
 * $p < .02$. ** $p < .01$. *** $p < .001$.

a scale to measure limerence, it was considered important to retain within the present scale only those items and factors necessary for an understanding of the experience of limerence. An initial principal-components analysis was performed, extracting all 10 factors with eigenvalues greater than one. Nine items were dropped from the scale because of low communalities. The remaining 33 items were then factored, resulting in 4 factors that accounted for 41.98% of the total variance. For this scale, oblique rotation produced the best solution and showed moderate correlations among the factors. The factors were interpreted as Obsessive Preoccupation, Self-Conscious Anxiety, Emotional Dependence, and Idealization (see Appendix C for factor loadings and communalities).

Sex and Attachment Style Effects on 16 Scales

A multivariate analysis of variance (MANOVA) was performed to study the effects of sex and attachment style on responses to the 16 scales formed from the factor analyses of the self-esteem inventory and the four questionnaires measuring love (as outlined above and tabulated in the appendixes¹). This analysis addresses the question of the relationships between attachment styles and other forms of love. Scale scores were obtained for each of the 16 scales by summing items loading greater than .35 on a factor; factorially complex items were assigned to the scale on which they loaded most highly. (For Rubin's Love Scale, the total score was included, because all items loaded on the first factor.) Coefficient alphas for 13 of the 16 scales were greater than .70, the highest value of .83 being for the Obsessive Preoccupation and Self-Conscious Anxiety scales of the limerence measure. The remaining coefficients were .64 (Social Self-Esteem), .60 (Idealization), and .54 (Unfulfilled Hopes). Because these three scales were based on relatively few items, and because the relevant factor loadings and item-scale correlations were all moderate to high, it was considered appropriate to use the scales in these exploratory analyses.

Significant multivariate effects were obtained for sex (Wilks's lambda = .79), $F(16, 353) = 5.80$, $p < .001$, and for attachment style (Wilks's lambda = .71), $F(32, 706) = 4.13$, $p < .001$; the interaction was not significant. The results are shown in Table 4. The univariate F tests revealed significant sex differences on

five scales: Men obtained higher scores on Loving, Agape, and Reliance on Partner, and Women scored more highly on Friendship and Obsessive Preoccupation. All but one of the 16 scales (Pragma) yielded significant attachment style differences. Secure subjects obtained the highest scores on all three self-esteem scales and the lowest scores on Self-Conscious Anxiety and Unfulfilled Hopes. The avoidant group obtained the lowest scores on Loving and Romantic Love Ideal, and scored less highly than the anxious-ambivalent subjects on Idealization. (Although the univariate F test for Ludus was significant, with the avoidant group obtaining the highest mean score, this result narrowly failed to reach significance as a post hoc test.) The anxious-ambivalent subjects were characterized by high scores on Mania, Obsessive Preoccupation, Emotional Dependence, Reliance on Partner, and Agape and by low scores on Friendship.

Relationships Among the 16 Scales

In order to study the relationships among the various love and self-esteem scales, intercorrelations among the 16 scales were examined. All three self-esteem scales were negatively correlated with the Self-Conscious Anxiety limerence scale (with correlations of $-.45$, $-.43$, and $-.28$ with Personal, Social, and Family Self-Esteem, respectively), and smaller but significant negative correlations were obtained between each of family and personal self-esteem and Mania, Emotional Dependence, and the two love addiction scales. The only significant positive correlation between self-esteem and forms of love was between Social Self-Esteem and the Romantic Love Ideal scale ($r = .23$).

Further clarification of the relationships among the love and self-esteem scales was provided by a second-order factor analy-

¹ Scale scores for the Love Attitudes Scale were based on the present factor analysis. For comparison purposes, sex and attachment style differences were also studied for the six scales corresponding to the original factor structure of this instrument (Hendrick & Hendrick, 1986). These analyses yielded similar results, despite the lack of perfect correspondence between some pairs of scales (e.g., anxious-ambivalent subjects obtained the lowest scores on Storge and on Friendship; the avoidant style was characterized by low scores on both Eros and Romantic Love Ideal).

