

THE MEDIATING AND MODERATING EFFECTS OF WOMEN'S ATTACHMENT
STYLE ON INTERRELATIONSHIPS AMONG EMOTIONAL ABUSE,
PHYSICAL AGGRESSION AND RELATIONAL STABILITY

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This purpose of this study was to combine two bodies of literature on relationships, attachment and violence. Given the impact of men's physical aggression and emotional abuse on women, it is likely that these behaviors would also affect attachment. A model proposing that women's attachment style mediated and moderated the relationship between partners' physical and emotional abuse and the stability of women's relationships was tested.

Archival data were used from two waves of interviews with a sample of low-income, ethnically diverse community women. Most (89%) of the initial 835 participants of Project HOW: Health Outcomes of Women completed at least one additional interview providing information on the status of their initial relationships. Of these women, 39% were African American, 30% were Euro-American, and 31% were Mexican American.

The effects of men's psychological abuse and physical violence on women's attachment style were tested with regression analyses. The interrelationships between partners' abuse, attachment and relational stability were tested with SEM. Attachment style was expected to moderate the associations among variables and mediate the impact of partners' negative behavior on relational stability.

In regression analyses, partners' psychological abuse predicted avoidant and anxious, but not secure attachment ratings. Violence, although significant, explained less variance than psychological abuse for insecure attachment ratings. SEM indicated

Physical Aggression was not a significant predictor of Attachment Rating in any group.

Moderation was not found. There were no differences between attachment groups.

Therefore, attachment was tested in the sample as a mediator.

As in analyses for each group, the path from Physical Aggression to Attachment Rating was not significant. In the final model, Emotional Abuse predicted Physical Aggression and Attachment Rating mediated the effect of Emotional Abuse on Relational Stability. Specifically, Emotional Abuse increased (insecure) Attachment Rating, which decreased Relational Stability. Overall, previous research in the violence literature was extended by showing that emotional abuse affected attachment, rather than the reverse.

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CHAPTER I

INTRODUCTION

Researchers have examined facets of romantic relationships from inception to dissolution along with the behaviors and emotions of intimate partners. One focus has been on the prevalence of partner violence. In addition to finding violence is surprisingly common, researchers have reported it has more adverse effects on women than men and is less associated with outcomes such as relational satisfaction and stability than would be expected. Other researchers have focused on associations between attachment style and relational outcomes. This study combined these two bodies of literature.

Attachment style is thought to develop through relationships with parents (Ainsworth, Blehar, Waters & Wall, 1978; Bowlby, 1969). Since Hazan and Shaver's (1987) research, attachment style in adult romantic relationships has been addressed in many studies. In general, research indicates the relationships of securely attached individuals are less turbulent and more satisfying than those of insecurely attached individuals (e.g., Collins & Read, 1990; Senchak & Leonard, 1992; Simpson, Ickes & Grich, 1999). The relative consistency of findings on relational outcomes exists despite a controversy about whether the 25% (Fuller & Fincham, 1995) to 30% (Kirkpatrick & Hazan, 1994) of samples who show differences across time is caused by measurement error or whether adult attachment style changes. This study examined whether physical and emotional abuse affect attachment style in adulthood. Although partner violence is usually found to be mutual (e.g., Bookwala & Zdaniuk, 1998; Gaertner & Foshee, 1999;

Marshall & Rose, 1987; Mason & Blankenship, 1987; Stets & Pirog-Good, 1990; White & Koss, 1991), studies consistently report that women are more likely to be physically and emotionally injured (Acierno, Resnick & Kilpatrick, 1997; Holtzworth-Munroe, Bates, Smutzler & Sandin, 1997; Holtzworth-Munroe, Smutzler & Sandin, 1997; National Research Council, 1996) and less likely to cause injury (Vivian & Langhinrichsen-Rohling, 1994) than are men. Moreover, major reviews have shown that violence by male partners adversely affects women's self concept and mental health (American Psychological Association, 1996; National Research Council, 1996). Consequently, this study was conducted with a sample of women.

In their national survey, Straus, Gelles and Steinmetz (1980) found a lifetime prevalence of 28% for partner violence that has been replicated in many studies of dating and married couples (e.g., Bernard & Bernard, 1983; Brinkerhoff & Lupri, 1988). Rates as low as 9% (Roscoe & Callahan, 1985) and as high as 75% (Marshall & Rose, 1987) have been reported. Part of the difference appears to be a function of sample characteristics. For example, national studies have found that women of color are more likely to report partner violence than are nonminority women (Acierno et al., 1997; Asbury, 1999; Greenfeld et al., 1998). However, the higher rates for minority women may be, in part, a function of socioeconomic status, which is often confounded with ethnicity (National Research Council, 1996). Studies of low-income women show rates as high as 60% (Tolman & Rosen, 1999) to 63% (Browne & Bassuk, 1997). Consequently, socioeconomic status was controlled by using an ethnically diverse sample of low-income women.

A surprising finding in the violence literature is that physical abuse is not necessarily associated with relational outcomes such as satisfaction and stability. Although couples in distressed relationships are more likely to report violence than those in satisfied relationships, violence coexists with relational satisfaction (Holtzworth-Munroe et al., 1992). Indeed, relationships have been reported to improve after violence has occurred (Cate, Henton, Koval, Christopher & Lloyd, 1982; Sugarman & Hotaling, 1989). The weaker than expected association between partner violence and relational outcomes has led some researchers to study possible mediating factors, such as positive behavior (Marshall, Weston & Honeycutt, 2000). This study tested the hypothesis that attachment style mediated the relationship between physical and emotional abuse and the stability of women's relationships.

Attachment

Bowlby (1969) developed attachment theory to describe how infants develop emotional attachments to their primary caregivers. Ainsworth et al. (1978) tested this theory by observing the reactions of infants who had been temporarily separated from their mothers. The patterns of infant behavior were classified as indicating secure, avoidant and anxious-ambivalent attachment styles. Differences in infants' behavior corresponded to differences in parenting styles. Parents of securely attached infants were readily available to their children, were sensitive to their needs and evidenced love in their responses. These behaviors were thought to promote secure attachment between primary caregivers and infants. Avoidant behavior was associated with parents who had a tendency to reject infants when they needed comfort or protection. Parents who were

intermittent and unpredictable in their availability and who used separations and threats of abandonment as a means of control promoted anxious-ambivalent attachment behavior in infants. These attachment styles were hypothesized to be fairly consistent throughout the lifespan, although Bowlby (1988) has suggested that attachment can be influenced in adulthood by extreme negative or positive events. Abuse by partner could be such an event.

Attachment theory was first applied to peer and romantic relationships by Hazan and Shaver (1987) using a self-report measure with three categories based on Ainsworth et al.'s (1978) study. They described securely attached adults as being comfortable with intimacy and able to trust and depend on their partners. Avoidant individuals were uncomfortable with closeness and could not easily depend on partners. Anxious-ambivalent adults reportedly sought extreme levels of closeness and feared they would be abandoned or not loved enough. Using brief paragraphs to describe each of these categories, participants chose the description that best represented them. The majority of the sample (56%) rated themselves as secure, 25% were avoidant and 19% were anxious-ambivalent.

The distributions of adult attachment styles in Hazan and Shaver's (1987) and other samples of adults (cf., reviews by Shaver & Clark, 1994 and Shaver & Hazan, 1993) were similar to those found by Ainsworth et al. (1978). Based on this similarity, it would be reasonable to assume attachment is stable from childhood through adulthood. However, the stability of ratings is one of the most controversial issues in attachment research. Attachment styles did not change over two years in 75% of couples in Fuller

and Fincham's (1995) study and 70% of participants showed stability over four years in Kirkpatrick and Hazan's (1994) study. From these proportions, it appears the majority of respondents do not change attachment styles, supporting Scharfe and Bartholomew's (1994) proposition that attachment is a trait, and any observed instability is due to measurement error.

On the other hand, there is evidence supporting Bowlby's (1988) assertion that experiences in adulthood may affect attachment style. The proportion of securely attached women increased as the age of Klohnen and John's (1998) subsample increased. Additionally, adults have reported different styles in different relationships (Baldwin, Keelan, Fehr & Koh-Rangarajoo, 1994). Consequently, Baldwin and Fehr (1995) compared the stability of self-rated attachment style from others' studies with test-retest intervals ranging from one week to one year. Corresponding to Fuller and Fincham's (1995) and Kirkpatrick and Hazan's (1994) research, 30% of participants' responses differed from their initial response. The changes were not likely due to measurement error because the proportion of participants who showed changes varied systematically by attachment style. Relatively few (17%) respondents who initially rated themselves as secure changed their rating at the second assessment. More than twice as many (39%) avoidant respondents reported different attachment styles. The least stable category was anxious-ambivalent attachment, with 50% rating themselves differently at the second assessment. The possible instability of attachment in adulthood is made more plausible with findings from two studies.

Feeney and Noller's (1992) longitudinal study showed the formation of a relationship impacts attachment style. Approximately half of the subjects who had entered a relationship changed their attachment style, with the majority of subjects (83%) changing from secure to avoidant or vice versa. Kirkpatrick and Hazan (1994) extended this research with their four-year prospective study. Initially avoidant participants who began a new relationship between interviews were much less likely to rate themselves as avoidant in the second interview than were avoidant individuals who remained single. Thus, both studies support the notion that attachment can be affected by past relationships and, to some extent, events in current relationships.

In summary, the ways in which parents respond to their infants' needs affects children's attachment style, which has been thought to be a trait. Yet, several studies found that attachment styles change in a significant proportion of samples. Consequently, it is reasonable to assume that experiences in adulthood may affect the intensity of attachment styles or, perhaps, change the dominant style. Romantic relationships are similar in intensity and intimacy to parent-child relationships. Therefore, it is possible that the behaviors of adult partners would affect attachment styles.

Although there is limited research on how partners influence attachment styles, there is a wealth of information on the association between attachment and relational outcomes. Hazan and Shaver's (1987) secure participants reported longer and happier relationships than did insecure participants. Relationships with at least one securely attached partner may be more satisfying and stable, perhaps because secure partners may be more accepting of faults than those who are avoidant or anxious-ambivalent (Hazan &

Shaver, 1987). Securely attached individuals characterized their relationships as having more emotional involvement and stability (Morrison, Uriquiza & Goodlin-Jones, 1997) and experiencing more relational satisfaction (Collins & Read, 1990; Pistole, 1989; Senchak & Leonard, 1992), and quality (Feeney & Noller, 1990; Senchak & Leonard, 1992; Simpson, 1990) than insecurely attached partners.

Research by Simpson et al. (1999) supported Feeney and Noller's (1992) speculation that partners with insecure attachment styles may be more likely to initiate break ups. Insecure styles have been associated with relational jealousy (Shaver & Hazan, 1993) and obsessive intrusion (Spitzberg, 2000). Insecurely attached partners are more likely to engage in deception (Cole, 2000) and, as might be expected, report less trust in their partners (Hazan & Shaver, 1987; Simpson, 1990). Poorer marital adjustment is also associated with insecure attachment (Senchak & Leonard, 1992), although the type of maladjustment likely differs for avoidant and anxious attachment styles.

Avoidant attachment is associated with avoidance of intimacy (Collins & Read, 1990; Feeney & Noller, 1990; Hazan & Shaver, 1987) and relatively little commitment (Levy & Davis, 1988). Compared to securely and anxiously attached women, avoidant women are more likely to withdraw from their partners when they are upset (Simpson, Rholes & Nelligan, 1992). Klohnen and Bera's (1998) longitudinal research revealed that avoidant women have relationships that are less happy and less stable than those of other women.

Given the negative behaviors associated with the anxious attachment style, unstable relationships would be expected. However, several studies have indicated this

may not be the case. Kirkpatrick and colleagues (Kirkpatrick & Davis, 1994; Kirkpatrick & Hazan 1994) reported that relationships with anxious women were the most stable followed by secure and avoidant women, respectively. Relationships with either avoidant men or anxious women (which generally received the lowest ratings of satisfaction) were as stable as those of the relatively secure participants. Despite having more stable relationships, individuals with anxious attachment styles are less committed (Simpson, 1990). A concept that intuitively makes sense, secure participants having the most stable relationships, does not consistently appear in the data. Therefore, the link between relational stability and attachment was examined in this study.

Findings with regard to other relational factors are more consistent for anxiously attached partners. They have a tendency to over invest in their relationships (Hindy & Schwarz, 1994). This is evidenced by their preoccupation with relationship issues (Collins & Read, 1990; Feeney & Noller, 1990; Hazan & Shaver, 1987). For women, anxious attachment is associated with less relational satisfaction (Collins & Read, 1990; Kirkpatrick & Davis, 1994), perhaps because they are more likely than others to idealize their partners (Feeney & Noller, 1991). Anxious attachment has also been associated with hyper-vigilant (Mikulincer, 1998), controlling (Bartholomew & Horowitz, 1991) and clinging behaviors (Brennan & Shaver, 1995). Positive associations also exist between anxious attachment and dysfunctional expressions of anger (Kobak & Hazan, 1991), more conflict (Feeney, Noller & Callan, 1994) and dominating styles of conflict (Levy & Davis, 1988).

Although many behaviors correlated with insecure attachment are also characteristic of violent relationships (Dutton, 1994; Dutton & Starzomski, 1993), research on the association between physical aggression and attachment is limited. Violence has been more often linked with insecure rather than secure attachment (Dutton, Saunders, Starzomski & Bartholomew, 1994; Ryan, 1993). A secure attachment style is associated with a reduced motivation for aggression (Fonagy, Target, Steele & Steele, 1997; Sampson & Laub, 1992). These findings indicate the expression of violence and emotional abuse may be associated with attachment. It is also possible that sustained violence and psychological abuse would be associated with attachment style. This hypothesis was tested.

Violence and Emotional Abuse

Research on physical aggression in relationships has increased exponentially since the publication of Straus et al.'s (1980) volume on violence in American families. Most of the studies have documented the adverse effects of partner violence on women. Recently, investigators have expanded their scope to examine psychological or emotional abuse.

Partner violence has been studied by researchers in diverse disciplines, including criminal justice, social and clinical psychology, sociology and communication. As the field has become more interdisciplinary and less focused on specific physically aggressive behaviors, chapters on what has been called psychological or emotional abuse began to appear in books (Marshall, 1994; Murphy & Cascardi, 1993; O'Leary & Jouriles, 1994). To date, there is no common term for this construct, nor is there a

generally accepted definition. O'Hearn and Davis (1997) conceptualized emotional abuse as an intentional behavior with the goal of lowering the target's status. Murphy and Hoover (1999) defined emotional abuse somewhat more broadly as behaviors directed at the target's emotional well-being or self-image. Although the term abuse brings to mind only negative behaviors, Marshall (1994; 1999a) pointed out behaviors that adversely affect a target may be expressed in a positive or negative manner and with positive or negative intent.

Researchers have identified several behaviors used by emotionally abusive partners. Tolman's (1989) Psychological Maltreatment of Women Inventory measures how men control their partners on emotional-verbal abuse and dominance-isolation subdimensions. Follingstad, Rutledge, Berg, Hause and Polek (1990) identified verbal attacks, isolation, jealousy, verbal threats, threats to leave or have an affair, and destruction of personal property experienced by battered women. In factor analyses of Marshall and Guarnaccia's (1998) Men's Psychological-Harm and Abuse in Relationships Measure, 4 factors of men's overt psychological abuse (Dominating, Indifference, Monitoring, and Discrediting) and 3 subtle factors (Undermining, Discounting and Isolating) were identified.

Despite lack of agreement on specific behaviors that constitute emotional abuse, there is clear evidence of its association with physical violence in relationships. Two studies showed that women who sustained partner violence had also sustained emotional abuse (Aguilar & Nightingale, 1994; Follingstad et al., 1990). Murphy and O'Leary (1989) found that emotional abuse in the form of threats was a precursor to physical

violence in young, engaged couples. Using the same longitudinal sample, O'Leary, Malone and Tyree (1994) demonstrated a direct effect of emotional abuse on violence among recently married couples. Similarly, Leonard and Senchak (1996) found that emotional abuse predicted the initiation and frequency of physical aggression in newlywed couples. Based on these findings, the emotional abuse women sustain was hypothesized to have a direct, positive impact on physical violence by their partners.

Research has shown that emotional abuse and physical violence each affect women's perceptions of themselves. For example, sustained violence has been associated with low self-esteem, negative self-views (Aguilar & Nightingale, 1994; Cascardi & O'Leary, 1992; Gelles & Straus, 1988), anxiety (Russell, Lipov, Phillips & White, 1989), stress (Cascardi & Vivian, 1995; Dutton, 1992; Marshall & Rose, 1990; Vogel & Marshall, 2001), and suicide attempts (Gondolf, Fisher & McFerron, 1990; Kurz & Stark, 1989; Stuart & Campbell, 1989; Thompson et al., 1999) among women. Yet, Follingstad et al. (1990) reported that emotional abuse had a more severe impact than physical violence on 72% of abused women in their sample. Marshall (1999a) supported this finding. Others have found emotional abuse alone impacts women's general functioning (Tolman & Bhosley, 1991), physical health (Marshall, 1996), self-esteem (Aguilar & Nightingale, 1994; Marshall, 1999a; Pipes & LeBov-Keeler, 1997; Stets, 1991), depression (Arias, Street & Brody, 1996) and PTSD symptoms (Vitanza, Vogel & Marshall, 1995). Marshall (1999a) found that subtle psychological abuse, specifically, was predictive of lower ratings for women's perceived quality of life. Thus, the negative

and pervasive effects of physical violence and emotional abuse on how women perceive themselves have been well documented.

The impact of emotional abuse and physical violence on perceptions of relational outcomes also has been repeatedly demonstrated. Many studies indicate as violence increases, relational satisfaction decreases (Bookwala, Frieze & Grote, 1994; Gaertner & Foshee, 1999; Julian & McKenry, 1993; Sabourin, Infante & Rudd, 1993; Smith, Vivian & O'Leary, 1991). Relationship quality is negatively affected by violence and verbal aggression (Arias, Lyons & Street, 1997; Barnett & Hamberger, 1992; Frieze & McHugh, 1992; Kasian & Painter, 1992; O'Leary et al., 1994). Men's violence has been associated with low quality and less stable relationships (DeMaris, 2000). However, the association between violence and the quality of relationships is not always as expected. For example, Holtzworth-Munroe et al. (1992) showed that many individuals in satisfied relationships report violence. Furthermore, emotional abuse was a significant predictor of divorce in one sample, but violence was not (Jacobson, Gottman, Gortner, Berns & Shortt, 1996). Emotional abuse may have a greater impact than violence on relational quality and stability. Verbal aggression has also been linked with a decrease in marital satisfaction (Julian, McKenry, Gavazzi & Law, 1999). Marshall (1999a) found that subtle and overt psychological abuse as well as partner's violence predicted women's relational quality, while psychological abuse and sexual aggression predicted the duration of their relationships. Emotional abuse and physical violence have been negatively correlated with women's relational happiness (Sackett & Saunders, 1999). In summary, emotional abuse and violence have been associated with many of the relational outcomes that

correlate with attachment style. This similarity allows for the possibility that attachment style may mediate the relationship between partner abuse and violence with relational outcomes.

Abuse and Attachment

Despite the large bodies of literature in both areas, there has been little research on possible associations between abuse and attachment. Mayseless (1991) and Babcock, Johnson, Gottman and Yerington (2000) found violence was more prevalent in relationships with an insecurely attached partner. Research on married and dating couples has indicated violent men (Holtzworth-Munroe, Stuart & Hutchinson, 1997) and women (Roberts & Noller, 1998) were more likely to be anxiously attached than were nonviolent partners. Pistole and Tarrant (1993) did not find differences by attachment style among men who had been convicted of assault against a partner or family member. However, others found insecure attachment was linked with the expression of violence among men in treatment for domestic violence (Dutton et al., 1994) and among dating partners (Bookwala & Zdaniuk, 1998). Dutton et al. (1994) found a positive relationship between insecure attachment and men's psychological abuse. Senchak and Leonard (1992) found that verbal aggression was used with greater frequency when either wives or both partners were insecurely attached. Although firm conclusions cannot be made with so few studies, it appears the expression of violence is more likely to be associated with insecure than secure attachment.

Another way to examine associations among violence, emotional abuse and attachment style is to consider the 25% (Fuller & Fincham, 1995) to 30% (Kirkpatrick &

Hazan, 1994) of participants whose style changes over time. Part of this change may result from sustaining violence and/or emotional abuse. The strong and pervasive effects of these types of abuse on women's self-concept and mental health are well documented. Thus, it would not be surprising if these detrimental behaviors by a partner affected the way women conceptualize relationships. For example, women experiencing rejection or dismissal may become similarly aloof in response to their partners' behaviors over the course of the relationship. Thus, this type of abuse could result in an avoidant attachment style. If men exhibited unpredictable emotional availability, women may become uncertain about their desirability as a romantic partner, thus increasing a need for closeness in addition to increasing uncertainty about relational stability. Regardless of how they perceived relationships earlier in their lives, these women could develop an anxious-ambivalent attachment style.

Sustaining physical violence and/or emotional abuse would decrease secure attachment. Experiencing violence would not foster a sense of trust or comfort with intimacy in a relationship, two characteristics of secure attachment. Sustaining violence or psychologically abusive behaviors such as threats to leave or rejection would increase insecure attachment. Violence would be expected to decrease women's ability to depend on their partners and to feel comfortable with closeness, thus increasing avoidant attachment. Psychological abuse could increase fears of abandonment and being unwanted, which are associated with anxious attachment.

Measurement of Attachment

More than 20 scales have been developed to measure adult attachment, the largest proportion of which were based on Hazan and Shaver's (1987) paragraphs. The most widely used measures were derived from George, Kaplan and Main's (1985) Adult Attachment Interview (AAI), Hazan and Shaver's (1987) three category measure, or Bartholomew and Horowitz' (1991) two-dimensional (four-category) measure. These approaches reflect different assumptions about human behavior and include different attachment categories. For example, the AAI assesses internal working models through questions about attachments in childhood, whereas Hazan and Shaver measured more accessible models of romantic relationships.

Most self-report scales were initially presented as categorical measures. In conceptualizing attachment style as a typology, three limitations have been noted (Collins & Read, 1990; Hazan & Shaver, 1987; Simpson, 1990). First, a categorical measure assumes each category is independent of others. Furthermore, a forced choice measure precludes evaluation of the ability of each type to describe individuals. Finally, measurement error cannot be estimated with categorical measures.

Support for attachment as a multi-dimensional construct is found in Ainsworth et al.'s (1978) study, as well as in Hazan and Shaver's (1987) Study 1. In Ainsworth's typology, difficulty in classifying subjects resulted in the creation of several subgroups. For example, four subgroups were needed within the secure category to describe different patterns of infants' behaviors. When adults were asked to choose the category that best described them, 8% of Hazan and Shaver's (1987) sample either did not choose a

category or chose multiple categories. The necessity for subgroups and multiple responses indicate that categorical measures may not be sufficient in characterizing attachment. Consequently, researchers began using continuous measures which generally consisted of having participants rate the degree to which each attachment paragraph described them (e.g., Levy & Davis, 1988) or rate separate sentences from Hazan and Shaver's paragraphs (e.g., Collins & Read, 1990; Simpson, 1990).

Despite modifications of Hazan and Shaver's (1987) measure, researchers have been slow in rejecting the notion that attachment is a typology. One argument for categorical measurement is evident in research indicating that certain clusters of behavior exist within each attachment type. If certain behaviors (e.g., discomfort with closeness, distrustfulness) coexist for some individuals, but not others, this may imply attachment is a qualitative (i.e., categorical) rather than a quantitative (i.e., multi-dimensional) construct.