Table 4
Test for Sex and Attachment Style Effects on Scale Scores of Love Measures

Measure	Sex			Attachment style			Univariate <i>F</i> (2, 368)
	<i>M</i>		Univariate <i>F</i> (1, 368)	<i>M</i>			
	Males	Females		Secure	Avoidant	Ambivalent	
Self-esteem							
Family	5.62	5.70	.45	6.26 _a	5.18 _b	4.48 _c	19.11***
Personal	4.64	4.56	.07	5.04 _a	4.18 _b	3.80 _b	12.98***
Social	4.49	4.43	.01	4.86 _a	3.93 _b	4.05 _b	16.03***
Loving	36.46	35.03	4.72*	36.15 _a	34.04 _b	37.13 _a	6.16**
Love Attitudes/Scale							
Love ideal	31.04	30.05	.67	31.40 _a	28.51 _b	31.14 _a	9.90***
Pragma	15.77	16.92	1.86	16.11	17.46	15.46	2.10
Friendship	21.67	23.31	4.06*	22.94 _a	23.19 _a	20.16 _b	5.74**
Ludus	16.35	15.06	3.14	15.20	16.50	15.34	3.17*
Mania	23.36	23.95	.02	22.83 _a	23.09 _a	28.07 _b	19.13***
Agape	13.69	11.67	22.58***	12.58 _a	11.91 _a	13.71 _b	3.38*
Limerence							
Preoccupation	37.57	39.66	6.09*	38.32 _a	38.24 _a	41.42 _b	5.43**
Self-conscious	26.95	27.83	.40	25.23 _a	30.16 _b	30.04 _b	19.51***
Dependence	22.83	23.50	1.97	22.53 _a	22.77 _a	26.54 _b	16.10***
Idealization	14.22	14.18	.21	14.25 _{ab}	13.65 _a	15.13 _b	3.68*
Love addiction							
Reliance	19.60	17.70	15.45***	18.50 _a	17.61 _a	20.50 _b	7.01***
Unfulfilled	13.83	13.85	.09	13.05 _a	14.54 _b	15.32 _b	12.01***

Note. Within each row, means with different subscripts differ at the .05 level of significance according to a Tukey B test.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

sis of the 16 scale scores. The best solution retained four factors, which accounted for 59.59% of the variance (see Table 5 for factor loadings and communalities). The factors were interpreted as Neurotic Love (Obsessive Preoccupation, Emotional Dependence, and Idealization scales from the limerence measure; Mania; and the Reliance on Partner scale from the love addiction measure); Self-Confidence (all self-esteem scales, and a negative loading on Self-Conscious Anxiety); Avoidance of Intimacy (Ludus; Unfulfilled Hopes scale from the love addiction measure; and negative loadings on Loving, Love Ideal, and Agape); and Circumspect Love (Friendship and Pragma).

Sex and Attachment Style Effects on Second-Order Scales

In order to summarize the major gender differences and the essential characteristics of the three attachment styles, a MANOVA was performed on responses to the 4 second-order scales (formed by summing the standardized scores for all scales loading greater than .35 on a given factor). A significant multivariate effect was obtained for attachment style (Wilks's lambda = .76), $F(8, 730) = 13.68$, $p < .001$, whereas the multivariate effect for sex showed a trend only (Wilks's lambda = .96), $F(4, 365) = 2.24$, $p < .07$; the interaction was not significant. The results are shown in Table 6. The only scale that showed a significant sex effect was Circumspect Love, for which women obtained higher scores than men. Reliable attachment style effects were obtained for all four scales. Secure subjects were characterized by high scores on the Self-Confidence scale, and avoidant subjects scored most highly on Avoidance of Intimacy. Anxious-ambivalent subjects differed from the other styles in their high

scores on Neurotic Love and in their low scores on Circumspect Love.