In summary, the most appropriate measurement method is still debated (e.g., Fraley & Waller, 1998) and there are valid arguments to conceptualize attachment as either a typology or as a multi-dimensional construct. Separate ratings for each category allow attachment to be represented as a continuous variable, resulting in scores that quantify how well each category portrays adult attachment. A forced-choice measure is useful in determining the overall style individuals believe is most characteristic of themselves. Fuller and Fincham (1995) found a substantial correlation between continuous and categorical measures of attachment ($k = .66$) in their sample. However, there appear to be sufficient differences to warrant using both types of measures. Use of a

forced choice item allowed testing attachment style as a moderating variable, affecting the interrelationship of emotional abuse, physical aggression and relational stability. In contrast, conceptualizing attachment as a combination of the three ratings allowed it to be addressed as mediating the relationship between abuse and relational stability.

Hypotheses

Three general hypotheses were tested in this study. The effect of psychological abuse on each of the three attachment styles was examined, as was the impact of physical violence on attachment. Second, interrelationships between partners' emotional abuse, physical aggression, attachment and relational stability were tested, as shown in Figure 1. Attachment Rating in the figure was a composite of women's separate ratings for each type of attachment.

First, partners' violence and psychological abuse were expected to be significant predictors of women's attachment style ratings. Increases in sustained psychological abuse and physical violence were expected to be predictive of higher ratings on insecure attachment styles. An inverse relationship between secure attachment ratings and abuse was expected. The impact of psychological abuse and physical violence were tested in separate analyses, although it was expected that these behaviors would affect attachment styles in similar ways.

To date, the proposed impact of Emotional Abuse (Path A) and Physical Aggression (Path C) on Attachment Rating have not been tested. The necessity of Paths A and C in Figure 1 were evaluated with several criteria. The simplest indication for these paths in the model were significant path loadings. In addition, a decrease in

explained variance of Attachment Rating when Path A (or Path C) was dropped indicated the necessity of the path. Furthermore, when compared to the model tested without Path A (or Path C), explained variance in Relational Stability was expected to be higher with the path. Finally, if the overall fit of the model with Path A (and with Path C) was better than without the path, there was statistical support for the hypothesized direct effect of Emotional Abuse (Physical Aggression) on Attachment Rating.

Second, relationships between four constructs were proposed. As shown in Figure 1, Emotional Abuse was expected to have a direct effect on both Attachment Rating (Path A) and on Physical Aggression (Path B). Physical Aggression was also expected to directly affect Attachment Rating (Path C). Therefore, Emotional Abuse was proposed to indirectly affect Attachment Rating through Physical Aggression. Finally, Attachment Rating was hypothesized to have a direct effect on Relational Stability (Path D), as has been shown in previous studies.

Third, the moderating effects of attachment style were examined because previous research implies different interrelationships for each type of attachment. Using women's forced choice, the model was tested separately for women who self-identified as secure, avoidant or anxious-ambivalent. The Attachment Rating construct was conceptually different for each of the three groups. For example, in the secure group, secure attachment was expected to be a stronger indicator of the construct, while avoidant (anxious) attachment was proposed to have a higher loading among women who were predominantly avoidant (anxious). Thus, the configuration of attachment ratings would differ by primary style. Consequently, the associations among Emotional Abuse, Physical

Aggression, Attachment Rating and Relational Stability were expected to differ by attachment group. The exception was Path B from Emotional Abuse to Physical Aggression, which was expected to be positive for all groups in accord with previous research (Leonard & Senchak, 1996; Murphy & O'Leary, 1989; O'Leary et al., 1994).

For the secure group, Emotional Abuse was expected to have a negative impact on Attachment Rating, which was expected to be more representative of secure than anxious or avoidant attachment, as shown in Figure 2. Research has shown that violence is more likely to occur in relationships with at least one insecure partner (Dutton et al., 1994; Roberts & Noller, 1998). It may be that lower levels of violence result in a more secure perspective on relationships. Therefore, the association between violence and attachment (Path C) was also expected to be negative. Finally, Path D was expected to be positive in this group. Increases in Attachment Rating for this group would represent stronger secure bonds and thus more stable relationships.

For women who chose avoidant as their predominant attachment style, the construct Attachment Rating would be affected by partners' behaviors differently than women in the secure group. As shown in Figure 3, Emotional Abuse was expected to have a positive impact on Attachment Rating (Path A). Path C was proposed to be positive, but Path D was hypothesized to be negative, indicating that women who perceive themselves as avoidant attachment had unstable relationships.

A stronger positive relationship between Emotional Abuse and Attachment Rating (Path A, Figure 4) was expected among anxiously attached women than for avoidant women because control and isolation behaviors evident in Emotional Abuse were thought

to serve to increase uncertainty about the relationship, thereby increasing ratings of anxious attachment. As in the avoidant group, Physical Aggression was expected to have a positive effect on Attachment Rating (Path C). However, a positive effect of Attachment Rating on Relational Stability was proposed (Path D). Although this may seem counterintuitive, the strong need for involvement in a relationship, characteristic of the anxious-ambivalent style, may buffer the effects of Emotional Abuse and Physical Aggression, resulting in more stable relationships.

CHAPTER II

METHOD

Sample

The data were from the first wave of interviews of Project HOW: Health Outcomes of Women, a longitudinal study. To participate, volunteers had to be between 20 and 48 years old, in a long-term heterosexual relationship for at least one year, and have a household income less than twice the poverty level or be receiving public assistance. In addition, Mexican Americans had to have been educated in the United States as were the 10 immigrants. Each of the three ethnic groups in the obtained sample was generally representative of low-income women in the metroplex (Honeycutt, Marshall & Weston, 2001).

In Wave 1, data were collected from 835 women who were, on average, 33.3 ($SD = 7.8$) years old. The sample consisted of African Americans ($n = 302, 36.2\%$), Euro-Americans ($n = 273, 32.7\%$), and Mexican Americans ($n = 260, 31.1\%$) who self reported as dating ($n = 201, 24.1\%$), cohabiting ($n = 107, 12.8\%$), common-law ($n = 181, 21.7\%$), or legally ($n = 346, 41.4\%$) married. These relationships had lasted an average of 7.7 ($SD = 6.6$) years. At Wave 1, African American women ($M = 0.9\%$ below poverty) were somewhat poorer than Euro-Americans ($M = 10.9\%$ above poverty) and Mexican Americans ($M = 12.2\%$ above poverty), $F(2, 816) = 4.16, p < .02$, when the cash value of public assistance was included. The average for the sample (7% above the poverty

threshold) was \$15,455 for a four-person household in 1995. Although they were the most disadvantaged financially, African American women had more education ($M = 12.54$ years) than Mexican Americans ($M = 11.21$) with Euro-Americans ($M = 12.04$) between these groups, $F(2, 834) = 3.63, p < .001$. General Equivalency Degrees and diplomas were classified as 12 years.

Study subsample. Most ($n = 740, 88.6\%$) of the 835 Wave 1 participants completed at least one additional interview. Data from subsequent interviews provided information on the status of women's Wave 1 relationships, which was used to create the Relational Stability factor. Therefore, all analyses were conducted with data from these participants. Of these women, 285 (38.5%) were African American, 225 (30.4%) were Euro-American, and 230 (31.0%) were Mexican American. More African Americans (94.7%) than Mexican Americans (88.5%) or Euro-Americans (82.4%) completed a second interview, $\chi^2(2, N = 835) = 21.69, p < .001$.

Procedure

Subject recruitment. Women were recruited to participate in a four wave, longitudinal study of factors that impact their health. The study, named "Project HOW: Health Outcomes of Women" was later extended to five waves. Participants were given a membership card as well as \$15.00 in cash, bus passes, a "Project HOW" canvas tote bag and t-shirt in return for their participation in the first wave of interviews. The women were also told the incentive for participation would increase each time they returned for the next part of the study. Recruitment began in May, 1995, and was completed in December, 1996.

Women were recruited in a variety of ways, including personal contact, distribution of flyers and a mass mailing. In addition, a primary source of recruitment was study participants who referred their friends and family. Flyers, written in both Spanish and English, were distributed through churches, schools (pre-schools to junior colleges) and left in public places (e.g., libraries, convenience stores, other businesses). Announcements about the study were made at churches, schools, community gatherings, social service and health care agencies. Additionally, public service announcements in both English and Spanish were made on local radio stations and in minority newspapers describing the study and giving interested women telephone numbers to call. Finally, a mailing list was purchased from an independent company. A mass mailing of over 18,000 letters went to women in the low-income sections of southwest Dallas County. The mailing consisted of a letter (Appendix C) and two to three flyers inviting women to call the project offices.

Interviewers were trained to do street recruiting in southwest Dallas County. Students went to stores, clinics, laundromats, social service agencies, health fairs, etc. and talked to women they encountered. On the contact sheets (Appendix D) interviewers completed only women's first names and telephone numbers to maintain relative anonymity. Names of friends and family members whom women felt might be willing to participate were also obtained. These contact sheets were taken to one of two offices in Oak Cliff. Office workers received the contact sheets from recruiters to make follow-up telephone calls and answered telephone calls from prospective participants. Office

workers screened volunteers and described the commitment necessary to participate in the study.

Screening. Screening consisted of asking women how long they had been with their current partner, the amount of their household income, the number of people dependent on that income, whether they were receiving public assistance and their race/ethnicity. Income was matched to government figures (Appendix E). Women reporting greater than 175% of poverty were eliminated. Because women generally underreported income during screening, this cutoff was expected to allow for a final sample within 200% of poverty. In addition, Mexican American women were asked whether they were born in the United States. If they were immigrants, they were asked the number of years they had gone to school in the United States. A U.S. education was necessary for two reasons. This requirement minimized acculturation differences among Mexican Americans. It also ensured women would have been exposed to questions requiring structured responses similar to those used in the interviews.

Prospective volunteers were told that participation would require them to answer questions in a total of four interviews, each of which would last approximately three hours. They were told the interviews would occur over a two-year period. When women were qualified and agreed to participate, office workers obtained their full name and address before scheduling their first interview.

When a woman arrived for her interview, a registration form was completed to acknowledge informed consent and provide information to match subjects to their data (Appendix F). Women were given a copy of the informed consent information in two

ways. One was written in technical terms and hand signed by the principal investigator (Appendix G). In the other form (Appendix H), simple English was used and the information was organized into summary points. Permission to contact forms were also completed to facilitate contacting women for future interviews (Appendix I).

Confidentiality. Strict procedures of confidentiality were devised for the study. A Certificate of Confidentiality was obtained from the Public Health Service to protect women's anonymity and the data they provided. With this certificate, neither women's names nor their answers can be released.

Interviewers were instructed not to discuss participants' answers or the actual questions with anyone involved in the project except other interviewers, the principal investigator and the doctoral students in charge of data. Interviewers did not have access to identifying information, such as participants' last names or addresses. In addition, interviewers and office workers were naive to the actual purposes of the study, hypotheses and research questions. All students and employees of the study, with the exception of the principal investigator, statistician, and doctoral research assistants, were told the study was being conducted to better understand various factors in the lives of low income women that impact their physical and mental health.

When women scheduled an interview, office workers assigned participant numbers that did not correspond to subject numbers used with the data to facilitate tracking. Office workers did not have access to the questions being asked, participants' answers, purposes of the study, hypotheses or research questions. Moreover, interviewers were not allowed to be in the waiting area while the registration and permission to

contact forms were completed to ensure that identifying information would not be overheard. Only one doctoral student and the principal investigator had access to both women's answers and the registration forms containing identifying information.

When interviews were received in the research room at the University of North Texas, subject numbers were assigned. The master sheet matching participant codes to the subject number and to participants' names, and registration forms were stored in a locked room at the University of North Texas, with completed interviews kept in a different room. In all interviews, women gave their first name, birth date, birthplace and their mother's first name. This information was used to match data across interviews.

Interviewers. Wave 1 data were collected using structured interviews conducted by 61 trained undergraduate and graduate female students. Interviewers were paid \$17.00 per completed interview. Students could also choose to receive psychology course credit instead of pay or volunteer without pay.

Three doctoral students in Clinical and Counseling Psychology under the supervision of two faculty advisers (i.e., Drs. Marshall and Guarnaccia) trained interviewers. Training consisted of going through the interview, item by item, explaining how each question should be asked and when to ask conditional questions. Moreover, standardization and confidentiality issues were stressed during the training. Trainees were instructed to spend time practicing the interview and role-playing with one another and with friends and family.

When a student believed she was ready to begin interviewing, she was assessed by one of the doctoral students. For Wave 1, this procedure consisted of videotaping a

role-play session with the doctoral student playing the part of a difficult participant. The videotaping allowed a faculty adviser to be consulted when necessary. Training procedures became more standardized over time and it was not necessary for faculty advisors to view the videotapes. Consequently, videotapes were eliminated with the second wave of interviews. Through role playing, doctoral students assessed whether the student knew the interview, knew when to ask conditional questions, whether she was able to handle extraneous questions and comments appropriately, whether her pacing was adequate, whether she could handle surprising information appropriately, etc.

If a student did not pass this part of the training, she was asked to continue practicing and return for an additional role-play. This procedure was repeated until the doctoral student believed the interviewer was sufficiently competent to begin collecting data. Only one woman was told after several role-play sessions that she would not be able to conduct interviews. Continual feedback was given to the interviewers as the study progressed to ensure accuracy of the data.

Data collection. Data were collected in two store front offices in the Oak Cliff area of Dallas. Wave 1 interviews, lasting one to 5 hours ($M = 2.5$), were conducted in one of several private rooms at the offices. The interviewer administered all questionnaires. Questions were read aloud by the interviewer and the participant gave her answer verbally to be recorded by the interviewer. Response scales were kept in a notebook used by participants during the interview.

Scoring. After the interviews were completed, they were taken to a research room at the University of North Texas. A graduate student checked each interview for errors.

All time related questions were coded for number of months or number of weeks, depending upon the question asked. Any participant who gave information in the interview that indicated she did not meet the Wave 1 inclusion criteria was dropped from the study via a letter of notification. Participants unable to master the use of rating scales and those who were obviously intoxicated were dropped during the interview, but were given the incentives for their efforts. Of the 996 women interviewed, 161 were dropped from the study, primarily because their relationship was too brief or their household income was too high.

Measures

In all interviews, well-trained and monitored female students asked participants questions on topics including health, stressors, employment, personal and social relationships and abuse. Scaled and open-ended response formats were used. Only the measures used in this study are described here.

Emotional Abuse. Men's psychological abuse was measured with the Subtle and Overt Psychological Abuse Scale (SOPAS; Marshall, 1999b). The SOPAS is a revision of the measure described in Marshall (1999a). Women were told "Men may do these acts in a loving way, a joking way, or a serious way." On a scale ranging from never (0) to almost daily (9) women reported their partners' behavior since their relationship began. The mean of the 65 items in Appendix J was used for psychological abuse ($\alpha = .99$). Partner's verbal aggression was measured with the 7 items in Appendix K that used the same 10-point response scale. The mean of these items was used for verbal aggression (α

= .91). Additionally, women reported the number of times their partner had left them. These three indicators comprised Emotional Abuse.

Physical Aggression. Marshall's (1992) Severity of Violence Against Women Scale (SVAWS; Appendix L) assessed partners' threats and acts of violence as well as sexual aggression. Women reported the frequency of these 46 behaviors on a scale ranging from never (0) to a great many times (5). Threats of violence ($\alpha = .94$), acts of violence ($\alpha = .95$) and sexual aggression ($\alpha = .85$) were represented by the means for each subscale. These scores were used as indicators of Physical Aggression.

Attachment Rating. A modified version of Hazan and Shaver's (1987) paragraphs described in Appendix M specified attachment to the partner. Interviewers read each statement. Then, participants used a 7-point scale anchored by "completely false, I'm never like this" and "completely true, exactly like me" to rate how accurately the paragraph described them. After these ratings, women chose the paragraph that was most representative. Proportions were similar to those found by Hazan and Shaver, with 55.8% ($n = 413$) of participants classifying themselves as secure, 29.6% ($n = 219$) describing themselves as avoidant, and the remaining 14.6% ($n = 108$) categorized their attachment as anxious. One participant did not respond to the categorization item. Three groups were created based on attachment style categorizations to test the moderating effects of attachment style.

Analyses of variance (ANOVAs) indicated that scaled ratings varied by attachment style categories for secure, $F(2,736) = 87.80, p < .001$, avoidant, $F(2,736) = 131.62, p < .001$, and anxious, $F(2,736) = 121.98, p < .001$, attachment. Post-hoc

Student-Newman-Keuls tests indicated all three groups differed from each other on the attachment ratings. Women who categorized themselves as secure in the forced choice item rated themselves as significantly more secure ($M = 5.41, SD = 1.62$) than women who rated themselves as avoidant ($M = 3.63, SD = 1.85$) or anxious ($M = 3.98, SD = 1.71$) in their attachment to their partner. Similarly, women who chose the avoidant category rated themselves as significantly more avoidant ($M = 5.32, SD = 1.68$) than did securely ($M = 2.80, SD = 1.92$) or anxiously ($M = 3.81, SD = 1.95$) attached women. The pattern was the same for anxious attachment, with anxiously attached women rating themselves significantly higher ($M = 5.17, SD = 1.90$) than secure ($M = 2.16, SD = 1.69$) or avoidant ($M = 2.96, SD = 1.90$) women. Based on the differences in ratings by attachment categories, the three rating items were used as indicators of the Attachment Rating construct.

Relational Stability. At Wave 1, commitment was measured with four of the six items used by Canary and Stafford (1992). These were “I am committed to maintaining this relationship,” “I want this relationship to last as long as possible,” “I think it is unlikely that this relationship will end in the near future,” and “I feel very attached to my partner.” Women used a 6-point scale ranging from strongly disagree to strongly agree. The mean was used for women's commitment ($\alpha = .81$). At the beginning of subsequent interviews, women reported whether their Wave 1 relationship had ended. This categorical variable (termination) and the mean for commitment were proposed indicators of Relational Stability.

Analysis

The proposed effects of psychological abuse and physical violence on attachment style were tested with regression analyses. Psychological abuse was expected to be a significant predictor of avoidant and anxious attachment scores, as was physical violence. These relationships were tested separately to determine the amount of variance in each attachment rating contributed by psychological abuse and physical violence, independent of interrelationships between these indicators and others. Although partners' behavior was expected to affect attachment style as a construct, regression analyses would reveal how psychological abuse and physical violence affected each of the insecure attachment styles.

In addition to the hypothesized impact of both violence and emotional abuse on attachment styles, interrelationships between these and other measured variables were also proposed. A Structural Equation Modeling (SEM) procedure was used to analyze the hypothesized relationships among the four constructs within each of the three attachment groups. Therefore a brief summary of the history, statistical principles and necessary steps of SEM is in order.

SEM is a method of analysis similar to correlation, multiple regression and analysis of variance (ANOVA) in three ways. All four statistical procedures are general linear models, all are valid only if specific assumptions are met, and none of these techniques imply causality. Despite the implication of directionality in path diagrams, causality is not indicated by results of any of these techniques, only by the soundness of the underlying theory. This leads to three of the differences between SEM and other methods of analysis.

One advantage of SEM is the necessity of *a priori* model specification. Diagrams are pictorial representations of substantive theory and SEM further tests whether there is empirical support for the hypothesized theory. In SEM, models are specified based on theory and previous findings in the literature. Therefore, directionality and valence are proposed by the researcher and supported (or not) with the results. A second difference is the capacity of SEM to estimate and test the relationships between latent variables (LVs). By modeling LVs, researchers are able to remove the effects of measurement error that are found in regression and ANOVA. Finally, there is some ambiguity regarding significance of results. Unlike other techniques, there is uncertainty about what constitutes an appropriate fit of the model to the data. In correlation, a significant r indicates a good fit. When using regression analysis, an R^2 that is significantly greater than zero indicates empirical support for a hypothesis. When comparing differences in groups, a significant F -ratio sufficiently validates the proposed model. In SEM, rather than reporting only one test statistic and a significance value, researchers must consider multiple fit indices in determining whether their model accurately represents the relationships among latent and observed variables.

History. SEM is a hybrid of two statistical techniques; factor analysis and path analysis. Factor analysis was developed by Spearman (1904) and advanced by Thurstone's (1935) work on intelligence. In factor analysis, intercorrelations among measured variables are analyzed to explore or confirm unobserved constructs. The explosion of research on factors related to human intelligence led to the popularity of this technique in the 1950s and 1960s. Jöreskog (1967) developed the maximum likelihood

(ML) approach to factor analysis, an innovation that allowed researchers to specify the numbers of factors hypothesized to explain measured variables.

Although not as popular as factor analysis, path analysis is also an important component of SEM. By showing pictorially how correlations among variables were related to model parameters, Wright (1918, 1921, 1934, 1960) created the path diagram. Path diagrams were used to illustrate and test direct, indirect and total effects among observed variables. The combination of factor and path analysis is based on Jöreskog's (1973) outline of the general structural equation model that consists of two parts, measurement models and structural models.

Measurement and structural models. Factor analysis is used in building the measurement models that define LVs. LVs are the unobserved constructs free of measurement error hypothesized to underlie observed variables, or indicators. In the proposed model, there were 11 measurement models proposed:

SOPAS = function of Emotional Abuse + error
Number of times partner left = function of Emotional Abuse + error
Verbal aggression = function of Emotional Abuse + error

Threats = function of Physical Aggression + error
Violence = function of Physical Aggression + error
Sexual Aggression = function of Physical Aggression + error

Secure attachment = function of Attachment Rating + error
Avoidant attachment = function of Attachment Rating + error
Anxious attachment = function of Attachment Rating + error

Commitment = function of Relational Stability + error
Termination = function of Relational Stability + error

As in factor analysis, measures that have little error should have higher loadings on LVs and will be better indicators. For example, in the standardized solution, if partners'

leaving had a factor loading closer to 1.0 on Emotional Abuse than verbal aggression, partners' leaving would have been considered a better indicator of Emotional Abuse.

The structural equations specify relationships between independent and dependent LVs. There are three types of relationships between LVs; associations, direct effects and indirect effects. Associations are nondirectional relationships and estimates for these parameters are covariances. Direct effects are directional relationships between variables, similar to those found in ANOVA and multiple regressions. Path coefficients are interpreted as regression weights. An indirect effect is the effect of an independent LV on a dependent LV through one or more mediating variables (Baron & Kenny, 1986). In the proposed model, three structural models were proposed:

$$\begin{aligned}\text{Physical Aggression} &= \text{Emotional Abuse} + \text{error} \\ \text{Attachment Rating} &= \text{Emotional Abuse} + \text{Physical Aggression} + \text{error} \\ \text{Relational Stability} &= \text{Attachment Rating} + \text{error}\end{aligned}$$

These models specified the direct effects of Emotional Abuse and Physical Aggression on Attachment Rating and the direct effect of Attachment Rating on Relational Stability. Indirect effects of Emotional Abuse and Physical Aggression on Relational Stability and of Emotional Abuse on Attachment Rating were implied.

The need for ensuring the accuracy of the measurement models before testing the structural model was outlined in Anderson and Gerbing's (1988) two-step approach to modeling. In this approach, the measurement model provides an assessment of convergent and discriminant validity of the proposed factors. Structural models provided support for predictive validity. Therefore, confirmatory factor analyses of each of the

proposed latent variables were conducted before testing the SEM with the steps described below.