Discussion

The relative frequencies of subjects endorsing the three attachment styles are similar to those reported by Hazan and Shaver (1987), as is the failure to find sex differences in these frequencies. The latter finding is noteworthy, because the descriptions of avoidant and anxious-ambivalent attachment bear at least superficial similarity to the communication patterns of withdrawal and demand frequently reported as characterizing male and female partners (respectively) in intimate relationships (e.g., see Noller & Fitzpatrick, 1988).

The analyses of attachment history and mental models also replicate most of the findings of Hazan and Shaver. Secure subjects tended to report positive early family relationships and to express trusting attitudes toward others. Anxious-ambivalent subjects were the most likely to perceive a lack of paternal supportiveness; they also expressed dependence and desire for commitment in relationships. Subjects in the avoidant group were most likely to endorse items measuring mistrust of and distance from others. Interestingly, the mental model statements dealing with general views of the self and of human relationships discriminated among the three attachment styles much more powerfully than did those items dealing specifically with beliefs about romantic love. This suggests that attachment style is likely to exert a very pervasive influence on the individual's relationships with others, because it reflects general views about the rewards and dangers of interpersonal relationships. It is possible, however, that this influence may be especially salient in the con-

Table 5
 Second-Order Factor Analysis of 16 Scales: Oblique Rotated Factor Loadings

Scale	Factor				HSQ
	Neurotic Love	Self-Confidence	Avoidance of Intimacy	Circumspect Love	
Preoccupation	.81				64
Mania	.73				63
Dependence	.72				58
Idealization	.68				49
Reliance	.60				55
Social Self-Esteem		.82			64
Personal Self-Esteem		.81			67
Self-Conscious		-.53			69
Family Self-Esteem		.48			39
Ludus			.72		50
Loving	.48		-.67		70
Love Ideal	.39		-.65		68
Agape	.46		-.59		57
Unfulfilled	.53		.57		63
Friendship				.81	70
Pragma				.61	49

Note. HSQ = square of the communalities.

text of intimate relationships; Bowlby (1973) suggested that working models of the self and of relationship partners tend to be complementary and mutually confirming.

In contrast to the present results, Hazan and Shaver (1987) found no relationship between attachment style and items measuring childhood separation from parents. However, their sample may have been more self-selected than the present one, because their major study was based on responses to a survey questionnaire printed in a newspaper. The role of childhood separation from the mother in forming attachment style is supported by other findings in the attachment literature, including the Camberwell study that linked later depression with early separation from mother (Brown, 1982). Although the effect of separation from father was not significant in the present study, the pattern of mean scores suggests the possibility that more refined measures or procedures may produce results similar to those reported for separation from mother.

The responses to the background questions lend support to the relevance of attachment style to romantic love. Avoidant subjects were more likely to report never having been in love or

not being in love at the time of the study and to indicate low intensity of love experiences. In accordance with the findings of Hazan and Shaver (1987), the love relationships of secure subjects tended to last the longest; those of anxious-ambivalent subjects were the least enduring.

The second-order factor analysis indicates four major themes among the measures used in this study. The Circumspect Love factor corresponds to the Practicality factor reported by Hendrick and Hendrick (1989). The Neurotic Love factor also has some parallel with the results of Hendrick and Hendrick, because it links mania and anxious-ambivalence. The lack of correspondence between the remaining factors (Self-Confidence and Avoidance of Intimacy) and those of Hendrick and Hendrick is not surprising, given the different emphases of the two studies as reflected in the choice of questionnaire measures.