Steps in SEM

Many experts in modeling agree on the five steps necessary in testing a model. A model must be specified, identified, estimated, tested and modified (Hoyle, 1995; Kaplan, 2000; Kline, 1998; Schumaker & Lomax, 1996). A model is a statistical statement, expressed with equations or a diagram, about the hypothesized relationships among variables based on theory and research (Hoyle, 1995). In Figure 5, Emotional Abuse, Physical Aggression, Attachment Rating and Relational Stability are LVs, and diagrammatically indicated as such through the use of ellipses. Measured variables are represented with rectangles. Because LVs are thought to be the constructs that underlie measured variables, arrows indicate a direct effect of LVs on measured variables. All relationships between variables in this figure are directional. There were no associations (nondirectional relationships) specified. Each variable is exogenous (independent) or endogenous (dependent).

Model specification. Model specification is the formulation of a set of constants (parameters) that indicate an association, direct or indirect effect between two LVs. Parameters may be fixed, usually to zero or 1.0 and not estimated, or free to be estimated from the data. There are three types of parameters; directional effects, variances and covariances. Directional effects include the effects of LVs on indicators (factor loadings) and effects of LVs on other LVs (path coefficients). Because LVs are not scaled, the loading of the LV on measured variables (indicators) cannot be interpreted. This problem

can be addressed by constraining the variance of the LV to 1.0 or by setting the factor loading at 1.0. In Figure 5, one factor loading for each LV has been set at 1.0 to scale the LV. Free parameters, indicated with asterisks, are to be estimated for 7 factor loadings and 4 path coefficients. Measurement error for each dependent variable must also be estimated. Any variable, whether observed or latent, predicted by another variable is assumed to have unexplained variance in measurement. Consequently, variance must be estimated for measurement error (e) in the 11 observed variables and for the prediction error (D) in the 3 LVs. Covariances are nondirectional associations between variables and only found among exogenous variables. There were no covariances in the proposed model. Therefore, 25 parameters were specified for estimation.

Identification. In many cases, researchers specify their models before data collection. Those who are unfamiliar with SEM may inadvertently specify a model that cannot be identified. This potentially costly mistake may not be discovered before data are collected. A model is identified when it is possible to derive a unique estimate for each proposed path. If the model is not identified, estimation may not be successful. If there is only one way to identify a unique value for each path, the model is just identified and has zero degrees of freedom. If a value for every path can be obtained multiple ways from the data, the model is overidentified. If a unique value cannot be obtained from the data for each free path, the specified model is underidentified.

If a specified model meets necessary and sufficient requirements for identification, estimation may be successful. Requirements differ for the type of model specified. The proposed model is considered a hybrid model because it includes both

measurement and structural models. There are two steps in determining identification of a hybrid model (Kline, 1998). First, the model must be respecified as a confirmatory factor analysis (CFA). This is done by specifying associations among all LVs, as shown in Figure 6. For identification of a CFA with more than two factors, three requirements must be met. Having two or more indicators per LV is a necessary condition. Every LV must be scaled, as previously discussed. Finally, the number of free parameters must be less than or equal to the number of observations, which is the number of variances and covariances among measured variables. If v represents measured variables, $v(v + 1)/2$ is the number of observations. With 11 measured variables in this model there were 66 observations. With 66 observations and only 25 parameters, the third condition CFA identification was met. The model was overidentified because the number of observations was greater than the number of free parameters.

The second step in determining identification of a hybrid model is much simpler. The structural portion of the model is viewed as a path analysis, as shown in Figure 1. If the path model is recursive, the model is identified. A model is recursive if two conditions exist. First, all causal effects must be unidirectional, as shown by unidirectional arrows in Figure 1. Bidirectional arrows would indicate correlations and would make this model nonrecursive. Second, the error variances (disturbances) are independent when there are direct effects among endogenous variables. This means the disturbances of the LVs are not correlated when one LV predicts another. None of the disturbances in Figure 5 were correlated, thus the structural model was recursive and the hybrid model was identified.

Data preparation. Once the model is specified and identified, collected data are screened in preparation for estimation. Undesirable problems with data fall into four categories; missing data, multicollinearity, outliers and nonnormality. Data may be missing at random (MAR), missing completely at random (MCAR), or not missing at random (NMAR). Briefly, MAR means the probability of missing data is unrelated to the missing variable. Therefore, observations MAR differ by chance, not differing systematically from present observations. MCAR implies a stronger assumption about the randomness of missing observations. Data that are MCAR for one variable are assumed to be unrelated to that and all other variables. NMAR implies the probability of missing is related to the data missed and a systematic loss of data.

The possibility that data were missing systematically was addressed. Chi-square analyses indicated that women who completed only one interview did not differ from those who completed at least two waves on marital status, $\chi^2(3, N = 835) = 2.64$, or attachment style, $\chi^2(2, N = 834) = 0.22$. Differences between these groups on other relevant variables were analyzed with *t*-tests. Of the 30 analyses, shown in Table 1, *t* values were significant only for age and length of relationship. Women who completed at least two interviews were significantly older ($M = 33.07$ years, $SD = 7.8$) and had been in their relationships longer ($M = 7.9$ years, $SD = 6.7$) than women who dropped out of the study ($M_s = 30.9$ and 6.3 years, respectively, $SD_s = 7.1$ and 6.3 , respectively). Although the difference in length of relationship is a concern, the lack of significant differences in attachment, violence, length and number of past relationships, etc., in addition to the age

difference indicates that data were not missing systematically with regard to variables considered in this study.

Univariate and multivariate outliers must also be examined. Outliers are univariate if scores are extreme on only one variable. When subjects have two or more extreme scores or an unusual configuration, they are considered multivariate outliers. Univariate outliers could be either transformed or changed to the next most extreme score, depending on the normality of the data. Multivariate outliers were transformed.

Finally, univariate and multivariate normality must be considered. Univariate distributions were examined for skewness and kurtosis. For the skewness index, values greater than 3.0 are considered extreme (Chou & Bentler, 1995; West, Finch & Curran, 1995). Values over 10.0 for the kurtosis index suggest a problem and values over 20.0 are considered extreme (Kline, 1998). Multivariate normality assumes all univariate distributions are normal, the joint distributions for any combination of variables are normal and bivariate scatterplots show the existence of linearity and homoscedasticity. Homoscedasticity exists when scores of the criterion are evenly distributed along the regression line for the predictor. Heteroscedasticity can be caused by nonnormality. Deletion or transformation of univariate or multivariate outliers enhances multivariate normality.

Estimation. After screening, the researcher obtains estimates of the free parameters from the data. In SEM, iterative techniques are generally used. Iterative methods involve multiple attempts to obtain parameter estimates that result in a covariance matrix similar to the observed matrix. With each attempt, the difference

between the consecutively estimated parameter values is evaluated. When this difference is small enough (e.g., less than .0001), parameter estimates cannot change and the estimation procedure has converged.

There are several estimation procedures, including maximum likelihood (ML), least squares (LS), unweighted LS (ULS), generalized LS (GLS), and asymptotic distribution free (ADF). ML and GLS methods assume multivariate normality, LS and ADF do not. LS estimation does not provide a valid inference, but ADF does with large sample sizes. One of the most commonly used techniques, ML, is robust to moderate violations of the normality assumption (Anderson & Gerbing, 1984; Chou, Bentler & Satorra, 1991; Hu, Bentler & Kano, 1992; Muthén & Kaplan, 1992). However, if the data are severely nonnormal, the researcher has three options (Kline, 1998). The data may be transformed and then analyzed with ML or LS estimation. GLS and ML are scale invariant. Therefore, if the original scale data are transformed, the obtained parameter estimate can be algebraically converted to the original scale metric for easier interpretation. ULS is sensitive to transformation and generally not effective with transformed data.

Alternatively, nonnormal data may be analyzed with corrected statistics to reduce bias. Corrected test statistics include scaled goodness of fit tests and robust standard errors (Kline, 1998). Satorra and Bentler's (1994) scaled χ^2 is an example which decreases the value of standard χ^2 by a constant reflective of the observed kurtosis.

Finally, nonnormal data may be estimated with methods such as ADF, which do not assume multivariate normality. ADF adjusts for kurtosis, but has two disadvantages.

First, it requires more computer time and memory than other techniques. Second, very large samples are necessary to generate stable, accurate estimates. Samples of 100 or less are too small for this technique. Simple models can be estimated with sample sizes of 500 or more and complex models require thousands of subjects. However, Yuan and Bentler (1997) provided a corrected ADF statistic that is more reliable with small to medium samples. The proposed model was estimated with a medium ($n = 740$) sample.

Chou and Bentler (1995) reported that scaled χ^2 was superior to ADF in estimating χ^2 in nonnormally distributed samples with small sample sizes. This was a concern due to the small size of the three attachment subsamples when moderation was tested. Therefore, the robust downweighting procedure described in Yuan, Chan and Bentler (2000) was the most appropriate method for handling a heavy-tailed distribution.

Model fit. Once estimated, the fit of the model to the data must be evaluated. As suggested by Hoyle and Panter (1995), several recommended indices of overall model fit are reported. Hu and Bentler (1995) presented two categories for fit indices. Absolute fit indices directly assess how well a model fits the data. Incremental (comparative) fit indices compare the proportional improvement of the fit of the target model over a more restricted model.

Absolute fit indices include the goodness-of-fit index (GFI; Jöreskog & Sörbom, 1981; Tanaka & Huba, 1985, 1989), χ^2 (Bollen, 1989) and scaled χ^2 (Satorra & Bentler, 1994). GFI is analogous to R^2 , used in summarizing multiple regression results. Both χ^2 values test the fit of the fixed parameters. A nonsignificant χ^2 indicates the specified model implied variance-covariance matrix is not significantly different from the

observed sample variance-covariance matrix. Therefore, a nonsignificant χ^2 is indicative of a model that fits the data well. However, as with most statistics, large sample sizes frequently result in significance. Consequently, multiple indices were used to evaluate model fit.

Bentler's (1989, 1990) comparative fit index (CFI) is also reported. The CFI has a range of zero to 1.0, with values closer to 1.0 indicating better fitting models. Acceptable CFI values are generally over .90 (Hu & Bentler, 1995; Kline, 1998), which was the cutoff value used in this study.

The root mean squared error of approximation (RMSEA; Steiger, 1990; Steiger & Lind, 1980) is also suggested as an index of fit. A value of less than .05 indicates an excellent fit, less than .08 is good, and less than .10 is acceptable. To summarize, a nonsignificant χ^2 , CFI > .90 and RMSEA < .10, would indicate the model fit the data well.

Model modification. On most occasions, a proposed model is not the best fitting model. Consequently, modification (respecification) is needed. This involves adjusting the estimated model by freeing or fixing parameters. Modification is a controversial topic that has been likened to the debate about post-hoc comparisons in ANOVA (Hoyle, 1995). Readers interested in specific aspects of the dispute are referred to Bollen and Long's (1993) edited volume which is devoted entirely to the debate.

Modification is generally accomplished by using statistical search strategies to determine which adjustments will result in a better-fitting model. The Lagrange multiplier (LM) test suggests parameters fixed at zero to be freed (estimated) and the

Wald test suggests which free parameters should be fixed (removed). This is the root of the controversy. Careful researchers will modify their model within the limitations of their theory. For example, if a Wald test indicated the proposed path from Emotional Abuse to Physical Aggression should be removed that modification would not be included because the suggested relationship contradicts theory and research. If the LM test indicated, contrary to theory, a path from Physical Aggression to Emotional Abuse should be estimated, the modification would not be made. If an acceptable rationale for modification of the model existed, the model was respecified.

CHAPTER III

RESULTS

Data preparation

The data for the sample as a whole and for each of the three attachment groups were screened for outliers using univariate skewness and kurtosis. For the sample, three variables (times partners had left, partners' violence and sexual aggression) had kurtosis values close to or over 10 (117.07, 10.87 and 14.45, respectively), indicating nonnormality (Kline, 1998). This held for the same variables in the secure (88.76, 16.73 and 20.37, respectively) and avoidant (127.96, 9.31 and 9.96, respectively) groups. In the anxious group, kurtosis was problematic only for partners' leaving (31.57). Inspection of the distributions of these variables revealed extreme outliers in each instance. Outliers were recoded to the fourth standard deviation beyond the mean. This resulted in a more normal distribution, yet retained values for all but the most extreme cases. The descriptive statistics are listed in Table 2 for all continuous variables after transformations.

Bivariate correlations were calculated to address the potential for multicollinearity. These are shown in Table 3 for the sample and Tables 4 through 6 for each of the three attachment groups. As expected, the correlations within constructs were generally higher than between constructs, with a few exceptions. Consequently, it was reasonable to proceed.

Exploratory factor analysis (FA) is often helpful in indicating potential specification problems prior to model estimation. In the sample and each group, four factors were produced with the 11 variables. For all analyses, Physical Aggression was the strongest factor. None of the indicators for Physical Aggression loaded on other factors and the lowest loading was .50 (for sexual aggression in the avoidant group). There were inconsistencies on the Emotional Abuse factor. Partners' leaving loaded highest on the Relational Stability factor for the sample and in the secure and avoidant groups, although the loadings were low, less than .40 in all instances. Low loadings for relational termination were also seen in these groups and in the sample. These problems with the outcome construct forced reconsideration of the measurement models.

The literature shows the quality of relationships (Karney & Bradbury, 1995) and the possibility of having a relationship with other potential partners (Rusbult, 1980) are related to stability. Therefore, these measures were added as indicators of stability. Relational quality was assessed with a modified version of Acitelli, Douvan and Veroff's (1993) measure of relational well-being. Women's perceptions of alternative partners was assessed with three questions. Items from both scales are included in Appendix M.

The addition of these two indicators improved the factor structure of the FA. These results for the sample are shown in Table 7. Tables 8 – 10 show factor loadings for the secure, avoidant and anxious groups, respectively. Loadings less than .32 indicate variables are not correlated with a factor (Tabachnick & Fidell, 1996). The results for the sample in Table 7 revealed none of the problems with the attachment indicators that were evident in the FA for each of the groups. With the exception of partners' leaving and

relational termination, all variables loaded as expected. In the secure (Table 8) and anxious (Table 10) groups, partners' leaving and relationship termination did not load greater than .30 on any factor. In the avoidant group (Table 9), partners' leaving was associated with indicators of Relational Stability. Alternatives did not load on any factor in the secure and avoidant groups. There were problems with the attachment variables in all three groups. In the secure and avoidant groups, secure ratings did not load greater than .30 on any factor. Additionally, among avoidant women, anxious attachment loaded highest (.32) on the Emotional Abuse factor. In the anxious group, avoidant and anxious ratings were not above .23 on any factor, but secure ratings had a very strong loading on the Attachment Rating factor. Overall, the FAs indicated there were likely problems with the measurement models for the Attachment Rating construct within each group, but not for the sample as a whole. Results of the FAs were used to guide modification of the proposed model.

Preliminary Analyses

Univariate and multivariate analyses tested proposed relationships between partners' behavior, attachment and relational stability. Results of regression analyses, chi-square tests and analyses of variance (ANOVAs) were conducted in preparation for multivariate analyses with SEM. Therefore, findings from univariate analyses are presented first, followed by results of estimation and modification of the proposed multivariate model.

First, the hypothesized relationships between partners' behavior and ratings of attachment style were tested. Psychological abuse was entered as a predictor in separate

equations for each attachment style. Psychological abuse did not predict secure attachment, $R^2 = .00$, but made significant contributions to avoidant, $R^2 = .04$, $p < .01$, and anxious, $R^2 = .17$, $p < .001$, attachment scores. In a second set of multiple regression equations, partners' threats and acts of violence in addition to sexual aggression were entered as predictors of attachment. Like psychological abuse, aggression did not predict secure attachment, $R^2 = .01$. Although avoidant attachment was predicted by partners' aggression, $R^2 = .02$, $p < .001$, only sexual aggression made a significant contribution, $\beta = .14$, $p < .001$. Variance in anxious attachment was also explained by partners' aggression, $R^2 = .08$, $p < .001$, with the contribution of threats, $\beta = .23$, $p < .001$, and sexual aggression, $\beta = .09$, $p < .05$, reaching significance. Thus, the first hypothesis was supported for insecure attachment, but the only regression equation to show a relatively strong relationship was between psychological abuse and anxious attachment. The small size of the β and R values potentially could be due to measurement error in the three predictors. However, this was unlikely given the high reliability for each measure of violence. Overall, the differing patterns associated with each attachment score supported the hypothesis that attachment style would be a moderator at the multivariate level.

Expected differences in the stability of relationships by primary attachment style were also found. Women endorsing a primarily secure attachment style at their first interview were proportionately more likely, $\chi^2 (2, N = 740) = 13.49$, $p < .001$, to be with the same partner at a subsequent interview ($n = 248$, 60.0%) than were avoidantly attached women ($n = 116$, 53.0%) or those with predominantly anxious attachment ($n = 44$, 40.7%). Results of ANOVAs, shown in Table 11, also supported the association

between attachment and relational termination. Women who had ended their relationships rated themselves significantly lower on secure, $F(1,735) = 4.98, p < .05$, and higher on avoidant, $F(1,735) = 8.40, p < .01$, and anxious, $F(1,735) = 16.90, p < .001$, attachment than women who remained with their partners.

Multivariate Analyses

All models were tested with Bentler's (1995) SEM software, EQS version 5.7. Mardia's coefficient of kurtosis was significant in the secure ($\kappa = 44.95, p < .001$) and avoidant ($\kappa = 21.76, p < .001$) groups, as well as in the sample ($\kappa = 52.24, p < .001$). Due to the high kurtosis, a cautious approach was taken. Analyses were first conducted without further transforming the data. The results were then confirmed using transformed, normally distributed data. For transformation, Yuan et al.'s (2000) downweighting procedure was used. After transformation, Mardia's coefficient was nonsignificant for the secure ($\kappa = 0.26, ns$) and avoidant ($\kappa = 1.73, ns$) groups, and for the sample ($\kappa = -0.70, ns$). As ML estimation performs well with moderately nonnormal data (Chou & Bentler, 1995), it was used to estimate all models. Models were first tested and modified separately in each of the three attachment groups to test moderation.

Secure group. The proposed model in Figure 1 fit the data from the secure group well. Although the χ^2 was significant, $\chi^2(61, N = 408) = 187.28, p < .001$, both CFI = .95, and RMSEA = .07, endorsed the model. The χ^2 was likely significant due to the sample size and large kurtosis. The model was re-estimated with the downweighted data. The results were similar, $\chi^2(61, N = 408) = 157.31, p < .001$, CFI = .96, and RMSEA = .06. Consequently, the unweighted data were used.

Table 12 shows path loadings of indicators within constructs, path coefficients between constructs, error variance of indicators by construct, variance associated with Emotional Abuse, and variances of disturbance error of the dependent constructs. Evaluation of these results reveals four problems with the proposed model. First, secure attachment did not load significantly on Attachment Rating. Second, Path C from Physical Aggression to Attachment Rating was not significant. These problems led to the lack of significance in disturbance error for Attachment Rating. Finally, the error variance of the indicator relational quality was negative, but nonsignificant. Significant negative error variances (Heywood cases) indicate a poorly specified model (Kline, 1998). However, the lack of significance indicated the parameter estimate was not different from zero in this model. Consequently, this problem was not interpreted as an indication of a misspecified model. A large proportion of variance in Physical Aggression, $R^2 = .61$, was explained by Emotional Abuse; in Attachment Rating, $R^2 = .73$, by Emotional Abuse and Physical Aggression; but not in Relational Stability, $R^2 = .43$ by Emotional Abuse, Physical Aggression and Attachment Rating. Thus, relatively little variance was accounted for in the outcome variable.

The Wald test indicated the nonsignificant path from Physical Aggression to Attachment Rating should be dropped from the model for the secure group. Research indicating the comparatively greater impact of emotional abuse than violence on women (Follingstad et al., 1990; Marshall, 1999a) supported the decision to re-estimate the model without Path C. Although the results did not indicate a significantly better fit than the previous model, $\chi^2 (62, N = 408) = 187.58, p < .001, CFI = .95, RMSEA = .07$, the

principle of parsimony made this model preferable. The model is shown in Figure 7. There was no difference in explained variance for any of the dependent LVs and all nonsignificant parameter estimates in the proposed model remained nonsignificant in the modified model. Thus, this model was adequate and parsimonious.

To ensure that kurtosis did not have a negative impact, this model was also re-estimated with the downweighted data. The obtained goodness of fit statistic was again significant, $\chi^2 (62, N = 408) = 158.00, p < .001$. Using the transformed data had little effect on other fit indices, CFI = .96, RMSEA = .06

Although the LM test did not suggest adding a path from Physical Aggression to Relational Stability, the absence of any effect, whether indirect (as proposed) or direct, was counter to theoretical considerations. This, in addition to the amount of explained variance in Relational Stability, $R^2 = .42$, resulted in the addition of a path from Physical Aggression to Relational Stability in a second alternative model. Chi-square was again significant, $\chi^2 (61, N = 408) = 182.46, p < .001$, but fit indices showed the model fit the data well, CFI = .95, RMSEA = .07. The newly estimated path was significant, $t = -2.63, p < .001$. As shown in Figure 8, Paths A and D, which were significant in the previous models, were no longer significant. Explained variance decreased a great deal for Attachment Rating, from $R^2 = .73$ to $R^2 = .60$, and somewhat for Relational Stability, $R^2 = .40$. Therefore, this model was rejected. The first alternative model was retained as the best fitting model for the securely attached group with Paths A, B and D from the proposed model.

Avoidant group. Results for the proposed model in the avoidant group were similar to those for the secure group, $\chi^2(61, N = 216) = 139.16, p < .001, CFI = .94, RMSEA = .08$. Table 13, organized in the same way as Table 12, shows the same four problems. The path loading for secure attachment was not significant. Neither Path C nor the disturbance error associated with Attachment Rating was significant, and relational quality had negative, but nonsignificant error variance. Additionally, error variance for partners' threats was nonsignificant. The explained variances for Physical Aggression $R^2 = .46$, and Attachment Rating, $R^2 = .61$, were slightly lower for avoidant women, but similar to the secure group for Relational Stability, $R^2 = .44$.

The proposed model for this group was also estimated with downweighted data for confirmation and to reduce the significant χ^2 . Chi-square remained significant, $\chi^2(61, N = 216) = 115.75, p < .001$. Other fit indices changed only slightly, $CFI = .96, RMSEA = .07$. Therefore, the remaining models in this group were estimated with unweighted data.

The removal of nonsignificant Path C caused little change in model fit, $\chi^2(62, N = 216) = 142.07, p < .001, CFI = .94, RMSEA = .08$. There was a slight, but not significant decrease in explained variance for all dependent LVs and all previously nonsignificant parameters estimates remained nonsignificant. This model, shown in Figure 9, was preferred to the proposed model because it was less complex and fit the data equally well.

Again, the lack of an association for Physical Aggression was counter to previous research. Yet, when the direct effect of Physical Aggression on Relational Stability was

tested in the avoidant group, the path was not significant. Fit indices revealed the model shown in Figure 10 fit the data well, CFI = .94, RMSEA = .08, although the obtained χ^2 was significant, $\chi^2(61, N = 216) = 139.94, p < .001$. The decrease in explained variance for Attachment Rating, from $R^2 = .61$, to $R^2 = .51$, and Relational Stability, from $R^2 = .44$, to $R^2 = .40$, in addition to the lack of significance for the new path led to rejection of the model.

Anxious group. There were no problems with ML estimation and the model fit very well, $\chi^2(61, N = 106) = 68.23, p = .25$, CFI = .99, RMSEA = .04. Further inspection of the parameter estimates, shown in Table 14, revealed several serious problems. First, path loadings for secure attachment, anxious attachment and relationship termination were nonsignificant. Additionally, examination of the path coefficients revealed that only Path B, from Emotional Abuse to Physical Aggression, was significant. Finally, the estimated disturbance error of Attachment Rating was negative, but nonsignificant at zero. The explained variances for Physical Aggression, $R^2 = .47$, and Attachment Rating, $R^2 = .69$, were similar to those for other groups, but much lower for Relational Stability, $R^2 = .31$.