The MANOVAS and the correlations among the 16 scales provide evidence of the relationships among self-esteem, attachment style, and the experience of romantic love. Self-esteem was negatively related to the more extreme forms of love (Mania, the Self-Conscious Anxiety and Emotional Dependence limerence

Table 6
 Test for Sex and Attachment Style Effects on Second-Order Scale Scores

Scale	Sex			Univariate <i>F</i> (1, 368)	Attachment style			Univariate <i>F</i> (2, 368)
	<i>M</i>				<i>M</i>			
	Men	Women			Secure	Avoidant	Ambivalent	
Neurotic Love	-.04	.03	.03	-.33 _a	-.65 _a	2.51 _b	15.70***	
Self-Confidence	.08	-.06	.01	1.05 _a	-1.12 _b	-1.53 _b	32.87***	
Avoid Intimacy	-.41	.31	2.84	-.56 _a	1.17 _b	-.36 _a	10.16***	
Circumspect Love	-.28	.21	5.13*	.01 _a	.28 _a	-.60 _b	5.40**	

Note. Within each row, means with different subscripts differ at the .05 level of significance according to a Tukey B test.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

scales, and the two love addiction scales). The only evidence of a positive association between self-esteem and the measures of love was a weak correlation between social self-esteem and the Romantic Love Ideal scale.

There were significant attachment style differences in self-esteem. The secure subjects were generally separated from the other styles by their high levels of self-esteem; this finding supports Hypothesis 1. (The only self-esteem scale that differentiated the two insecure groups was family self-esteem, on which the anxious-ambivalent subjects obtained lower scores than the avoidant group.) Secure subjects also obtained relatively low scores on the Self-Conscious Anxiety scale, and were least likely to endorse the items of the Unfulfilled Hopes scale. This pattern of scores suggests that secure subjects are generally positive and self-assured in their interactions with others, an interpretation that is supported by the high mean score of this style on the Self-Confidence scale from the second-order factor analysis.

Avoidant subjects obtained low scores on the Loving and Romantic Love Ideal scales; the significant effect for Loving is in line with Hypothesis 2. Avoidant subjects were also less likely than anxious-ambivalent subjects to idealize their partner, as defined by the Idealization scale of the limerence measure. The essential feature of avoidant attachment is further supported by the high scores of this style on the Avoidance of Intimacy second-order scale.

The anxious-ambivalent group obtained high scores on a number of scales reflecting their extreme approach to love (Mania, Obsessive Preoccupation, Emotional Dependence, Reliance on Partner, and Agape). These results provide support for Hypothesis 3. They also support Shaver and Hazan's propositions that mania, limerence, and anxious-ambivalent attachment are related constructs, and that the items of the Agape scale portray an extreme degree of self-sacrifice. However, there was considerable overlap of distributions for the three attachment styles on Mania, love addiction, and limerence; furthermore, avoidant and anxious-ambivalent subjects scored equally highly on the Self-Conscious Anxiety limerence scale. Major characteristics of the anxious-ambivalent group are summarized by their pattern of scores on the second-order scales, with high mean scores on the Neurotic Love scale and low scores on Circumspect Love.

Because the storge items did not cluster cleanly together in this study, the relationship between friendship love and attachment style is best examined with reference to the related Friendship scale (Love Attitudes Scale). The anxious-ambivalent subjects were differentiated from the other styles by their low scores on this scale. That is, love as friendship tends to be endorsed both by secure subjects (as proposed by Levy & Davis, 1988) and by avoidant subjects.

Support for the relationship between ludus and avoidant attachment is limited. Although the univariate *F* for effect of attachment style on ludus scores was significant, with avoidant subjects scoring most highly, there was a great deal of overlap of distributions for the three styles on this variable, and the mean differences were not significant as a post hoc test. (As expected, analysis of individual items showed that the two items dealing with the issue of multiple partners were not related to attachment style.)