As in the secure and avoidant groups, the model was respecified and estimated without Path C in the anxious group. Fit indices were also impressive for the alternative model, $\chi^2(62, N = 106) = 69.27, p = .25$, CFI = .99, RMSEA = .04. However, as shown in Figure 11, previously nonsignificant paths did not attain significance in this model. Explained variance increased for Attachment Rating, $R^2 = .82$, but did not change for Physical Aggression, $R^2 = .47$, or Relational Stability, $R^2 = .33$.

Results for the proposed and alternative models in the anxious group were quite different from those tested in the secure and avoidant groups. This implied attachment moderated the relationships between constructs in an unexpected way. Thus, rather than continuing with modifications, the best next step was to test for moderation.

Group differences. Figure 12 was included to facilitate the discussion of group differences. There are varying ways in which a model may differ by groups. There may be differences in indicator error (δ), disturbance error (ζ), effects of independent LVs on dependent LVs (γ), effects of dependent LVs on dependent LVs (β), and differences may exist across groups for path loadings on indicators (λ). There was some dissimilarity between accepted models in the groups with regard to variance accounted for in Physical Aggression (ζ_1) and Attachment Rating (ζ_2). For Physical Aggression, R^2 was highest in the anxious group, but R^2 for Attachment Rating was highest in the secure group. Overall, attachment style appeared to be a moderator. Rather than examining differences in parameter estimates between groups to determine whether attachment was a moderator, a more stringent test was used.

SEM software manuals (e.g., Bentler, 1995; Dunn, Everitt & Pickles, 1993) recommend comparing nested models to determine which parameter estimates differ across groups. Models are specified in steps with more or fewer degrees of freedom and fit indices are compared to see if a less restrictive model fits the data better. In the most restrictive model, all errors, disturbances, path coefficients and path loadings are held equal across groups. The least restrictive model, unconstrained, is analogous to comparing models for different groups. Less restrictive models, such as λ invariant (all

path loadings held equal), are nested within more restricted models, such as λ and β invariant (path loadings and DV \rightarrow DV path coefficients held equal). Nested models are compared by calculating the difference in χ^2 values for models. A significant difference between models indicates the less restrictive model increases the goodness of fit. Thus, differences exist between groups for various population parameters, which implies group membership has a moderating effect. In a fully constrained model, all parameters in Figure 12 would be held equal across groups. Testing a fully unconstrained model would be analogous to testing models in the three groups separately. However, by testing a fully unconstrained model across groups, rather than three separate models, the obtained χ^2 can be compared to the value for the fully constrained model. A direct χ^2 comparison across separately estimated models is not possible because the models are not nested. If there is a significant difference between the most and least restrictive models, constraints are released or added in steps to determine what specific parameters are affected by group membership.

Despite evidence from multiple regression procedures and preliminary SEM analyses with the anxious group, there was no evidence for moderation. The results were similar when all parameters were constrained, $\chi^2 (243, N = 730) = 458.47, p < .001$, and released, $\chi^2 (185, N = 730) = 413.88, p < .001$, across groups. Comparing these models yielded $\Delta\chi^2 (58, N = 730) = 44.59, ns$. If there had been a significant difference, constraints would be added until there was no difference between models to determine how the groups differed. However, the nonsignificant χ^2 difference test indicated

attachment did not have a moderating effect and none of the parameters differed significantly by group.

When tested within groups, the alternate model with Path C eliminated had the best fit. Therefore, the potential for moderation was tested with this model. In the constrained alternative model, $\chi^2 (244, N = 730) = 458.81, p < .001$. When compared to the unconstrained model, $\chi^2 (186, N = 730) = 413.88, p < .001$, there was no difference, $\Delta\chi^2 (58, N = 730) = 44.93, ns$. With no evidence for moderation, the proposed and alternative models were tested across the attachment groups.

Attachment style as a mediator. The hypothesis that the results would differ for the three groups made the proposed model in Figure 1 a moderation and mediation model. As shown, however, it is only a mediation model. With the lack of support for moderation, attachment as a mediator was tested using the sample as a whole. Chi-square was significant, $\chi^2 (61, N = 730) = 286.11, p < .001$, but CFI = .95, RMSEA = .07, indicated the proposed model fit the data well. As shown in Table 15, Path C was not significant and the error variance of relational quality, although nonsignificant, was negative. A Wald test suggested Path C be removed, as it had been in the first alternate model for the secure and avoidant groups. The removal of Path C did not significantly improve the model, $\chi^2 (62, N = 731) = 286.81, p < .001$, CFI = .95, RMSEA = .07, and error variance for relational quality remained negative. The indicator was dropped and χ^2 remained significant, $\chi^2 (51, N = 731) = 263.91, p < .001$, but fit indices for the resulting model, CFI = .94, RMSEA = .08, were acceptable. The obtained χ^2 without quality as an indicator for Relational Stability was significantly better, $\Delta\chi^2 (11, N = 731) = 22.90, p <$

.03. All parameter estimates were significant and are reported in Table 16. Figure 13 shows standardized parameter estimates for the final model.

Due to the high kurtosis in the sample, both models were also estimated with downweighted data. The obtained χ^2 for the proposed model was slightly larger with the downweighted data, $\chi^2(61, N = 730) = 292.65, p < .001$. When the relational quality indicator was removed from the model, kurtosis was further decreased in the downweighted data ($\kappa = -0.70$). However, the obtained χ^2 did not decrease, $\chi^2(51, N = 731) = 263.42, p < .001$.

Statisticians proficient in SEM have commented on social scientists' lack of attention to testing equivalent alternatives to proposed models (Boomsma, 2000; Hoyle & Panter, 1995; Steiger, 2001). Testing equivalent models may seem to violate ethical standards of data analysis and capitalize on chance. However, experts counter this charge by noting it is less ethical *not* to explore the possibility that equivalent models with potentially different implications fit the data equally as well as the final model (Hayduk, 1996; MacCallum, Wegener, Uchino & Fabrigar, 1993; Williams, Bozdogan & Aiman-Smith 1996). One specific problem is the lack of consideration given to the possibility that proposed arrows are reversible, potentially resulting in very different implications (Lee & Hershberger, 1990; MacCallum et al., 1993). Therefore, the potential for reversed effects was tested by estimating a unidirectional path from Attachment Rating to Emotional Abuse. The specified model was empirically underidentified, indicating Path A was not reversible.

CHAPTER IV

DISCUSSION

Three hypotheses were tested in this study. First, results of univariate and multivariate analyses provided partial support for the expected impact of partners' negative behavior on attachment. Although neither psychological abuse nor violence was related to secure attachment, each was associated with women's avoidant and anxious scores, with the association between psychological abuse and anxious attachment appearing the strongest. Second, SEM provided evidence for the existence of three of the four paths proposed in Figure 1. The expected effect of Physical Aggression on Attachment Rating (Path C) was not significant. All other proposed paths were retained in the final model. Third, there was mixed support for the hypothesized moderating effects of attachment style. As expected, univariate analyses indicated partners' behavior impacted the three attachment styles differently and relational termination related differently to the attachment styles. However, attachment style did not moderate interrelationships among the constructs in the model when tested using SEM. These findings led to specification of a mediation model for the entire sample. This model was accepted as the most effective and parsimonious way to represent the data.

Four constructs were included in the proposed model. Paths specified in Figure 5 graphically represent the measures hypothesized to indicate constructs and how constructs were expected to interrelate. Differences between Figures 5 and 13 represent hypothesized relationships that were not supported. The path from Physical Aggression to

Attachment Rating was dropped in the final model and indicators of Relational Stability were changed in the model modification process. The constructs and simple relationships are addressed before the final model.

Relational Stability

Relational Stability was the outcome variable in this study. There were several problems with indicators for this construct. Commitment and termination were the hypothesized indicators. However, factor analyses for each attachment group and the sample as a whole revealed that these measures were too independent to form a stable factor. Consequently, the relationship literature was consulted. Based on Karney and Bradbury's (1995) review of the quality and stability of marriages over time, additional measures were chosen. Acitelli et al.'s (1993) measure of relational quality and items assessing perceived alternatives to women's relationships were added as indicators of Relational Stability. Unfortunately, the quality indicator had negative error variance in every model estimated. Although this problem could have been overlooked because the parameter was nonsignificant, removal of the quality indicator allowed for a more stable and efficient model. Therefore, indicators of Relational Stability in the final model were commitment, termination and alternatives.

Emotional Abuse

There was also a problem with an indicator of Emotional Abuse. Preliminary analyses suggested partners' leaving would not be a good indicator. Although the path loading was significant in the final model, it was not high. Partners' leaving correlated more strongly with the Relational Stability factor in CFA for the secure and avoidant

groups. This implied women perceived leaving more as evidence of partners' lack of commitment than as an example of emotional abuse. Despite the plausibility of leaving as an indicator of instability, it was not changed for theoretical and empirical reasons. Threats of abandonment have been included in measures of psychologically abusive behaviors (e.g., Follingstad et al., 1990; Tolman, 1989). Carrying out these threats could conceivably add weight to other psychologically abusive behaviors, in addition to increasing women's anxiety and uncertainty about their relationships. Empirically, there was concern that removing partners' leaving from Emotional Abuse would result in a factor with redundant indicators, psychological abuse and verbal aggression. The high correlation between these two variables suggested they assessed the same facet of Emotional Abuse. Therefore, partners' leaving was retained, making the construct more globally representative of Emotional Abuse.

Emotional Abuse and Attachment Rating. At the univariate level, psychological abuse did not predict secure attachment scores, but there was significance for both insecure attachment styles. Psychological abuse was minimally related to avoidant scores, explaining 4% of the variance, and it explained 18% of variance in anxious attachment. Results were similar in multivariate analyses. Emotional Abuse increased women's avoidant and anxious attachment to their partners. Emotionally abusive behaviors such as isolation, belittling, abandonment and rejection by women's partners appear to have effects similar to effects parents' behaviors have on children. Thus, this study extended research on children's attachment (Ainsworth et al. 1978; Ainsworth, 1985; Main & Stadtman, 1981; Main & Weston, 1981; Sroufe, 1985; Waters, Vaughn & Egeland, 1980)

to adult relationships. Although change in attachment was not directly measured and the data were cross-sectional, Bowlby's (1988) suggestion that experiences in adulthood can affect attachment was supported.

The lack of association between psychological abuse and secure attachment was somewhat surprising given the significant contribution to both types of insecure attachment. It may be that secure attachment is not affected by negative relational experiences in adulthood, but rather remains relatively stable and buffers the impact of negative events. Securely attached individuals evaluate stressful situations less negatively than insecurely attached individuals, thus facilitating the use of constructive coping mechanisms and the ability to manage distress (Bowlby, 1988; Kobak & Sceery, 1988; Mikulincer & Florian, 1998; Shaver & Hazan, 1993). Positive coping strategies associated with secure attachment may shield women from the impact of their partners' negative behaviors. This possibility may explain why comparatively few individuals whose attachment changed in Fuller and Fincham's (1995) and Kirkpatrick and Hazan's (1994) studies were initially securely attached. These considerations suggest attachment style may function as a mediator of abuse for constructs affected by positive and negative coping strategies such as self-esteem, depression and support seeking.

Emotional Abuse and Physical Aggression. The relationship between Emotional Abuse and Physical Aggression was as hypothesized. In preliminary analyses by attachment group and in models tested for the entire sample, Emotional Abuse consistently had a strong, positive impact on Physical Aggression. This supported past research on the association between partners' psychological abuse and physical violence

(Follingstad et al., 1990; Leonard & Senchak, 1996; Murphy & O'Leary, 1989; O'Leary et al., 1994).

Physical Aggression

There were no problems with the proposed indicators of Physical Aggression. This was not surprising given the sound psychometric properties of Marshall's (1992) SVAWS. Overall, the subscales of the SVAWS and Emotional Abuse accounted for 52% of the variance in Physical Aggression.

Physical Aggression and Attachment Rating. At the univariate level, the impact of physical aggression on attachment was similar to the pattern for psychological abuse. There was no association for secure attachment, very little variance (2%) accounted for in avoidant attachment and slightly more variance (8%) explained in women's anxious attachment. In both significant equations, partners' sexual aggression, but not violence, was important. This supports previous research showing sexual aggression by partners having more impact than physical violence (Browne, 1997; Goodman, Koss, Fitzgerald, Russo & Keita, 1993; Monson & Langhinrichsen-Rohling, 1998). For example, when Campbell (1989; Campbell & Soeken, 1997) compared women who sustained sexual and physical aggression to those sustaining physical violence alone, sexually assaulted women had lower self-esteem, worse physical health and felt more shame. Others have found that women who sustained sexual aggression were more likely to self-blame (Frieze, 1983) and had worse attitudes towards their marriages (Shields & Hanneke, 1983) than women who reported violence with no sexual aggression. Thus, the findings

from this study extend previous research and underscore the importance of including a measure of partners' sexual aggression in studies of abuse.

With the strong association between Emotional Abuse and Physical Aggression and the similarity in the impact of these constructs on attachment at the univariate level, it was surprising that Physical Aggression was not related to Attachment Rating in multivariate analyses. However, when the effects of emotional abuse and physical violence on other variables were compared in previous research, similar results were reported. Researchers have found emotional abuse was a stronger predictor than violence for PTSD symptomatology (Arias & Pape, 1999), self-esteem, stress, emotional distress, depression, relationship quality (Marshall, 1994; 1999a) and fear (Sackett & Saunders, 1999) and had a stronger impact on women than physical violence (Follingstad et al., 1990). Marshall (1999a) suggested subtle psychologically abusive behaviors might undermine women's sense of self by creating uncertainty about their perceptions in a way overt acts would not. Women may tend to attribute threats and acts of violence, which are overt and readily recognized as abusive, to their partners whereas subtle acts may be attributed to themselves. These tendencies could provide some protection for the way women view themselves (e.g., the way they view their attachment) when they are in violent relationships.

At the univariate level, regression analyses showed physical violence predicted insecure attachment. However, these analyses were not conducted in the context of emotional abuse, and it was sexual aggression, rather than acts of violence, that made the significant contribution. When considered in conjunction with emotional abuse, the

perceived effects of physical violence on attachment would be negligible, as was found here. On the other hand, removal of Path C from aggression to attachment, although not significant, decreased the explained variance in attachment from 64% to 56%. Therefore, it would be inaccurate to conclude that violence had no effect on attachment, although the regressions and SEM clearly showed emotionally abusive behaviors had a greater impact than did physical violence.

These results have implications for violence research. The extensive research on the severe and pervasive effects of violence (e.g., Cascardi & Vivian, 1995; Dutton, 1992; Marshall & Rose, 1990; Thompson et al., 1999; Vogel & Marshall, 2001) made the modest relationships of violence with attachment and relational stability unexpected. Taking both types of negative behavior into account showed the relatively greater impact of emotional abuse. These results and studies of violence in context suggest the effects of violence may be more limited in scope than suggested in previous research.

Attachment Rating

All attachment styles were poor indicators of Attachment Rating. Methodologically, single items tend to be poor indicators of constructs as shown in Figure 12 for partners' leaving and relational termination. In retrospect, the path loadings in the measurement model for Attachment Rating should have been anticipated from methodological (Collins & Read, 1990; Fraley & Waller, 1998; Simpson, 1990) and conceptual (Bartholomew, 1990; Bartholomew & Shaver, 1998; Brennan, Clark & Shaver, 1998) critiques in the literature about Hazan and Shaver's (1987) conceptualization of attachment.

Differences in the strengths of path loadings of indicators have theoretical implications. Although the secure attachment indicator was significant in the final model, it had the smallest loading at -.13. These findings support Bartholomew's (Bartholomew, 1990; Bartholomew & Horowitz, 1991) two-dimensional model in which the strength of avoidant and anxious attachment are assessed. Individuals scoring low on both dimensions exhibit behaviors associated with secure attachment in the Hazan and Shaver (1987) measure. Although error variance was high for both insecure attachment indicators, their comparably higher path loadings showed the construct was reflective of anxious and avoidant behaviors (i.e., insecure attachment) when considered in the context of emotional abuse. Bartholomew's conceptualization was further supported when preliminary models estimated by group revealed that secure attachment was a poor indicator, even among women who self-reported their primary attachment style as secure.

Attachment Rating and Relational Stability. There are conflicting findings from past research on the association between attachment and relationship termination. Some evidence shows that anxiously attached individuals experienced more stable relationships than secure or avoidant partners (e.g., Kirkpatrick & Davis, 1994; Kirkpatrick & Hazan 1994). This was not the case for women in this sample. Univariate analyses indicated women who remained with their partners had higher scores on secure attachment and lower scores on avoidant and anxious attachment at their first interview than women whose relationships later ended. This finding was supported with the categorical measure. Thus, results from this study replicated past research (Collins & Read, 1990; Hazan &

Shaver, 1987; Simpson et al., 1999; Simpson et al., 1992) showing securely attached partners were more likely to have stable relationships.

Together, Attachment Rating and Emotional Abuse explained almost half (44%) of the variance in Relational Stability. Previous research on relational outcomes has shown factors such as conflict tactics (Canary & Cupach, 1988; Canary & Spitzberg, 1987; Sillars, 1980), attribution (e.g., Bradbury & Fincham, 1990; Fincham & Bradbury, 1993), investment (Rusbult, 1980; 1983), marital history (Spanier & Furstenburg, 1987) and many other variables (cf., Karney & Bradbury, 1995) affect relational stability. The diverse nature of these factors suggested it would be unrealistic to assume only emotional abuse and attachment would impact relational stability. Therefore, the direct effect of Physical Aggression on Relational Stability was tested. This path neither improved the model fit, nor increased explained variance in Relational Stability in any model.

Moderation vs. Mediation

The moderation hypothesis implied a qualitative difference in how women's primary attachment style would impact each construct in the model. For example, it was expected that Attachment Rating would be constructed and relate to other constructs differently for each of the groups. Then, attachment as a combination of the three styles was expected to mediate the relationship between partners' negative behaviors and relational stability. Thus, both moderation and mediation were expected.

SEM analyses indicated no differences between the groups (moderation) for the proposed model or for the alternative model. Lack of support for moderation resulted in testing the mediation model across attachment styles. The lack of interaction between

predominant attachment style and Attachment Rating impacted the meaning of the Attachment Rating construct. In the final model Attachment Rating fully mediated the relationship between Emotional Abuse and Relational Stability. Thus, partners' emotional abuse did not directly affect the stability of women's relationships. Rather, the effect was indirect. Emotional abuse increased insecure attachment, which decreased relational stability. There are implications for both the lack of support for the moderation hypothesis and for support of the mediation hypothesis.

The debate over the qualitative and quantitative properties of attachment (e.g., Fraley & Waller, 1998) is relevant in considering the meaning of the results. When the types of attachment were considered to be qualitatively different, logic suggested attachment would moderate the interrelationships among constructs. Because women's categorical responses were in accord with their rating of attachment styles and attachment style ratings were expected to be impacted differently by partners' negative behavior, it was reasonable to suppose the effects of partners' emotional abuse and physical violence would differ by primary attachment style. Moderation would have implied women's predominant attachment style could mitigate (for securely attached women) or exacerbate (for insecurely attached women) the effects of partners' negative behaviors.

The lack of support for the moderation hypothesis suggested that attachment was better conceptualized as a continuous construct that could increase or decrease, rather than as a categorical variable that would differ qualitatively. Assessing the strength of each style on a continuous scale resulted in a multifaceted, more realistic representation of women's attachment to their partners. It was the combination of all three attachment

styles, and not the impact of primary attachment style, that appeared to affect women's interpretations of and coping with emotional abuse.

Little attention is given to possible mediating effects of attachment in the literature on adult relationships. There were two requirements for conceptualizing attachment as a mediator. To be a mediator, attachment would first have to impact another construct. Generally, researchers have examined how attachment influences constructs such as relational satisfaction (Davila, Bradbury & Fincham, 1998; Feeney, 1999) and conflict resolution (Pistole, 1989). Therefore, the effects of attachment were fairly well established. The first requirement was satisfied for the proposed impact of attachment on relational stability.

Second, to be considered a mediator, attachment had to be predicted by another construct. Despite Bowlby's (1988) assertion, investigators have not determined whether (or which) experiences within adult relationships affect attachment. The two studies that addressed predictors of attachment (Feeney & Noller, 1992; Kirkpatrick & Hazan, 1994) were limited to the initiation of relationships. Therefore, this study extended past research by showing that women's attachment was affected by emotional abuse. Moreover, direction of influence is now an issue. Current results indicated abuse increased insecure attachment, whereas O'Hearn and Davis (1997) showed insecurely attached partners were more likely to sustain emotional abuse. Prospective research is needed to determine whether insecure attachment leads to emotional abuse or whether emotional abuse leads to insecure attachment.

It is likely that other constructs influence attachment as emotional abuse did in this study. For example, future research should determine how positive experiences in relationships affect attachment. In addition, attachment may function as a mediator of relationships between constructs other than abuse and relational stability. Given the impact of attachment on loneliness (Hazan & Shaver, 1987), drinking problems, eating disorders (Brennan, Shaver & Tobey, 1991), shame (Wagner & Tangney, 1991), and self-esteem (Brennan & Morris, 1997), as well as the effects of emotional abuse on attachment shown in this study, it is possible that attachment mediates associations among many relational experiences on perceptions of self, relationship and others. This possibility should be explored.

In summary, results of this study suggest that attachment provides women with a means for interpreting and responding to the actions of partners. This addresses an often neglected aspect of attachment theory. As some researchers have noted (Feeney, 1998; Mikulincer, Florian & Tolmacz, 1990), attachment is primarily a theory of affect regulation. Thus, different styles reflect differences in ways of coping with negative affect. Researchers have used stressful events to activate working models of attachment and then examined how interpretations and responses differ by primary attachment style (Mikulincer & Florian, 1998; Rholes, Simpson & Stevens, 1998; Simpson et al., 1992). Results of the current study suggested that instead of merely activating specific working models, negative behaviors may activate resources such as coping strategies associated with attachment in a more holistic way than the moderation hypothesis would have

suggested. Thus, there may not be differences by attachment style in women's interpretations of experiences, but in women's responses to events.

Limitations

This study was conducted using archival data from a convenience sample of women who completed at least two long interviews. Consequently, there are several limitations. First are problems inherent with archival data. These include retrospective reports, the need to choose between relatively poor measures, lack of control over the process, etc., all of which may affect the quality of the obtained data. Second, data regarding violent behaviors consisted of women's perceptions indicated on rating scales of subjective frequency. Perceptions may not reflect reality. However, when considering effects, perceptions may have more emotional and psychological impact than what actually occurred. Third, this study consisted of a volunteer sample, rather than a random sample. The most obvious disadvantage to using volunteers in studies concerning intimate violence is the possibility that partners of nonvolunteers may have prevented their participation. Therefore, results reported here might not be generalizable to women in the most severely violent relationships. On the other hand, 31% of the sample had sustained severe, life threatening acts of violence from their partners (Marshall, 1999a). Fourth, only the subsample of women who completed at least two interviews was included in this study. Although the initial sample was representative of low income women in each ethnic group (Honeycutt et al., 2001), women who dropped out of the study tended to be younger and have shorter relationships than those who remained. Yet, analyses indicated the dropouts were missing at random. Consequently, their non-

continuation was likely unrelated to the variables under examination here. However, caution should be used in generalizing these results to younger women or those in shorter relationships.