The view that secure attachment is a combination of eros and agape cannot be adequately tested within this study, because

Shaver and Hazan's proposition depends on a softer, less extreme version of the agape items. The present data provide limited support for Shaver and Hazan's view. Secure and anxious-ambivalent subjects were not differentiated by scores on the Romantic Love Ideal scale (comprising several eros and agape items); in addition, these two styles were not differentiated by the totals of eros and agape items, taken either separately or together. However, the failure to find a relationship between secure attachment and eros may be attributable in part to the emphasis, within the eros items of the Love Attitudes Scale, on rapid involvement in relationships; this feature is likely to characterize anxious-ambivalent subjects at least as much as the secure group. It is noteworthy that 8 of the 14 items from the eros and agape scales combined to form a single factor, suggesting some association between these two scales. The agape items loading on this factor tended to be those receiving the highest levels of endorsement by subjects in this study; furthermore, they appear to be those with least explicit reference to self-sacrifice, lending credence to the view that the Romantic Love Ideal factor represents a generally positive approach to love. Perhaps minor revisions to the item content could produce a scale differentiating secure subjects from both other styles. It is also possible, of course, that the meaning of a high score on the Romantic Love Ideal factor may be different for secure and anxious-ambivalent subjects and that patterns of scores across other scales are required to differentiate the two styles.

The strength of our results suggests that although numerous statistical comparisons were made in this study, the issue of Type I errors is unlikely to cause major problems of interpretation. For example, all 14 of the 16 scales meeting the .05 significance level for effect of attachment style by post hoc testing were significant also at .01 (although some minor changes in patterns of mean differences occurred). The general finding from the background questions and from the 16 scales was that significant attachment style differences were considerably stronger and more numerous than were sex differences. Furthermore, a discriminant analysis based on the 16 scales indicated that 61% of subjects were correctly classified by attachment style, with classification errors spread fairly evenly across the categories.

The reliance on self-report data is an obvious limitation of this study. It is possible that some of the obtained relationships may have been strengthened by the procedure of measuring the various constructs with a common method and at the same point in time. However, given the variety of theories and measures of love, and the limited research on the attachment theory approach to love, it is important to clarify the links among the various constructs. A clear understanding of the self-report domain is an important step toward a more broadly based research, in which a range of methodologies can be applied to the analysis of romantic relationships. The use of such techniques as the coding of couple communication and the analysis of subjects' descriptions of their romantic partners would enable an assessment of the convergence of findings with those from the self-report domain. The extension of these techniques into the area of marital relationships is another important direction for further research.

Summary and Conclusions

Overall, the findings of this study provide considerable support for the utility of an attachment theory perspective on adult

romantic love. The results confirm the essential characteristics of the three attachment styles. In comparison with both insecure groups, secure subjects were relatively trusting in their relationships and high in self-confidence. The two insecure groups clearly share important features, because they obtained similar scores on most of the measures that differentiated them from secure subjects (Unfulfilled Hopes, Self-Conscious Anxiety, and Personal and Social Self-Esteem). Beyond these features, however, the two insecure groups differ in vital ways. The major characteristic of the avoidant style is, indeed, the avoidance of intimacy, as indicated by these subjects' responses to the background questions tapping love experiences, their tendency for high scores on Ludus, and their low scores on the Loving and Romantic Love Ideal scales and the associated Avoidance of Intimacy scale. Those in the anxious-ambivalent group, on the other hand, are characterized by dependence and by the strong desire for commitment in relationships. Their responses to the measures of love indicate endorsement of a neurotic rather than a circumspect or companionate form of love.

Our results also suggest important implications for relationship quality. The possibility that secure subjects may be more "successful" than the other styles in their romantic relationships is suggested by two findings: their greater mean relationship length and their low scores on the Unfulfilled Hopes scale. Although these results provide only indirect evidence concerning relationship satisfaction, it would be surprising if the patterns of scores obtained on these self-report measures were not reflected in relationship quality. These issues would be usefully addressed by further research with more direct measures of relationship processes and relationship outcome.

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(Appendixes follow on next page)

Appendix A

Love Attitudes Scale Items—Varimax Rotated Factor Loadings

Item	Factor						HSQ
	Love Ideal	Pragma	Friendship	Ludus	Mania	Agape	
Eros items							
Right physical "chemistry"	.73						57
Were meant for each other	.64						52
Lovemaking is satisfying	.61						42
Really understand each other	.51						40
Ideal standards of beauty	.50						34
Quick emotional involvement			-.64				49
Were attracted immediately			-.49				36
Agape items							
What I own is my lover's	.53					.47	52
Love him/her unconditionally	.42					.37	34
Try to always help my lover	.39						31
Would rather suffer myself						.72	59
Place lover's happiness first						.67	52
Sacrifice my own wishes						.64	48
Would endure all things						.64	57
Pragma items							
What he/she will become in life		.75					57
How he/she reflects on career		.68					50
How he/she reflects on family		.63					42
Will he/she be a good parent		.62					48
Try to plan my life first		.62					43
Work out hereditary background		.61					41
Best if similar background		.49					30
Storge items							
Friendship merged into love			.74				57
Satisfying love from friendships			.69				48
Best love grows from friendship			.66				47
Didn't realize love at first			.46				29
Cannot love without caring			.41				27
Ludus items							
Enjoy playing "game of love"				.69			54
Had to keep two lovers apart				.66			50
If lover doesn't know, won't hurt				.64			44
Lover would get upset about things				.60			42
Try to keep my lover uncertain				.49			39
If dependent, want to back off				.43			36
Can get over affairs easily				.35		-.46	43
Mania items							
Feel sick all over without attention					.72		55
Cannot relax if suspicious					.64		43
Have trouble concentrating					.64		45
If problems, stomach gets upset					.53		34
Do stupid things for attention					.50		30
Get so excited I can't sleep					.50		30
Have even thought of suicide					.47		37

Note. Two storge items failed to load on any of the factors. HSQ = square of the communalities.

Appendix B
Love Addiction Items—Varimax Rotated Factor Loadings

Item	Factor		HSQ
	Reliance on Partner	Unfulfilled Hopes	
Secure and satisfied without partner*	.66		44
Want us to be together all the time	.65		42
Self-worth more positive with partner	.62		40
Allow opposite sex to disrupt plans	.61		41
Happiest, most alive with partner	.56		31
Make time for other activities*	.51		28
Don't mind spending time alone*	.38		17
Never satisfied with partners		.63	45
Daydreaming, planning about partners		.61	44
Pursuit more exciting than love		.62	44
Possessive of interests and friends	.44	.48	43
Avoid "couple" gatherings		.45	23

Note. Scores for items with reversed wording (indicated by an asterisk) have been reflected, so that positive loadings always indicate "love addiction" responses. HSQ = square of the communalities.

Appendix C
Limerence Items—Oblique Rotated Factor Loadings

Item	Factor				HSQ
	Obsessive Preoccupation	Self-Conscious Anxiety	Emotional Dependence	Idealization	
Heart flutters or face becomes flushed	.83				55
Find that my heart beats faster	.68				45
If reciprocated, couldn't be happier	.68				39
Vivid reminders of the person	.64				35
Look for clues about feelings	.54				34
Relive every word and gesture	.51				35
Imagine myself with the person	.43				40
Center of all my thoughts	.41				60
Thoughts constantly intrude	.39				51
Obsessed with hopes of reciprocation	.38				50
Show feelings in straightforward way*		.74			49
Awkward, confused, and shy		.72			53
Hide feelings for fear of rejection		.72			52
Sometimes afraid to be myself		.69			53
Confident and self-assured*		.66			42
Worry about right thing to say		.59			48
Worry about my behavior		.56			51
Experience great fear of rejection		.47			41
Plan what I should say or do		.39			46
Do not become emotionally dependent*			.80		48
Calmly accept lack of reciprocation*			.68		40
Other things get pushed to the side			.55		44
Sometimes get jealous			.51		43
Feelings increase if partner's diminish			.50		21
Would not change my appearance*			.50		31
Mood goes up and down			.42		32
Overlook the obvious faults				.83	49
Everything seems special, wonderful				.73	51
Overemphasize positive characteristics				.64	39
Admire everything about the person				.57	33

Note. Scores for items with reversed wording (indicated by an asterisk) have been reflected, so that positive loadings always indicate "limerent" responses. HSQ = square of the communalities.

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