Conclusions

Overall, finding that partners' negative behaviors increased women's insecure attachment extended previous research in the violence literature (Dutton et al., 1994; Senchak & Leonard, 1992) by showing that emotional abuse and violence affected attachment, rather than the reverse. Further, most previous research examined the association between attachment and the expression, rather than receipt, of abuse. As expected, sustaining psychological abuse appeared to increase the fears of abandonment and being unwanted which are associated with anxious attachment. Overall, there are at least three inferences to be drawn from this study.

First, sustaining psychological abuse and/or sexual aggression may have indirect effects on women's expression of violence in intimate relationships. For example, past research has shown that violence was more likely to occur when both partners had insecure attachment styles than when one or both partners were securely attached (Babcock et al., 2000; Mayselless, 1991). Therefore, increasing women's insecure attachment may lead to an increase in their expressions of violence. Consequently, research is needed to determine the long-term impact of partners' negative behaviors on women's insecure attachment and any resultant changes in the mutuality of violence.

Second, the results have implications for the controversy on stability of attachment styles in adulthood. Relationships between partners' psychological abuse (and

sexual aggression) and insecure attachment implied that negative behaviors in one relationship may increase the likelihood of insecure attachment in subsequent relationships. Because insecurely attached individuals report less relational satisfaction (Collins & Read, 1990; Pistole, 1989; Senchak & Leonard, 1992) and quality (Feeney & Noller, 1990; Senchak & Leonard, 1992; Simpson, 1990) than those who are securely attached, the history of abuse sustained in one relationship may affect the quality of future relationships.

Third are practical implications. In recent years, practitioners have become more aware of the prevalence and consequences of violence in relationships. However, the same awareness has not occurred for emotional abuse despite the increasing evidence that it may be more harmful than violence. The strong relationship between emotional abuse and women's view of themselves suggests practitioners should address emotional abuse, especially if violence is present. Further, practitioners' experience with other subtle and difficult to describe behaviors could help researchers develop brief, effective screening tools for emotional abuse.

Rather than conducting a replication study to corroborate the results, prospective research is needed. Research should determine whether women who sustain emotional abuse are more likely to report insecure attachment at later times and in subsequent relationships. In addition, studies are needed to identify precisely how emotional abuse affects attachment style and how changes in patterns of sustained abuse may result in an altered attachment style and change in expression of violence.

APPENDIX A

TABLES

Table 1

Means and difference scores for relational and demographic variables by attrition

	Completed Only Wave 1	Completed Two Waves	t value	df
Age (in years)	30.91	33.07	-2.54*	833
# past serious relationships	1.91	1.93	-0.05	832
Length of past rels. (years)	3.21	3.83	-1.88	717
# times cohabit/married	1.48	1.30	0.73	797
# times ended past relationship	1.72	1.86	-0.47	773
Length of current rel. (years)	6.31	7.89	-2.20*	832
Years lived together	5.87	7.19	-1.77	695
Relational satisfaction	4.32	4.43	-0.62	833
Relational happiness	4.74	4.83	-0.46	833
# times partner has left	0.97	0.99	-0.06	832
# times women left	1.38	1.51	-0.32	830
Secure attachment	4.53	4.67	-0.65	830
Avoidant attachment	3.52	3.69	-0.73	828
Anxious-ambivalent attachment	2.90	2.84	0.30	829
Relational commitment	4.85	4.78	0.42	833
Relational quality	5.00	5.06	-0.28	832
Rumination about relationship	20.71	20.35	0.39	832
Coping with relational problems	4.48	4.42	0.47	832
Partners' past threats	15.97	12.86	1.75	833
Partners' past violence	10.50	7.89	1.79	833
Partners' past sexual aggression	1.72	1.73	-0.02	833
Women's past threats	13.10	10.57	1.76	833
Women's past violence	5.29	4.72	0.60	833

Table continues...

Table 1 continued

Women's past sexual aggression	0.24	0.50	-1.26	833
Partners' psychological abuse	2.33	2.19	0.52	830
Partners' recent threats	13.20	11.90	0.61	709
Partners' recent violence	9.38	6.63	1.20	566
Partners' recent sexual agg.	4.13	5.02	-0.56	259
Women's recent threats	10.66	9.19	0.86	689
Women's recent violence	4.42	4.28	0.12	516
Women's recent sexual agg.	1.55	3.00	-0.93	122

* $p < .05$

Table 2

Means and standard deviations.

	Sample (<i>N</i> = 741)		Secure (<i>n</i> = 413)		Avoidant (<i>n</i> = 219)		Anxious (<i>n</i> = 108)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Emotional Abuse								
Psychological abuse	2.19	2.46	1.74	2.25	2.60	2.65	3.13	2.46
Times partner left*	0.84	1.74	0.66	1.48	0.79	1.61	1.68	2.75
Verbal aggression	2.20	2.43	1.82	2.27	2.50	2.56	3.08	2.49
Physical Aggression								
Threats	12.86	16.24	11.46	14.78	13.43	17.21	17.14	18.74
Acts**	7.70	12.23	6.44	10.32	8.18	12.46	10.86	14.79
Sexual aggression*	1.68	3.69	1.32	3.13	2.06	3.87	1.93	3.41
Attachment Rating								
Secure	4.67	1.90	5.41	1.62	3.63	1.85	3.98	1.71
Avoidant	3.69	2.16	2.80	1.92	5.32	1.68	3.81	1.95
Anxious	2.84	2.06	2.16	1.69	2.96	1.90	5.17	1.90
Relational Stability								
Commitment	4.78	1.35	5.00	1.27	4.55	1.40	4.43	1.39
Quality	5.06	1.73	5.41	1.61	4.81	1.75	4.20	1.78
Alternatives	3.57	1.28	3.61	1.32	3.46	1.24	3.63	1.24

*All data were transformed.

**Data in Sample, Secure and Avoidant groups were transformed.

Table 3

Correlations among indicators for sample (N = 730).

	2	3	4	5	6	7	8	9	10	11	12
Emotional Abuse											
1. Psych. Abuse	.29*	.92*	.65*	.58*	.51*	-.03	.21*	.42*	-.41*	-.58*	.17*
2. Times partner left	--	.28*	.23*	.25*	.21*	-.02	.10*	.24*	-.27*	-.31*	.10*
3. Verbal aggression		--	.68*	.61*	.48*	-.03	.16*	.37*	-.40*	-.57*	.19*
Physical Aggression											
4. Threats			--	.86*	.54*	.02	.09*	.27*	-.31*	-.43*	.12*
5. Acts				--	.53*	-.03	.08*	.25*	-.29*	-.39*	.12*
6. Sexual aggression					--	.01	.13*	.22*	-.23*	-.33*	.07*
Attachment Rating											
7. Secure						--	-.21*	-.09*	.12*	.12*	.12*
8. Avoidant							--	.27*	-.15*	-.17*	-.08*
9. Anxious								--	-.21*	-.35*	-.04
Relational Stability											
10. Commitment									--	.78*	-.25*
11. Quality										--	-.25*
12. Alternatives											--

*p < .05.

Table 4

Correlations among indicators for secure group ($n = 408$).

	2	3	4	5	6	7	8	9	10	11	12
Emotional Abuse											
1. Psych. Abuse	.31*	.92*	.68*	.58*	.49*	.05	.15*	.40*	-.41*	-.58*	.21*
2. Times partner left	--	.29*	.26*	.28*	.30*	.05	.11*	.22*	-.25*	-.30*	.17*
3. Verbal aggression		--	.72*	.63*	.45*	.06	.11*	.37*	-.38*	-.55*	.22*
Physical Aggression											
4. Threats			--	.85*	.52*	.04	.10*	.25*	-.30*	-.45*	.16*
5. Acts				--	.54*	.03	.06	.19*	-.29*	-.41*	.18*
6. Sexual aggression					--	.06	.13*	.24*	-.21*	-.30*	.07
Attachment Rating											
7. Secure						--	-.07	-.02	.05	.03	.15*
8. Avoidant							--	.31*	-.08	-.07	-.04
9. Anxious								--	-.22*	-.32*	.08
Relational Stability											
10. Commitment									--	.79*	-.27*
11. Quality										--	-.29*
12. Alternatives											--

* $p < .05$.

Table 5

Correlations among indicators for avoidant group (n = 216).

	2	3	4	5	6	7	8	9	10	11	12
Emotional Abuse											
1. Psych. Abuse	.21*	.92*	.62*	.57*	.59*	.09	.20*	.37*	-.36*	-.52*	.18*
2. Times partner left	--	.21*	.22*	.19*	.20*	.04	-.01	.11	-.40*	-.28*	.07
3. Verbal aggression		--	.64*	.59*	.55*	.04	.16*	.30*	-.36*	-.50*	.17*
Physical Aggression											
4. Threats			--	.88*	.59*	.06	.10	.23*	-.28*	-.40*	.09
5. Acts				--	.51*	-.01	.09	.27*	-.25*	-.36*	.08
6. Sexual aggression					--	.07	.09	.21*	-.26*	-.42*	.07
Attachment Rating											
7. Secure						--	.11	.12	.04	.01	.13
8. Avoidant							--	.21*	-.17*	-.24*	-.03
9. Anxious								--	-.15*	-.26*	.07
Relational Stability											
10. Commitment									--	.78*	-.22*
11. Quality										--	-.26*
12. Alternatives											--

* $p < .05$.

Table 6

Correlations among indicators for anxious group (n = 106).

	2	3	4	5	6	7	8	9	10	11	12
Emotional Abuse											
1. Psych. Abuse	.23*	.92*	.59*	.55*	.43*	.04	.08	.30*	-.41*	-.55*	.10
2. Times partner left	--	.22*	.02	.13	.09	-.08	.17	.14	-.14	-.24*	.00
3. Verbal aggression		--	.61*	.58*	.45*	-.01	.03	.29*	-.42*	-.58*	.16
Physical Aggression											
4. Threats			--	.80*	.51*	.12	-.01	.26*	-.38*	-.37*	.12
5. Acts				--	.57*	-.03	.02	.25*	-.37*	-.35*	.11
6. Sexual aggression					--	-.00	-.01	.15	-.27*	-.28*	.14
Attachment Rating											
7. Secure						--	.17	.13	.08	.07	-.05
8. Avoidant							--	.05	.01	.00	-.16
9. Anxious								--	-.05	-.18	-.11
Relational Stability											
10. Commitment									--	.73*	-.35*
11. Quality										--	-.21*
12. Alternatives											--

* $p < .05$.

Table 7

Factor loadings for entire sample.

Variable	Emotional Abuse	Physical Aggression	Attachment Rating	Relational Stability
Psychological abuse	.85	.43	.12	.26
Partners' leaving	.15	.17	.17	.24
Verbal aggression	.75	.48	.01	.28
Threats of violence	.27	.87	.00	.20
Acts of violence	.17	.90	.00	.17
Sexual aggression	.29	.51	.12	.14
Secure	.00	.01	-.36	-.01
Avoidant	.14	.00	.56	.00
Anxious	.30	.18	.39	.15
Commitment	-.14	-.14	-.19	-.80
Termination	-.00	.01	.20	.21
Quality	-.28	-.22	-.23	-.84
Alternatives	.01	.01	-.18	.31

Table 8

Factor loadings for secure group.

Variable	Emotional Abuse	Physical Aggression	Attachment Rating	Relational Stability
Psychological abuse	.67	.38	.37	.42
Partners' leaving	.00	.23	.27	.22
Verbal aggression	.74	.42	.28	.40
Threats of violence	.34	.78	.15	.26
Acts of violence	.18	.93	.01	.21
Sexual aggression	.15	.51	.31	.13
Secure	.01	.00	-.00	-.00
Avoidant	-.01	.01	.50	-.00
Anxious	.12	.10	.57	.18
Commitment	.00	-.12	-.14	-.80
Termination	-.01	.13	.21	.19
Quality	-.01	-.20	-.21	-.93
Alternatives	.01	.10	-.00	-.30

Table 9

Factor loadings for avoidant group.

Variable	Emotional Abuse	Physical Aggression	Attachment Rating	Relational Stability
Psychological abuse	.86	.43	-.00	.27
Partners' leaving	.00	.17	-.00	.34
Verbal aggression	.71	.48	-.00	.28
Threats of violence	.19	.97	.00	.15
Acts of violence	.20	.85	.00	.14
Sexual aggression	.37	.50	-.00	.21
Secure	.15	.01	.01	-.00
Avoidant	.23	.00	.97	.01
Anxious	.32	.17	.13	.11
Commitment	-.01	-.14	-.01	-.91
Termination	-.10	.00	.12	.29
Quality	-.26	-.24	-.11	-.80
Alternatives	.12	.00	-.01	.26

Table 10

Factor loadings for anxious group.

Variable	Emotional Abuse	Physical Aggression	Attachment Rating	Relational Stability
Psychological abuse	.80	.41	.17	-.22
Partners' leaving	.23	.00	-.00	-.01
Verbal aggression	.84	.43	.12	-.22
Threats of violence	.24	.80	.15	-.20
Acts of violence	.18	.92	-.00	-.16
Sexual aggression	.21	.55	.00	-.14
Secure	-.18	.00	.98	-.00
Avoidant	.00	.01	.17	-.01
Anxious	.21	.23	.17	.00
Commitment	-.16	-.20	.01	.96
Termination	-.00	-.01	-.26	-.01
Quality	-.44	-.18	.00	.64
Alternatives	.01	.01	-.00	-.33

Table 11

Significant differences on attachment styles by relationship termination.

	Stayed with Partner		Left Partner	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Secure attachment	4.81	1.81	4.50	1.98
Avoidant attachment	3.48	2.10	3.94	2.21
Anxious attachment	2.56	1.94	3.18	2.15

Table 12

Unstandardized parameter estimates with standard errors and test statistics of the proposed model in the secure group.

Parameter	Unstandardized Estimate	Standard Error	t-value
<i>Path Loadings</i>			
Emotional Abuse			
psychological abuse	1.00 ^a	--	--
times partner left	0.31	0.05	6.03*
verbal aggression	1.01	0.03	39.06*
Physical Aggression			
threats	1.00 ^a	--	--
acts	0.93	0.04	26.16*
sexual aggression	0.60	0.05	12.74*
Attachment Rating			
secure	0.16	0.30	0.54
avoidant	1.00 ^a	--	--
anxious	2.58	0.80	3.22*
Relational Stability			
commitment	1.00 ^a	--	--
termination	-0.38	0.06	-6.01*
quality	1.35	0.09	15.90*
alternatives	-0.34	0.06	-5.37*
<i>Path Coefficients</i>			
Emotional Abuse to			
A. Physical Aggression	0.78	0.04	20.36*
B. Attachment Rating	0.16	0.05	3.20*
Physical Aggression to			
C. Attachment Rating	0.01	0.02	0.56
Attachment Rating to			
D. Relational Stability	-2.62	0.81	-3.23*

Table continues...

Table 12 continued

Parameter	Unstandardized Estimate	Standard Error	t-value
<i>Variances of Independent Variables</i>			
Indicator Error			
psychological abuse	0.00	0.02	5.59*
times partner left	0.91	0.07	13.95*
verbal aggression	0.07	0.02	4.85*
threats	0.92	0.02	4.10*
acts	0.22	0.02	8.97*
sexual aggression	0.67	0.05	13.53*
secure	1.00	0.07	14.00*
avoidant	0.96	0.07	13.85*
anxious	0.76	0.06	12.42*
commitment	0.41	0.40	10.21*
termination	0.92	0.07	14.05*
quality	-0.07	0.05	-1.32
alternatives	0.93	0.07	14.05*
Latent Variable			
Emotional Abuse	0.92	0.07	12.61*
Disturbance Error			
Physical Aggression	0.35	0.04	10.02*
Attachment Rating	0.01	0.01	1.46
Relational Stability	0.34	0.05	7.40*

^aEstimates are not generated for path loadings fixed at 1.00 to scale the latent variable.

* $p < .05$

Table 13

Unstandardized parameter estimates with standard errors and test statistics of the proposed model in the avoidant group.

Parameter	Unstandardized Estimate	Standard Error	t-value
<i>Path Loadings</i>			
Emotional Abuse			
psychological abuse	1.00 ^a	--	--
times partner left	0.23	0.07	3.27*
verbal aggression	0.99	0.04	25.47*
Physical Aggression			
threats	1.00 ^a	--	--
acts	0.92	0.04	21.45*
sexual aggression	0.62	0.06	10.54*
Attachment Rating			
secure	0.28	0.27	1.02
avoidant	1.00 ^a	--	--
anxious	1.47	0.45	3.28*
Relational Stability			
commitment	1.00 ^a	--	--
termination	-0.35	0.09	-4.12*
quality	1.37	0.13	10.85*
alternatives	-0.33	0.09	-3.78*
<i>Path Coefficients</i>			
Emotional Abuse to			
A. Physical Aggression	0.69	0.06	12.15*
B. Attachment Rating	0.23	0.07	3.42*
Physical Aggression to			
C. Attachment Rating	0.03	0.03	0.74
Attachment Rating to			
D. Relational Stability	-1.66	0.49	-3.38*

Table continues...

Table 13 continued

Parameter	Unstandardized Estimate	Standard Error	t-value
<i>Variances of Independent Variables</i>			
Indicator Error			
psychological abuse	0.07	0.03	2.88*
times partner left	0.95	0.09	10.35*
verbal aggression	0.10	0.03	3.75*
threats	0.05	0.03	1.56
acts	0.19	0.03	6.04*
sexual aggression	0.63	0.06	10.07*
secure	0.99	0.10	10.34*
avoidant	0.91	0.09	9.97*
anxious	0.80	0.09	9.36*
commitment	0.43	0.06	7.38*
termination	0.93	0.09	10.40*
quality	-0.07	0.08	-0.95
alternatives	0.94	0.09	10.40*
Latent Variable			
Emotional Abuse	0.93	0.10	9.33*
Disturbance Error			
Physical Aggression	0.51	0.06	8.49*
Attachment Rating	0.04	0.02	1.66
Relational Stability	0.32	0.06	5.13*

^aEstimates are not generated for path loadings fixed at 1.00 to scale the latent variable.

* $p < .05$

Table 14

Unstandardized parameter estimates with standard errors and test statistics of the proposed model in the anxious group.

Parameter	Unstandardized Estimate	Standard Error	t-value
<i>Path Loadings</i>			
Emotional Abuse			
psychological abuse	1.00 ^a	--	--
times partner left	0.23	0.11	2.13*
verbal aggression	1.05	0.06	18.45*
Physical Aggression			
threats	1.00 ^a	--	--
acts	0.75	0.07	11.43*
sexual aggression	0.12	0.02	6.75*
Attachment Rating			
secure	0.43	1.50	0.29
avoidant	1.00 ^a	--	--
anxious	4.42	6.98	0.63
Relational Stability			
commitment	1.00 ^a	--	--
termination	-0.02	0.05	-0.51
quality	1.44	0.19	7.64*
alternatives	-0.34	0.11	-2.97*
<i>Path Coefficients</i>			
Emotional Abuse to			
A. Physical Aggression	4.91	0.64	7.69*
B. Attachment Rating	0.05	0.07	0.64
Physical Aggression to			
C. Attachment Rating	0.00	0.00	0.56
Attachment Rating to			
D. Relational Stability	-5.73	8.91	-0.64

Table continues...

Table 14 continued

Parameter	Unstandardized Estimate	Standard Error	t-value
<i>Variances of Independent Variables</i>			
Indicator Error			
psychological abuse	0.61	0.21	2.84*
times partner left	6.13	0.85	7.23*
verbal aggression	0.06	0.04	1.55
threats	62.23	18.35	3.40*
acts	36.63	10.56	3.48*
sexual aggression	6.84	1.00	6.82*
secure	2.83	0.39	7.25*
avoidant	3.74	0.52	7.25*
anxious	3.25	0.47	6.97*
commitment	0.68	0.16	4.22*
termination	0.24	0.03	7.24*
quality	0.57	0.28	2.04*
alternatives	1.38	0.19	7.14*
Latent Variable			
Emotional Abuse	5.19	0.82	6.33*
Disturbance Error			
Physical Aggression	141.53	27.74	5.10*
Attachment Rating	-0.00	0.00	-0.25
Relational Stability	0.79	0.27	2.88*

^aEstimates are not generated for path loadings fixed at 1.00 to scale the latent variable.

* $p < .05$

Table 15

Unstandardized parameter estimates with standard errors and test statistics of the proposed model for the sample as a whole.

Parameter	Unstandardized Estimate	Standard Error	t-value
<i>Path Loadings</i>			
Emotional Abuse			
psychological abuse	1.00 ^a	--	--
times partner left	0.30	0.04	8.03*
verbal aggression	1.00	0.02	51.71*
Physical Aggression			
threats	1.00 ^a	--	--
acts	0.93	0.03	35.59*
sexual aggression	0.62	0.03	18.08*
Attachment Rating			
secure	-0.43	0.17	-2.59*
avoidant	1.00 ^a	--	--
anxious	1.90	0.32	5.99*
Relational Stability			
commitment	1.00 ^a	--	--
termination	-0.36	0.05	-7.76*
quality	1.33	0.06	21.77*
alternatives	-0.32	0.05	-6.83*
<i>Path Coefficients</i>			
Emotional Abuse to			
A. Physical Aggression	0.72	0.03	24.05*
B. Attachment Rating	0.22	0.04	6.03*
Physical Aggression to			
C. Attachment Rating	0.01	0.02	0.28
Attachment Rating to			
D. Relational Stability	-2.02	0.34	-6.02*

Table continues...

Table 15 continued

Parameter	Unstandardized Estimate	Standard Error	t-value
<i>Variances of Independent Variables</i>			
Indicator Error			
psychological abuse	0.08	0.01	6.72*
times partner left	0.92	0.05	19.02*
verbal aggression	0.08	0.01	6.42*
threats	0.09	0.02	4.97*
acts	0.20	0.02	11.21*
sexual aggression	0.65	0.04	18.40*
secure	0.99	0.05	19.01*
avoidant	0.93	0.05	18.61*
anxious	0.73	0.04	16.79*
commitment	0.41	0.03	14.03*
termination	0.92	0.05	19.13*
quality	-0.05	0.04	-1.26
alternatives	0.94	0.05	19.13*
Latent Variable			
Emotional Abuse	0.92	0.05	17.22*
Disturbance Error			
Physical Aggression	0.44	0.03	14.52*
Attachment Rating	0.03	0.01	2.97*
Relational Stability	0.28	0.03	9.11*

^aEstimates are not generated for path loadings fixed at 1.00 to scale the latent variable.

* $p < .05$

Table 16

Unstandardized parameter estimates with standard errors and test statistics of the mediation model for the sample as a whole.

Parameter	Unstandardized Estimate	Standard Error	t-value
<i>Path Loadings</i>			
Emotional Abuse			
psychological abuse	1.00 ^a	--	--
times partner left	0.30	0.04	8.01*
verbal aggression	1.00	0.02	50.11*
Physical Aggression			
threats	1.00 ^a	--	--
acts	0.93	0.03	35.63*
sexual aggression	0.62	0.03	18.09*
Attachment Rating			
secure	-0.41	0.15	-2.73*
avoidant	1.00 ^a	--	--
anxious	1.71	0.27	6.39*
Relational Stability			
commitment	1.00 ^a	--	--
termination	-0.40	0.07	-5.52*
alternatives	-0.41	0.07	-5.60*
<i>Path Coefficients</i>			
Emotional Abuse to			
A. Physical Aggression	0.72	0.03	24.06*
B. Attachment Rating	0.25	0.04	6.95*
Attachment Rating to			
D. Relational Stability	-1.63	0.26	-6.31*

Table continues...

Table 16 continued

Parameter	Unstandardized Estimate	Standard Error	t-value
<i>Variances of Independent Variables</i>			
Indicator Error			
psychological abuse	0.08	0.01	6.42*
times partner left	0.92	0.05	19.03*
verbal aggression	0.08	0.01	5.83*
threats	0.09	0.02	4.97*
acts	0.20	0.02	11.22*
sexual aggression	0.65	0.04	18.42*
secure	0.98	0.05	18.95*
avoidant	0.90	0.05	18.05*
anxious	0.71	0.05	14.61*
commitment	0.39	0.09	4.31*
termination	0.90	0.05	17.94*
alternatives	0.89	0.05	17.86*
Latent Variable			
Emotional Abuse	0.92	0.05	17.13*
Disturbance Error			
Physical Aggression	0.41	0.03	14.53*
Attachment Rating	0.04	0.01	3.09*
Relational Stability	0.34	0.09	3.74*

^aEstimates are not generated for path loadings fixed at 1.00 to scale the latent variable.

* $p < .05$

APPENDIX B

FIGURES

Figure 1. Conceptual structural model.

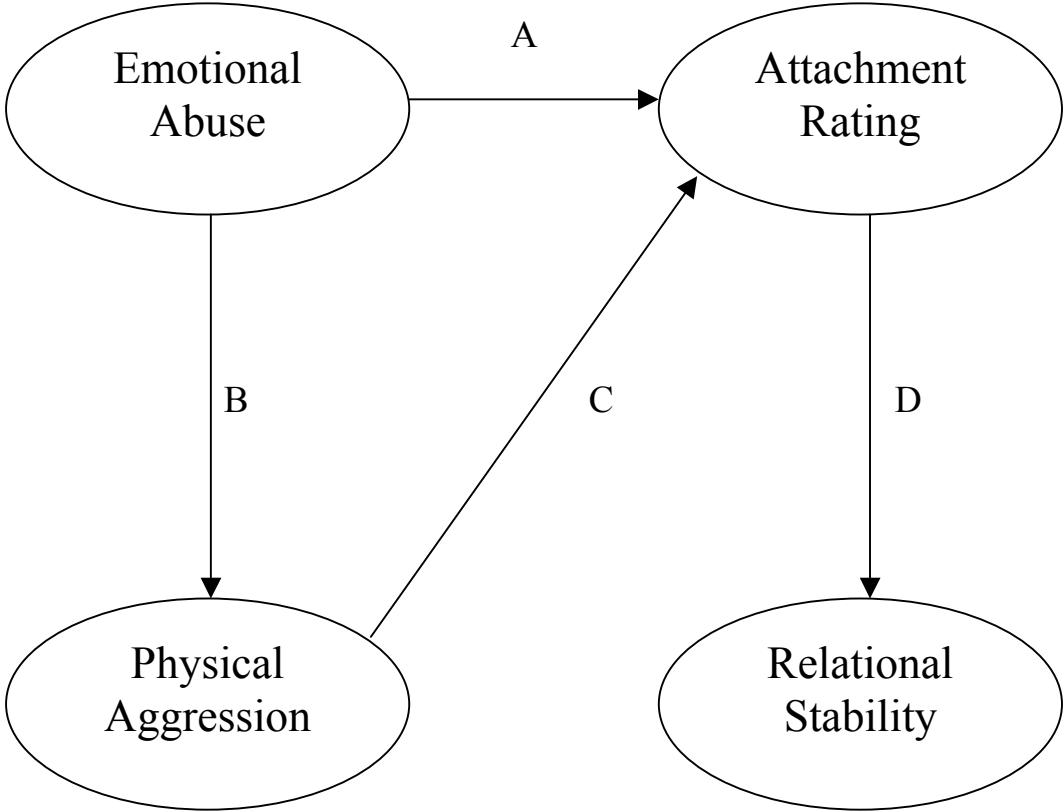


Figure 2. Structural model for secure group.

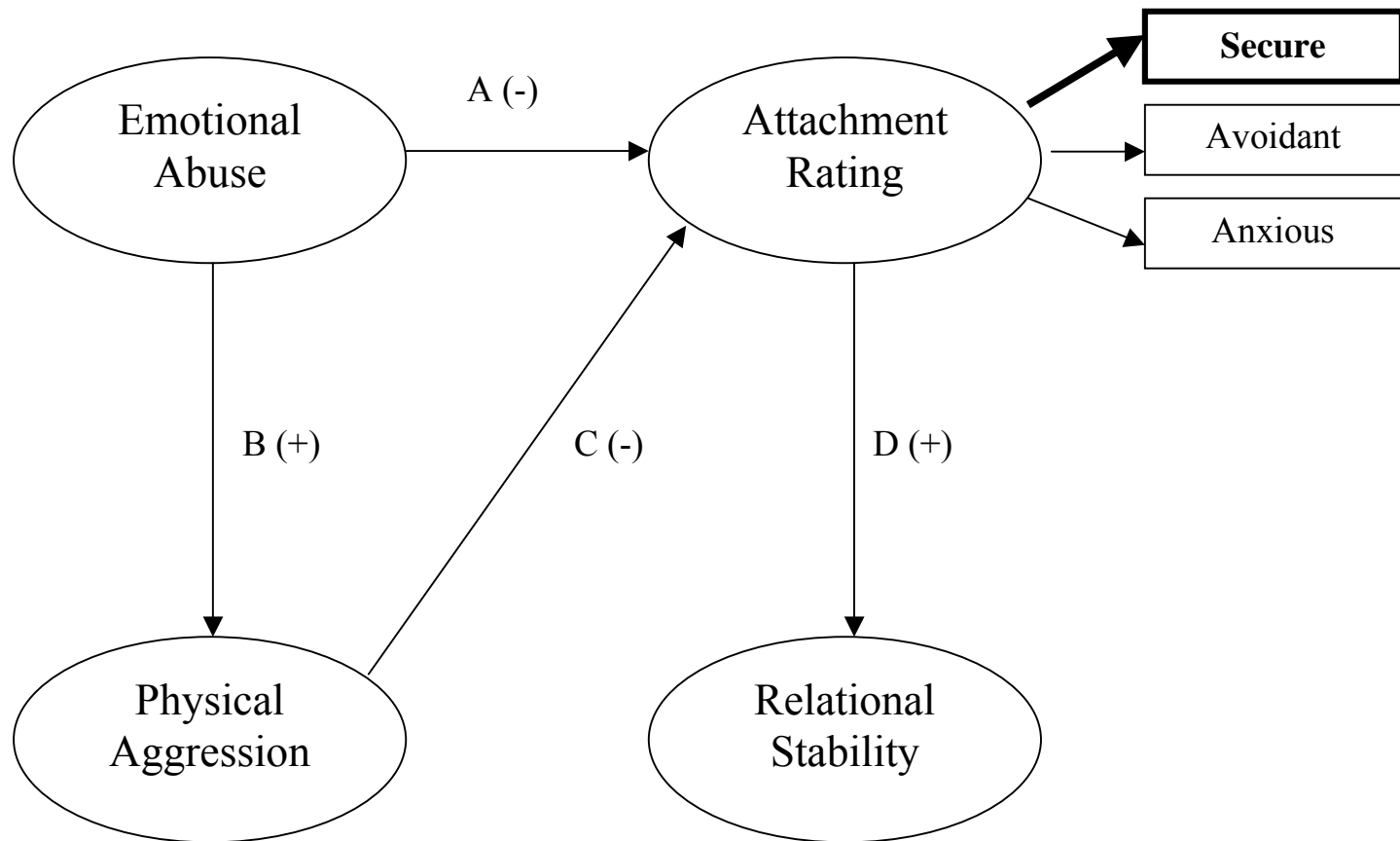


Figure 3. Structural model for avoidant group.

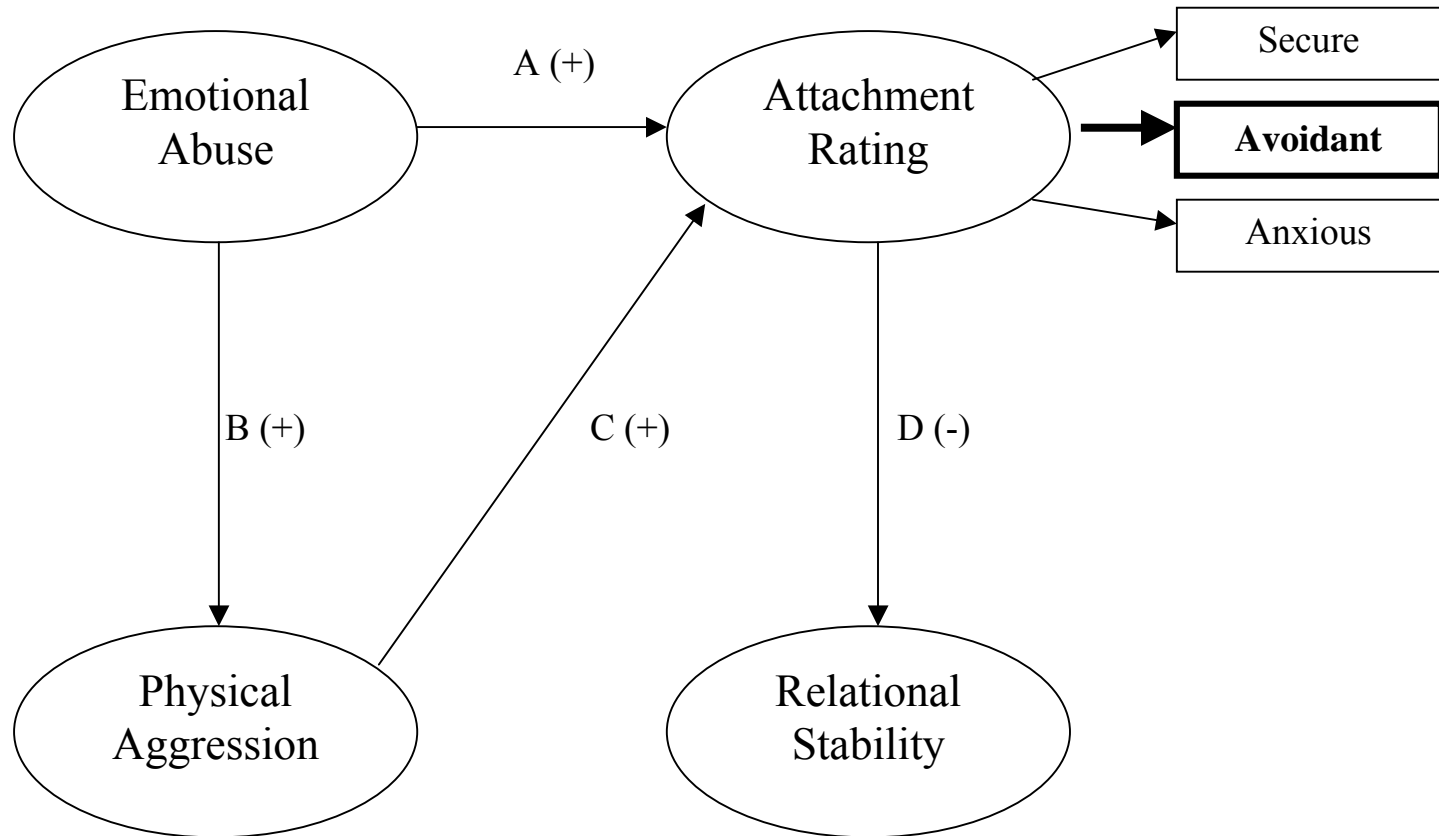


Figure 4. Structural model for anxious group.

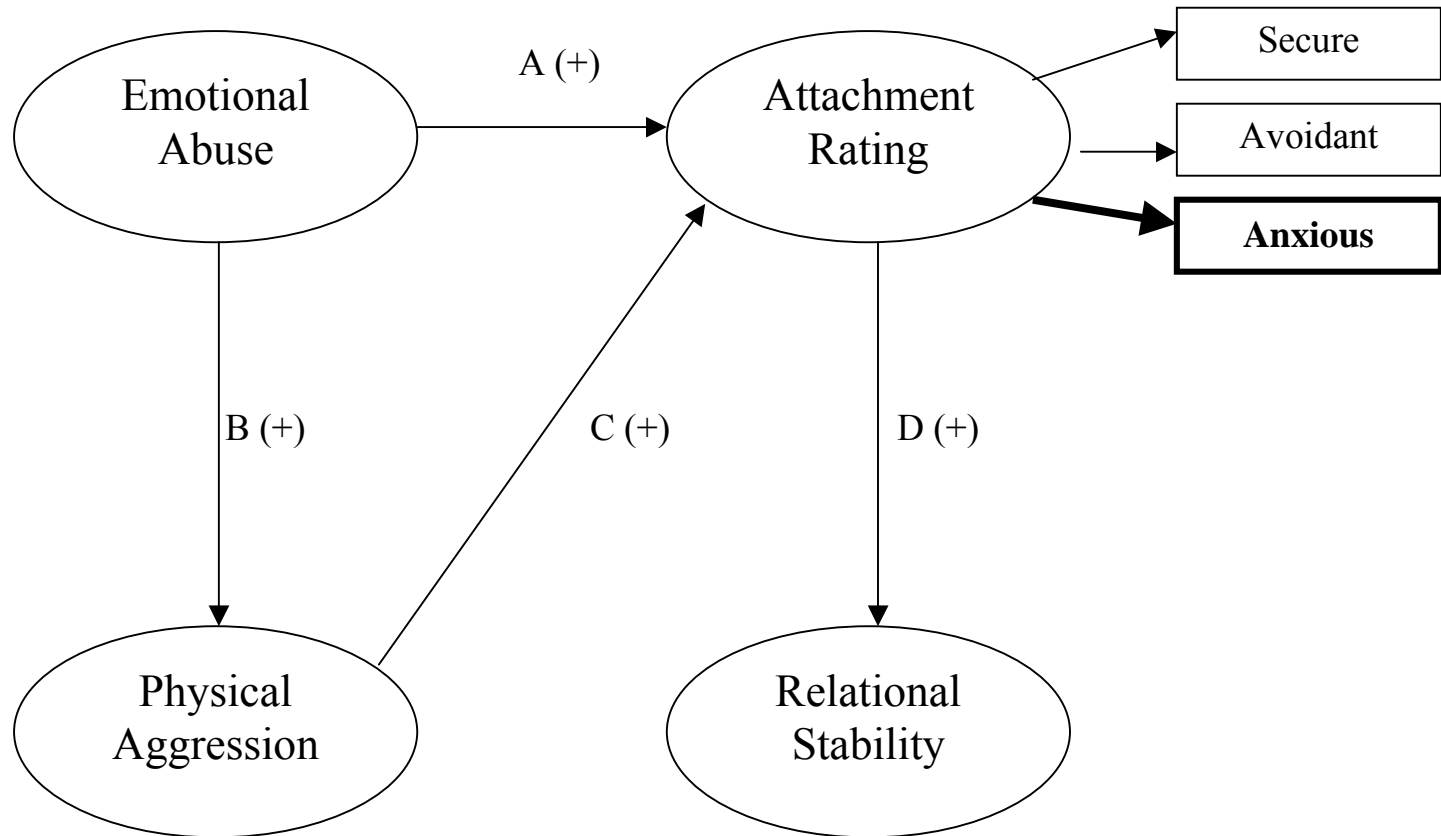


Figure 5. Conceptual model across groups with parameters.

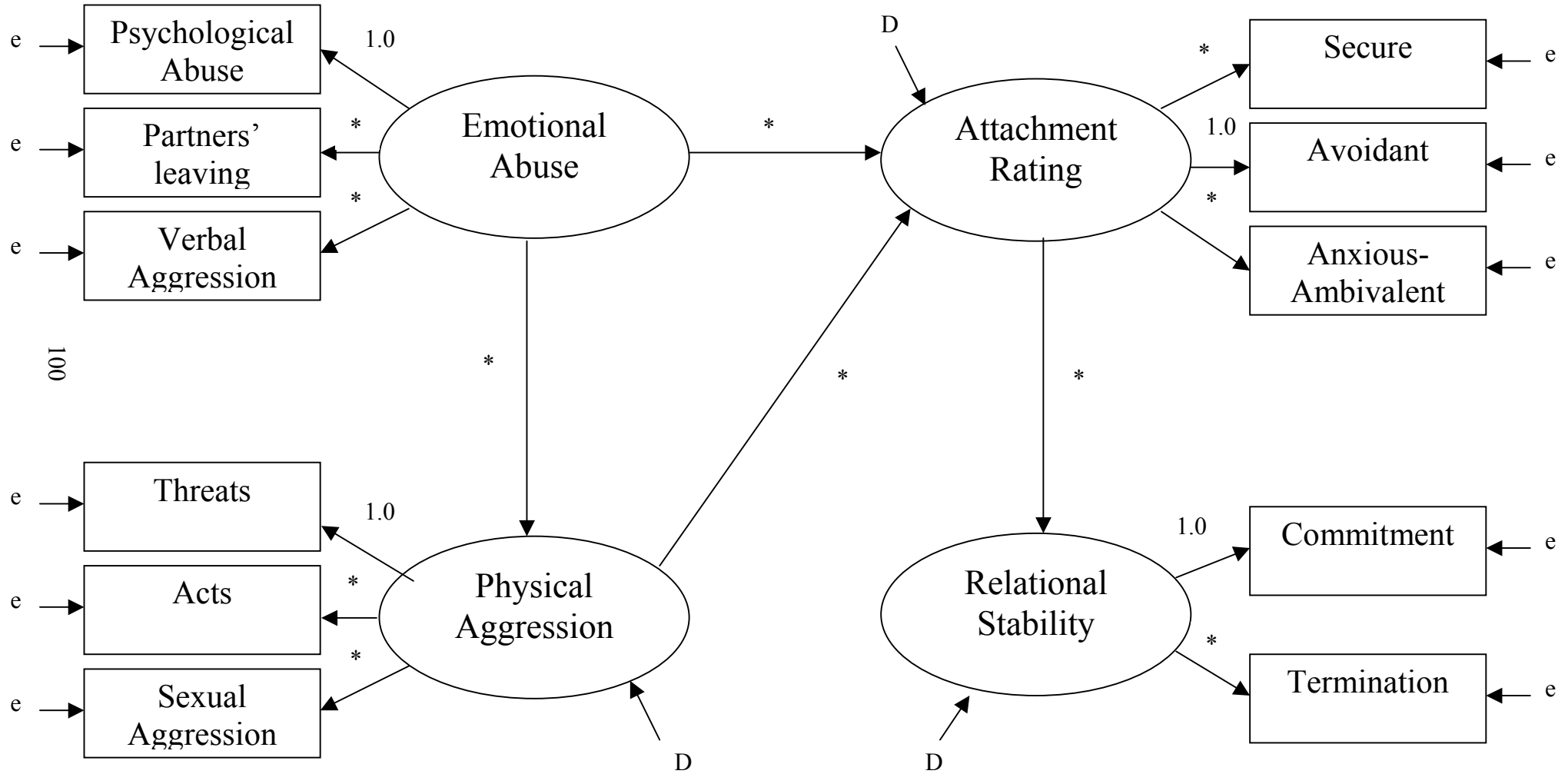


Figure 6. Confirmatory factor analysis (CFA) model.

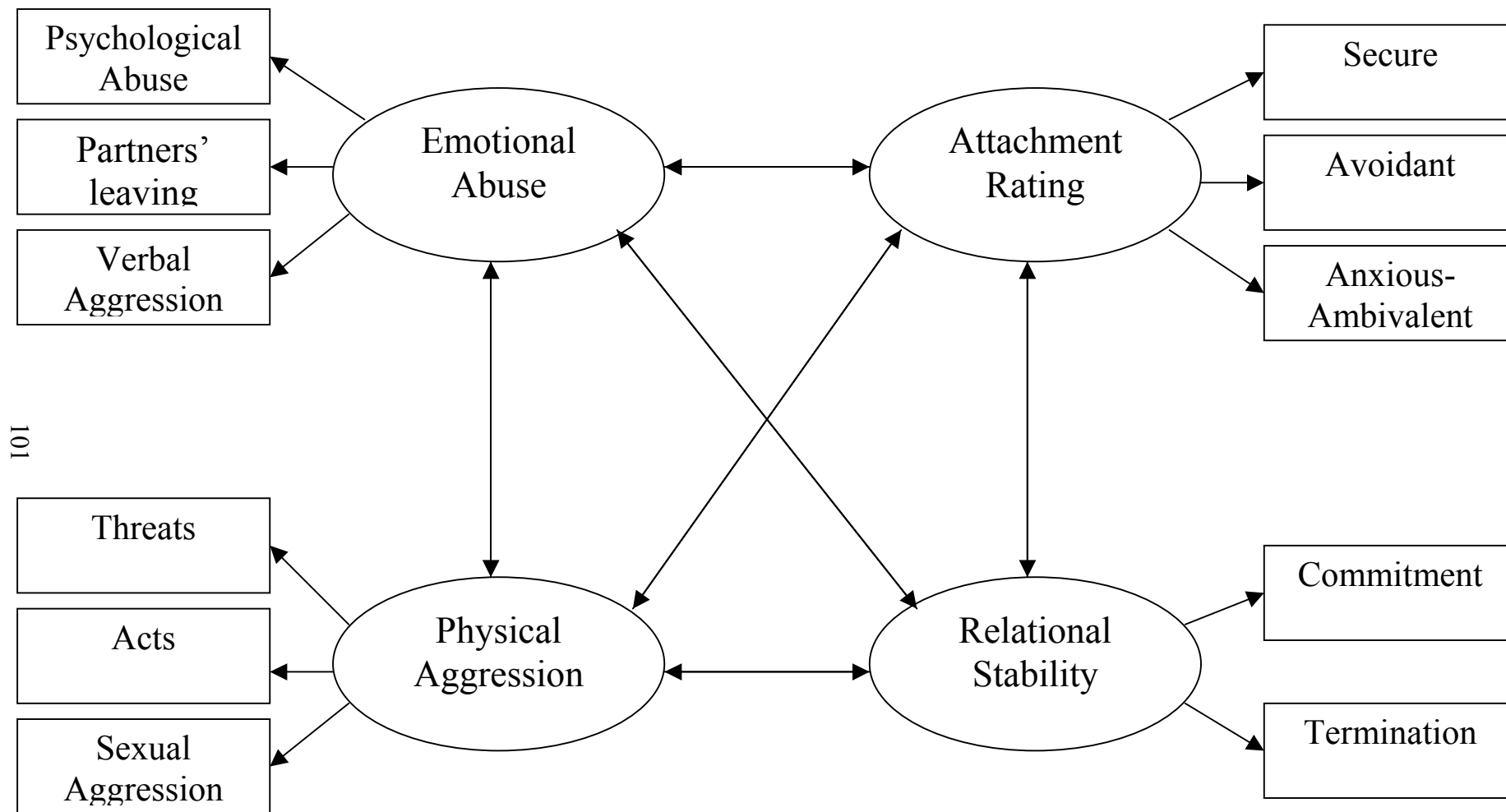
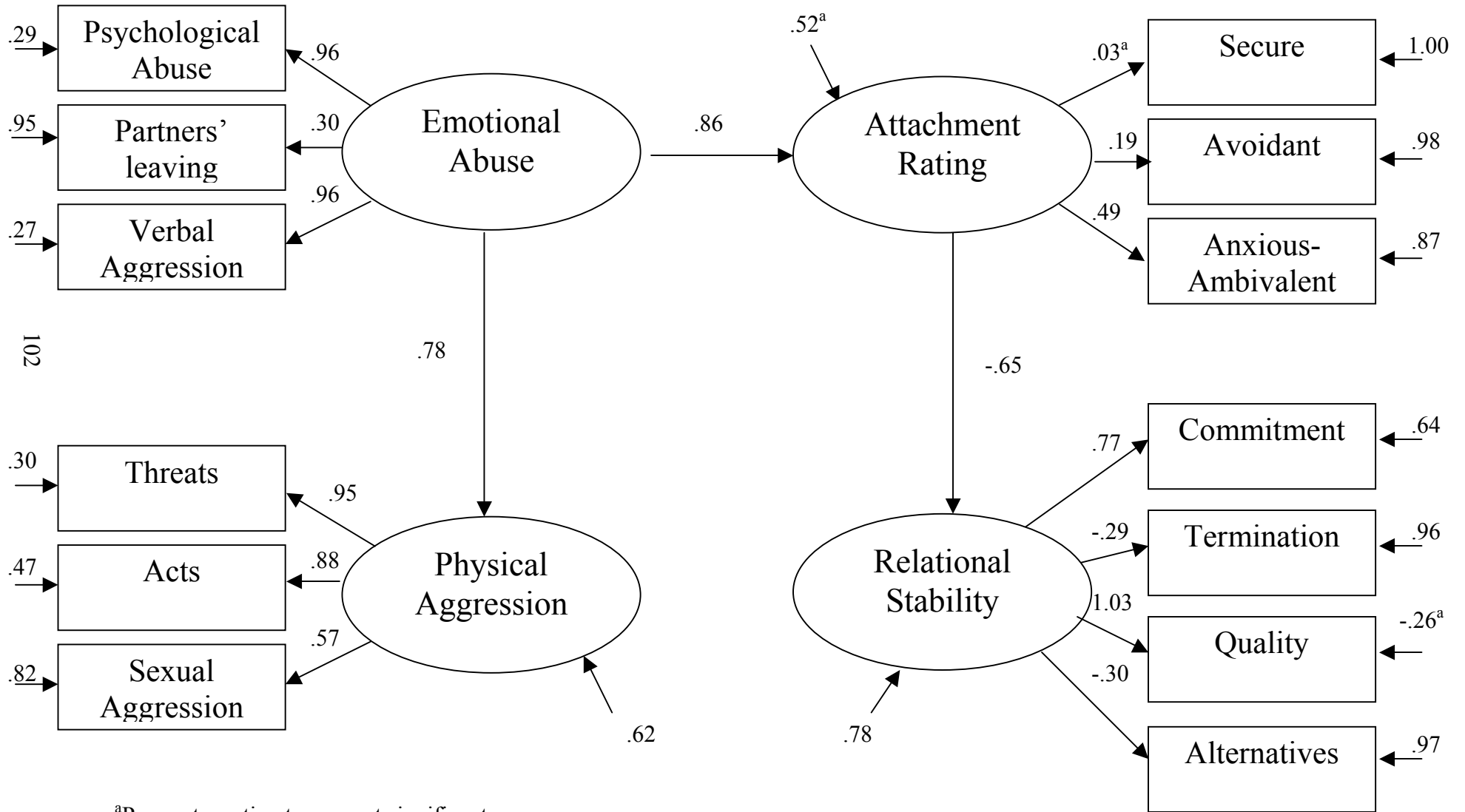


Figure 7. Standardized parameter estimates of modified model in secure group.



^aParameter estimate was not significant.

Figure 8. Standardized parameter estimates of second modified model in secure group.

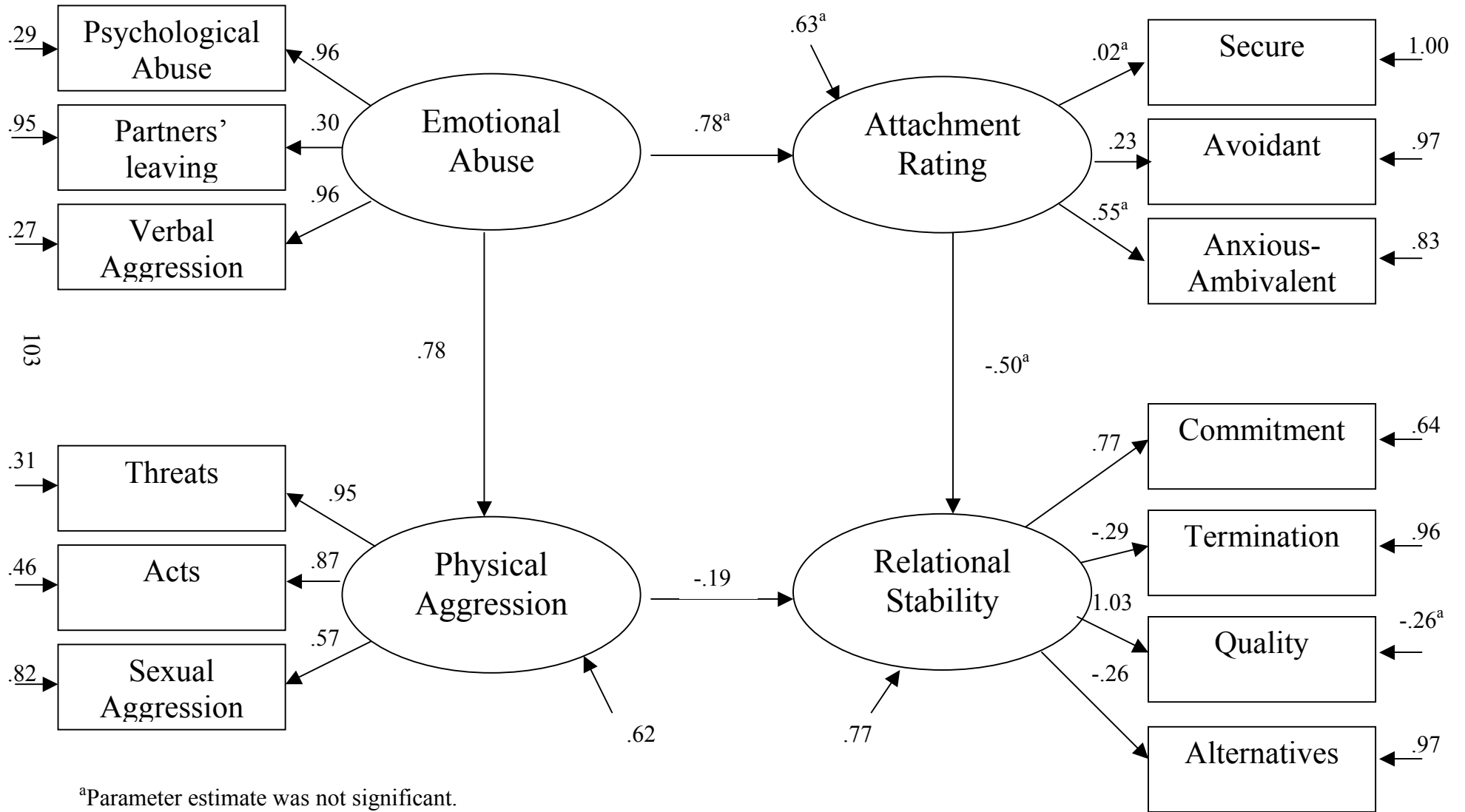


Figure 9. Standardized parameter estimates of modified model in avoidant group.

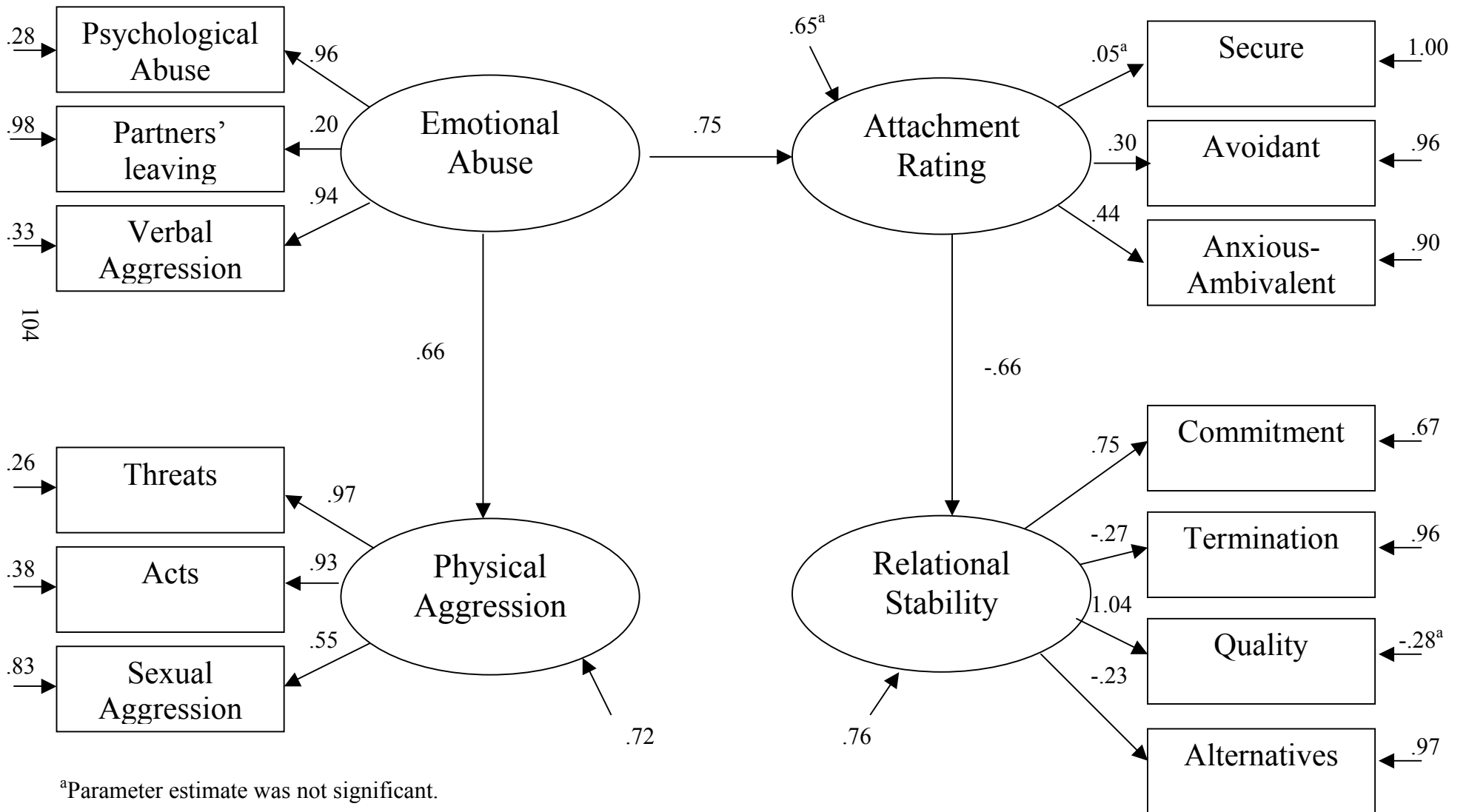


Figure 10. Standardized parameter estimates of second modified model in avoidant group.

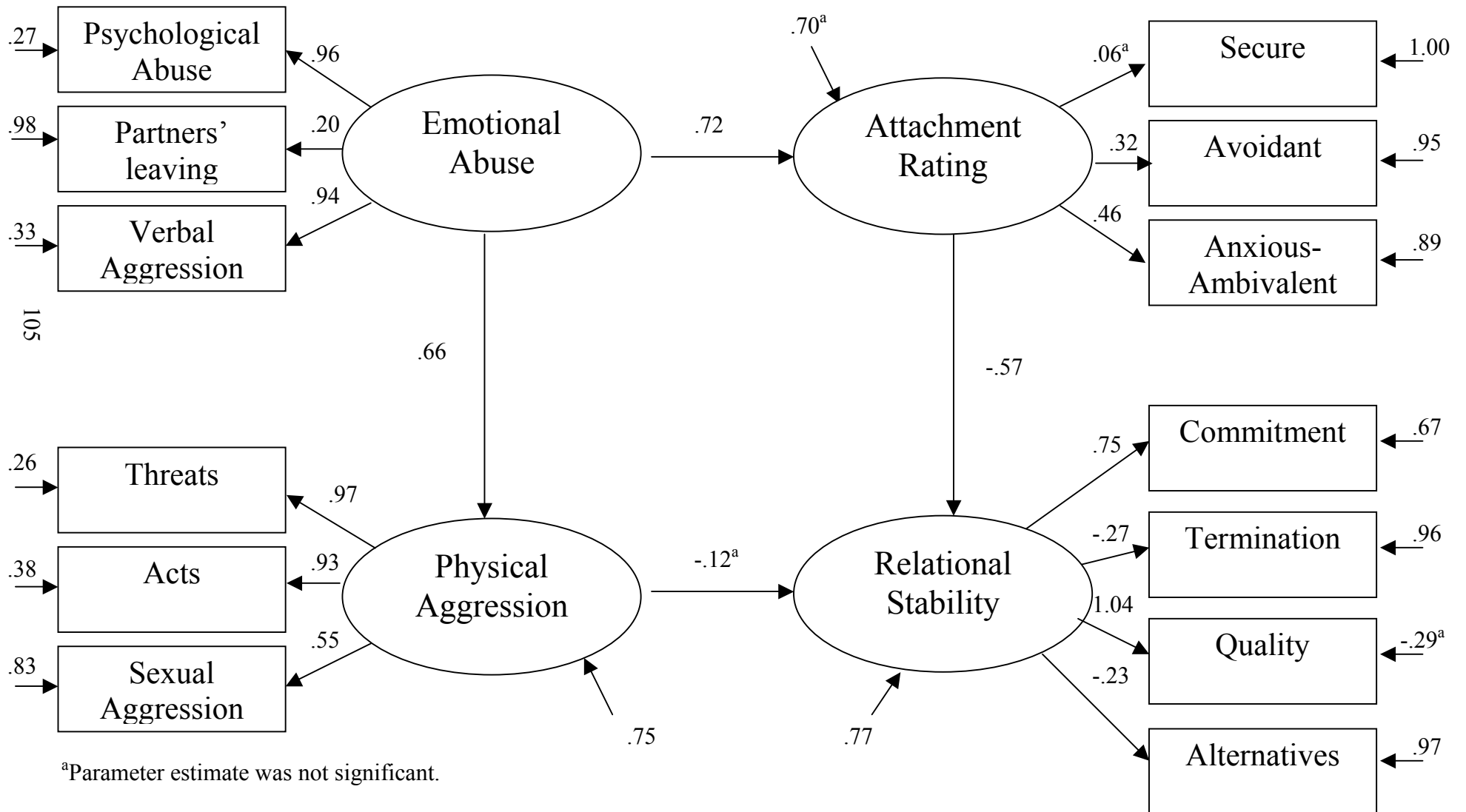


Figure 11. Standardized parameter estimates of modified model in anxious group.

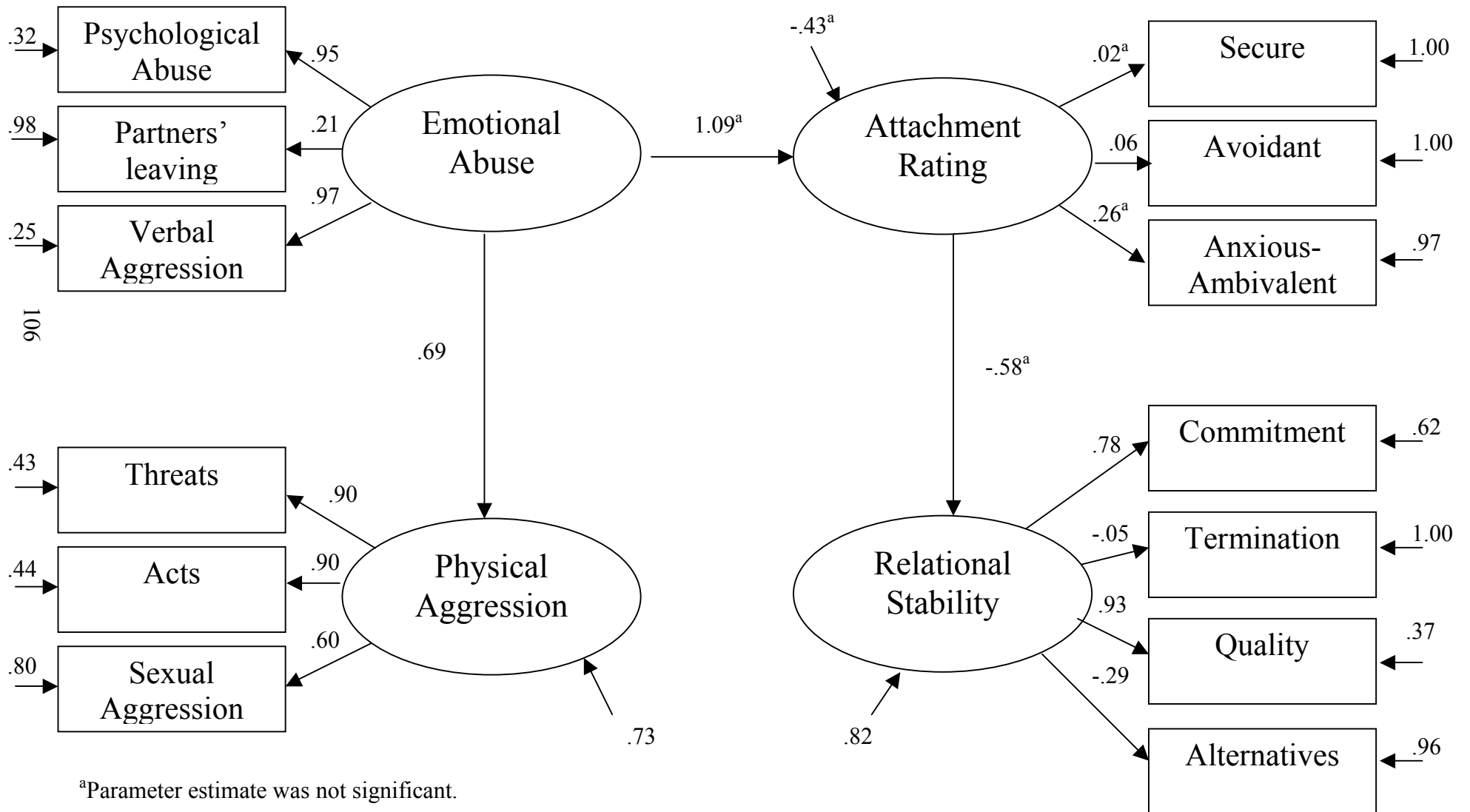


Figure 12. Proposed model with notation.

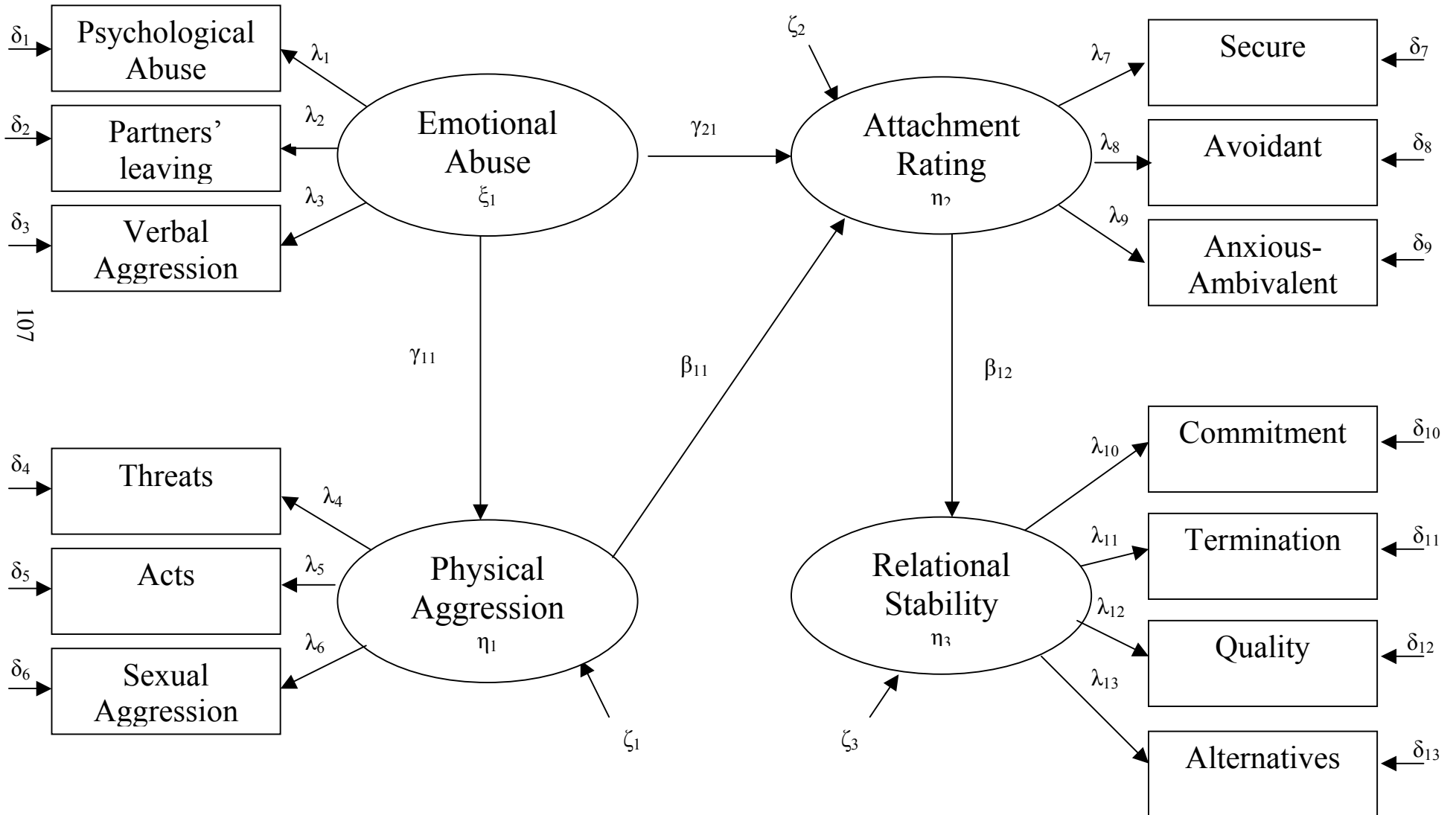
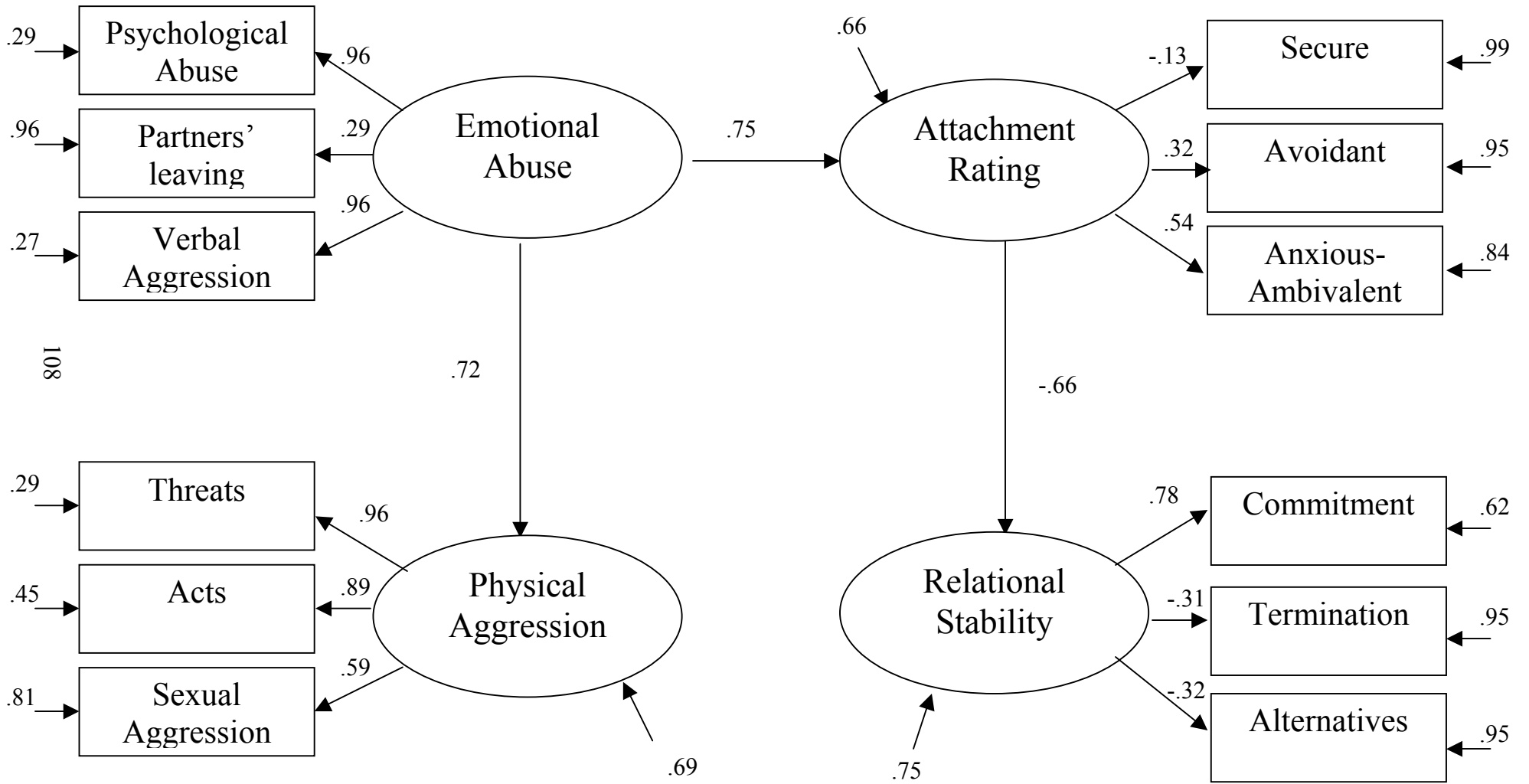


Figure 13. Standardized parameter estimates of final model for sample.



APPENDIX C
LETTER TO SUBJECTS

Fall, 1995

To Women in the Southwest Area of Dallas County

My name is Linda Marshall. I am writing this letter to tell you about an important project in your area. I planned Project HOW, **H**Health **O**utcomes of **W**omen, for many reasons. We know that women without much money are more likely to have some diseases (like diabetes) and more likely to die of other diseases (like breast cancer or high blood pressure) than women with more money. There are also differences in health care and rates of specific problems and illnesses depending on whether women are African American, Mexican American, or white but very little specific information is known. Unless more is learned, we can't make changes in health education and care that would help women of different ethnic backgrounds who don't have much money.

This project is dedicated to finding out HOW to help improve women's physical and mental health. Too often "experts" decide what we think and what is good for us or bad for us. Project HOW is different. We want to interview you to find out what you think and what your life is like. In return, we give gifts to women who participate. The more women we talk to, the better our information will be.

We need women who are willing to be interviewed once every 6 to 8 months about where they go for help, their background, beliefs, feelings, neighborhood, relationships, stress, health and health care. All of these things are related to health and well-being and we need information from your point of view. We want you to feel comfortable talking with us so our office staff will explain the many ways we protect each woman's privacy. Everyone with Project HOW is here because we want to help. Unfortunately, we are not able to provide counseling or services.

If you decide to participate, I will need you to come 4 times over 18 months and answer our questions honestly and openly for about 3 hours each time. In return, we will give you more valuable gifts for each interview. You will get \$26 in cash and goods for Interview 1 and \$37 or more for Interview 2 next spring. We will give you more than that for each of the last 2 interviews. I will send summaries of what we learn during and after the study and will use the combined results from all women to try to help women here and elsewhere.

We do interviews at 9, noon, 3, and 6 Sundays through Thursdays and at 9, noon, and 3 on Fridays and Saturdays. Sometimes different times can be arranged. Our offices are very near bus stops. Ora McQueen at the Mountain Lake office (467-8098) and Vernetta Moss at the Zang office (943-3223) are our office managers. They and other staff members would like to talk to you about participating in Project HOW.

Please call or come by soon to see if you can join Project HOW. Please be patient with us because a lot of women are calling and our office staff wants to talk to each of you. Your participation is important to us. We will continue accepting new participants until we have completed this first set of interviews.

Thank you very much,

Dr. Linda L. Marshall
Director, Project HOW

APPENDIX D
RECRUITMENT AND CONTACT SHEET

Project H.O.W. - Recruitment and Contacts

Initial contact by _____ Date _____

Type of contact: in person ___ called office ___ referred to her ___ other ___ (explain)

How she learned about project _____

Qualifications:

Age _____ (19 [by 1996 interview] to 47 [1996 birthday])

Length of serious, long term relationship with a man _____ (at least 1 year)

Does she consider herself to have a low income no yes her household? no yes

(circle): African American Mexican Immigrant Mexican American (US born) White American

If Immigrant, how long has she been in the U.S. _____ (at least 10 years)

Does she believe she is able (and willing) to do long interviews in english? no yes

Information needed to schedule interview (print):

Participant name: _____ phone _____

address & zip: _____

Times available for interviews: Mondays _____

(3 hrs to register & interview) Tuesdays _____

Wednesdays _____

Office: _____ Thursdays _____

1 = West Oak Cliff (ML) Fridays _____

2 = East Oak Cliff (Zang) Saturdays _____

Sundays _____

Contacts (notes on back):

Date	Method	Result
	(phone, home, office, left note)	(scheduled, left message [person/machine])
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____
8.	_____	_____
9.	_____	_____
10.	_____	_____
11.	_____	_____
12.	_____	_____
13.	_____	_____
14.	_____	_____
15.	_____	_____

Interview: Day, Date, Time	Date & Reason Interview Canceled
1.	_____
2.	_____
3.	_____
4.	_____
5.	_____

APPENDIX E

1995 AND 1996 POVERTY THRESHOLD TABLES

1995 Poverty Figures

#	Yearly	Yearly	Yearly	Monthly	Monthly	Monthly
Persons	Poverty	150%	175%	Poverty	150%	175%
1	7,470	11,205	13,072	623	934	1,090
2	10,030	15,045	18,030	836	1,254	1,463
3	12,590	18,885	22,033	1,049	1,574	1,836
4	15,150	22,725	26,513	1,263	1,894	2,210
5	17,710	26,565	30,993	1,476	2,214	2,583
6	20,270	30,405	35,473	1,689	2,534	2,956
7	22,830	34,245	39,953	1,903	2,854	3,330
8	25,390	38,085	44,433	2,116	3,174	3,703

#	Yearly	Monthly
	200%	200%
1	14,940	1,246
2	20,060	1,672
3	25,180	2,098
4	30,300	2,526
5	35,420	2,952
6	40,540	3,378
7	45,660	3,806
8	50,780	4,232

1996 Poverty Figures

#	Yearly	Yearly	Yearly	Monthly	Monthly	Monthly
Persons	Poverty	150%	175%	Poverty	150%	175%
1	7,740	11,610	13,545	645	968	1,129
2	10,360	15,540	18,130	863	1,295	1,511
3	12,980	19,470	22,715	1,082	1,623	1,893
4	15,600	23,400	27,300	1,300	1,950	2,275
5	18,220	27,330	31,885	1,518	2,278	2,657
6	20,840	31,260	36,470	1,737	2,605	3,039
7	23,460	35,190	41,055	1,955	2,933	3,421
8	26,080	39,120	45,640	2,173	3,260	3,803

#	Yearly	Monthly
	200%	200%
1	15,480	1,290
2	20,720	1,727
3	25,960	2,163
4	31,200	2,600
5	36,440	3,037
6	41,680	3,473
7	46,920	3,910
8	52,160	4,347

APPENDIX F
REGISTRATION FORM

Project H.O.W.
Master Form

This is the only form which would allow your identity to be matched with answers you give in the interviews. The office worker who administers this form will never know any of your answers to interview questions. Ms. Deirdre Harris, the interview coordinator, will give this form to Ms. Anne C. Freeman at the Dallas County Health Department for safe-keeping. Ms Freeman will not see any completed interviews. Dr. Linda L. Marshall at the University of North Texas will keep completed interviews. Dr. Marshall will not see this form unless funding for a follow-up study is obtained several years from now.

Completion of this form and your signature at the bottom shows that you received a copy of the Informed Consent Form signed by Ms. Anne C. Freeman and Dr. Linda L. Marshall.

Please print the information requested.

Date: _____

Full name: _____

first

middle

last

Current address: _____

Telephone number: _____

Social Security number: _____

Driver License number: _____

Texas Identification number: _____

The following information will be used as your code on the interview forms. We will assign you a number so interviews can be connected without ever using names. This allows the researchers to identify changes in each woman's health and life situation so results can be used to find ways to help women become healthier.

Your first name or nickname used for interviews: _____

Your birthdate: _____

Where you were born: _____

Race/ethnicity (circle): African American Mexican American White American

Mother's first name: _____

Number of brothers and sisters: _____

Name of mother's first (oldest) child: _____

Your partner's initials: _____

Your partner's race/ethnicity: African American Mexican American White American

Your partner's birthdate: _____

The information I provide is true to the best of my knowledge.

signature

APPENDIX G
FULL INFORMED CONSENT

Informed Consent Form
Project H.O.W., Health Outcomes of Women - Time 1

1. The purpose of this study is to find out HOW to help women become healthier. We want to identify ways to help women. We are looking at your total health and well-being. When the study is over, we will try to change things that you and the other women identify as important here in Dallas. We will also report the combined results from all women nationally, hoping that changes can be made elsewhere, too.
2. This study is being funded by the Centers for Disease Control and Prevention. It is being conducted jointly by Ms. Anne Freeman of the Dallas County Health Department and Dr. Linda Marshall of the University of North Texas, Psychology Department.
3. We are looking at HOW stress and life situations hurt and help women's health and well-being. This is the first of four interviews over the next two years to find out how your life changes and how it stays the same. It is very important that you complete all four interviews. You will be asked about how you have been thinking and feeling lately; relationships with friends and family; how you think about yourself, your self-concept; and how you cope with your problems, etc. The questions are about good things and bad things in your life.
4. Because we need personal information, we want to explain our procedures. The office workers will not know exactly what we ask or any of your answers. The interviewer will not know your full name. No one can connect your full name to the answers you give us unless you want us to, or unless Dr. Marshall does a follow-up study in several years. For your interviews, you will use a code. The project is covered by Certificates of Confidentiality so no one (including a court of law, the housing department, etc.) can find out what you say to us. We got the Certificates from the government because it is important that you answer our questions truthfully, even when doing so violates some rule (like if you make more money than you are supposed to). No one can learn anything about you from us. When we make reports, write articles, and give presentations, we will use only the combined answers from many women.
5. We need your help to keep the content of this study confidential. Please do not talk about specific questions we ask with anyone else, even the office worker or other women participating in this study. Some women could be hurt if people find out what questions we ask.
6. Besides keeping track of all the women who participate, our office workers will provide child care during interviews. As with anyone else in an "official" capacity (like teachers, doctors, etc.), we will report child abuse if we see evidence of it or are told about it. That is the ONLY exception to our rule of not telling anyone anything about individual women.
7. It may be difficult to answer some questions, use rating scales, or tell us things you have never told anyone else. You may feel frustrated, sad, offended or angry. These feelings should be temporary. On the other hand, the questions may help you in some way. You may come to think about yourself in a different way, even if the interview upset you.
8. The time you spend on the project will be compensated with a combination of cash, vouchers, and other goods. To show how valuable your time is and the increasing importance of what you

tell us, we will give you more cash and gifts for each of the later interviews. To contact you for later interviews we may send postcards, call you and/or visit your home. We may try to find you through the people you give us. If you tell us when your address or telephone changes, we will not need to contact anyone else. These procedures are used because each woman is very important to us.

9. It is very important to us that you are treated well. If anyone on the project is impolite or unkind, please report it to Dr. Marshall (817-565-4329) or Ms. Anne Freeman (819-1900) at the Health Department. We want to make this experience as easy for you as possible. Also feel free to contact Ms. Deirdre Harris, 819-1930, if you have any ideas about making the project better for you.

10. Results of the study will be used to identify ways to more effectively help those of you who have problems that affect your health and well-being. We hope to be able to tell you some of the things we find out as we go along, but we will not be able to tell you everything about the study until it is over. A few months after the last set of interviews, we will have a series of meetings for women who participated. At that time we will answer all your questions and report our findings to you. While the study is going on, we will try to provide information that could help you as often as possible.

11. This study was approved by the University of North Texas Institutional Review Board for the Protection of Human Subjects in Research.

Ms. Anne C. Freeman

Dr. Linda L. Marshall

APPENDIX H
BRIEF INFORMED CONSENT

Project HOW
Summary of Informed Consent
Time 1 Interviews

1. The purpose of the study is to find out how to help low income women become healthier. The results will help us make changes to serve you better.
2. The Centers for Disease Control and Prevention is funding the study. Dr. Linda L. Marshall from the University of North Texas and Ms. Anne C. Freeman from the Dallas County Health Department are directing the study.
3. We are looking at how stress and life situations hurt and help your health and well-being. You will be interviewed (in English) 4 times in the next 2 years so we can learn how women's lives change and how they stay the same in ways that affect their health. The first time you come may take about 3 hours for you to register, report the history of your health, and be interviewed. You will also have the opportunity to make suggestions to improve the project.
4. Procedures for confidentiality are very strict so you can feel safe answering questions truthfully. The office workers will not know the questions we ask or your answers. The interviewers will not know your full name or where you live. Certificates of Confidentiality protect you. No one (even a court of law) can ever find out what you tell us without your written permission.
5. Some women could be hurt if people learn about our questions. Please help us protect these women by not talking about specific questions asked during interviews. Do not even discuss it with others in the study or our office workers.
6. We will not ask questions about current or recent abuse of children. However, if the office worker notices abuse while she is providing child care during interviews, we will report it.
7. You may feel frustrated, sad, offended or angry during interviews. The feelings will be temporary and may cause you to see things in a new way.
8. It is important that you come for all 4 interviews. The gifts we give you will increase in value each time. We may contact you for later interviews through the mail, by telephone, in person, or (if necessary) through other people. You will tell us what is best for you.
9. If anyone on the project is impolite, unkind, or offensive in any way please contact Ms. Freeman or Dr. Marshall. Call Ms. Harris if you have ideas about making the project better.
10. After the project is over, we will have meetings to tell you everything we learned. In the meantime, we plan to provide you with useful information through our offices.
11. The procedures for this study were approved by the University of North Texas Institutional Review Board for the Protection of Human Subjects in Research.

APPENDIX I
PERMISSION TO CONTACT FORMS

Project HOW
Permission to Contact Agencies or Departments

Project HOW is a study of Health Outcomes of Women sponsored by the Centers for Disease Control and Prevention and conducted by the University of North Texas and the Dallas County Health Department.

I, _____, give the departments and/or agencies I circled my permission to help Project HOW staff locate me in the future. The departments and/or agencies have permission to release my address and telephone number. This permission does not allow Project HOW staff to release any information about me to those departments and/or agencies.

Department of Health for WIC other_____

Department of Human Services for AFDC Food Stamps

other_____

Parkland Hospital

Dallas Housing Authority

Other_____

signature

Project HOW
Permission to Contact Dallas Independent School District

Project HOW is a study of Health Outcomes of Women sponsored by the Centers for Disease Control and Prevention and conducted by the University of North Texas and the Dallas County Health Department.

I, _____, give the Dallas Independent School District my permission to help Project HOW staff locate me in the future. DISD has permission to release my address and telephone number. This permission does not allow Project HOW staff to release any information about me to DISD.

Student's name; school in Spring, 1995; grade in Fall, 1995

Student's name; school in Spring, 1995; grade in Fall, 1995

Student's name; school in Spring, 1995; grade in Fall, 1995

Student's name; school in Spring, 1995; grade in Fall, 1995

signature

Project HOW
Permission to Contact People

Project HOW is a study of Health Outcomes of Women sponsored by the Centers for Disease Control and Prevention and conducted by the University of North Texas and the Dallas County Health Department.

I, _____, give the person named below my permission to help Project HOW staff locate me in the future. This person has permission to release my address and telephone number. This permission does not allow Project HOW staff to release any information about me to the person listed.

name

telephone

address including apartment number and city if not Dallas

new telephone new address including apartment number and city if not Dallas

new telephone new address including apartment number and city if not Dallas

signature

APPENDIX J

SUBTLE AND OVERT PSYCHOLOGICAL ABUSE SCALE

Subtle and Overt Psychological Abuse Scale

How often does he...

1. try to make you feel like you should be submissive, like you should yield or give in
2. accuse you of being against him
3. play games with your head
4. act like he doesn't believe you
5. act like there's something wrong with you mentally or emotionally
6. act like he's more important or better than you
7. act like he knows what you did when he wasn't around
8. ignore your needs or what you want
9. belittle you or put you down
10. blame you for him being angry or upset
11. change his mind but not tell you until it's too late
12. criticize something you did well or discount it
13. do something that makes you feel small or less than what you were (like less smart, less competent, less attractive, less moral)
14. discourage you from having interests that he isn't part of
15. discourage you from having your own friends
16. try to keep you from seeing your friends or family
17. do or say something that harms your self-respect or your pride in yourself
18. encourage you to do something then somehow make it difficult to do
19. belittle, find fault or put down something you were pleased with or felt good about
20. get angry or hurt if you talk to someone about him or your relationship
21. get more upset than you are when you tell him how you feel
22. make you feel like it's useless to disagree with him
23. make you feel bad when you did something he didn't want you to do
24. make you feel like nothing you say will have an effect on him
25. make other plans when you want to do something
26. make you choose between something he wants and something you want or need
27. make you feel frustrated trying to talk to him
28. say or do something that makes you feel unloved or unlovable
29. make you worry about whether you could take care of yourself
30. make you feel guilty about something you have done or have not done
31. use things you've said against you (like if you say you made a mistake, how often does he use that against you later)
32. make you feel ashamed of yourself
33. make you worry about your emotional health and well-being
34. make you feel like you have to fix something he did that turned out badly
35. make you feel like you can't keep up with changes in what he wants
36. wear you out, make you feel drained or empty
37. put himself first, not seeming to care what you want
38. get you to question yourself, making you feel insecure or less confident
39. remind you of times he was right and you were wrong
40. say his actions (which hurt you) are good for you or will make you a better person
41. say something that makes you worry about whether you're going crazy
42. say or do something that makes you feel guilty
43. act like he owns you
44. somehow make you feel worried or scared even if you're not sure why
45. somehow make it difficult for you to go somewhere or talk to someone
46. somehow keep you from having time for yourself
47. act like you over-react or get too upset
48. continue to talk when you're tired or don't feel well
49. talk about how you couldn't take care of yourself without him
50. tease you in a way that embarrasses you
51. get upset when you did something he didn't know about

52. tell you the problems in your relationship are your fault
53. tell you that something he did was your fault
54. interrupt or sidetrack you when you're doing something
55. blame you for his problems
56. discourage you from making new friends
57. try to keep you from showing what you feel
58. try to keep you from doing something you want to do or have to do
59. try to tell you what you can and cannot do
60. try to get you to apologize for something that wasn't your fault
61. try to find out things you don't want to tell him
62. try to convince you something was like he said when you know that isn't true
63. try to get you to say you were wrong even if you think you were right
64. use an offensive or hurtful tone of voice with you
65. wear you down emotionally (like keep at you about something until you feel worn out)

APPENDIX K
VERBAL AGGRESSION ITEMS

Verbal Aggression Items

How often does he...

1. seem like he disagrees with you just to be disagreeing
2. call you hurtful names
3. go on and on about something in a way that wears you down
4. mock you or make fun of you
5. put you down to other people
6. swear at you
7. yell at you

APPENDIX L

SEVERITY OF VIOLENCE AGAINST WOMEN SCALE

Severity of Violence Against Women Scale: SVAWS
8 subdimensions

Threats of Violence

Symbolic violence

- Hit or kick a wall, door, or furniture
- Throw, smash or break an object
- Drive dangerously with you in the car
- Throw an object at you

Threats of mild violence

- Shake a finger at you
- Make threatening gestures or faces at you
- Shake a fist at you
- Act like a bully towards you

Threats of moderate violence

- Destroy something belonging to you
- Threaten to harm or damage things you cared about
- Threaten to destroy property
- Threaten to hurt someone you cared about

Threats of serious violence

- Threaten to hurt you
- Threaten to kill himself
- Threaten to kill you
- Threaten you with a weapon
- Threaten you with a club like object
- Act like he wants to kill you
- Threaten you with a knife or gun

Acts of Violence

Mild violence

- Hold you down pinning you in place
- Push or shove you
- Grab you suddenly or forcefully
- Shake or roughly handle you

Minor violence

- Scratch you
- Pull your hair
- Twist your arm
- Spank you
- Bite you

Moderate violence

- Slap you with the palm of his hand
- Slap you with the back of his hand
- Slap you repeatedly around the face and head

Serious violence

- Hit you with an object
- Punch you
- Kick you
- Stomp on you
- Choke you
- Burn you with something
- Use a club-like object on you
- Beat you up
- Use a knife or gun on you

Sexual Aggression

- Demand sex whether you wanted it or not
- Make you have oral/mouth sex against your will
- Make you have sexual intercourse against your will
- Physically force you to have sex
- Make you have anal/bottom sex against your will
- Use an object on you in a sexual way

APPENDIX M
ATTACHMENT SCALE

Attachment Style Descriptions

Secure: I find it relatively easy to get close to others and am comfortable depending on them and having them depend on me. I don't often worry about being abandoned or about someone getting too close to me.

Avoidant: I am somewhat uncomfortable being close to others; I find it difficult to trust them completely, difficult to allow myself to depend on them. I am nervous when anyone gets too close, and love partners often want me to be more intimate than I feel comfortable being.

Anxious-ambivalent: I find that others are reluctant to get as close as I would like. I often worry that my partner doesn't really love me or won't want to stay with me. I want to merge completely with another person, and this desire sometimes scares people away.

APPENDIX N
RELATIONAL QUALITY
AND PERCEIVED ALTERNATIVES

Relational Quality Scale

Women were asked to respond to the following items on a 7 point scale from not at all/never (1) to completely/extremely often (7).

1. Taking things together, how happy is your relationship?
2. When you think about your relationship – what each of you puts into it and gets out of it, how happy do you feel?
3. How certain are you that you'll be together one year from now?
4. What about 5 years from now?
5. How stable is your relationship?
6. In the past 6 months how often have you considered leaving him? (reverse scored)

Perceived Alternatives items

The following items were answered on a 7 point scale from not at all likely (1) to extremely likely (7). Think about if your relationship ended now. How likely is it...

1. you could have a relationship with another man?
2. it would be a good relationship?
3. it would be a better relationship?

Two additional items answered on a 6 point scale from strongly disagree/definitely false (1) to strongly agree/definitely true (6) were included in the mean for women's perceived alternatives.

1. If this relationship ended, I would not want another man in my life. (reverse scored)
2. If this relationship ended, I could easily find another partner.

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