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ON MATERNAL-FETAL ATTACHMENT BEHAVIOR

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ADULT ROMANTIC ATTACHMENT STYLE AS A MEDIATOR
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By

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ABSTRACT

ADULT ROMANTIC ATTACHMENT STYLE AS A MEDIATOR FOR THE EFFECTS OF DOMESTIC VIOLENCE ON MATERNAL-FETAL ATTACHMENT BEHAVIOR

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Robin Pierce Weatherill

Previous research has shown that domestic violence is associated with numerous negative outcomes in children whose mothers are abused. Domestic violence may impact the lives of children by interfering with the development of a secure attachment relationship between mother and child. Few studies have looked at the prospective effects of domestic violence on adult attachment or on the attachment of mothers to their unborn children. This study examined the effects of domestic violence on maternal attachment to the fetus in women who had experienced domestic violence with either a previous or current partner. It was hypothesized that women who were physically abused by a partner during pregnancy would be less engaged in maternal-attachment behaviors than women who had experienced violence with a previous partner but who were not currently battered. It was also hypothesized that adult romantic attachment would mediate the effects of domestic violence on maternal-fetal attachment behavior, and that high relationship satisfaction in a non-violent relationship would buffer the effects of domestic violence on adult romantic attachment. Results revealed a mediated link between domestic violence and maternal-fetal attachment behaviors, providing preliminary support for the hypothesis that the negative effects of domestic violence on the mother-child relationship may begin before birth.

Dedicated to the women who so generously shared their stories, and to my parents and my brother, for their love and support.

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INTRODUCTION

Researchers on domestic violence have been expanding the focus of their studies to include the effects of partner violence on children and the family system (Campbell & Lewandowski, 1997; Fantuzzo et al., 1991; Sternberg et al., 1993). There are multiple and pervasive ways in which domestic violence may affect children. The effects may be direct, in the form of injuries, or indirect, through witnessing or repercussions to the mother, beginning even prior to birth. With lifetime prevalence estimated at 21-34%, domestic violence constitutes a substantial threat to women's physical and psychological health, and, by extension, to the health of children (Browne, 1993). A study of the prevalence of domestic violence in five U.S. cities found that households in which domestic violence occurred were significantly more likely to be households with children, particularly young children under the age of 5 years (Fantuzzo, Boruch, Beriama, Atkins, & Marcus, 1997). Research suggests that being pregnant and raising children is associated with increased risk of domestic violence occurring in the home (Fantuzzo et al., 1991; Gazmararian et al., 1996; Peterson et al., 1997). A review of studies on the prevalence of violence during pregnancy concluded that between 3.9% and 8.3% of pregnant woman experience partner violence (Peterson et al., 1997). More recently, a study of 6,718 pregnant women in South Carolina found that 10.9% of the women reported being physically hurt by a partner or being in a physical fight with the partner (Cokkinides & Coker, 1998).

The psychological harm that women and children experience when living with domestic violence has been well documented (Campbell & Lewandowski, 1997;

Fantuzzo et al., 1991; Sternberg et al., 1993). Women and children who live with domestic violence have been found to be at increased risk for low self-esteem, depression, anxiety, and PTSD (Campbell & Lewandowski, 1997; Graham-Berman & Levendosky, 1998a). Children who live with domestic violence are also more likely to have internalizing and externalizing problems, reduced social competence, and school problems (e.g. Campbell & Lewandowski, 1997; Edleson, 2000; Grahman-Berman & Levendosky, 1998b; McCloskey, Figueredo & Koss, 1995). Studies have found a significant overlap of child abuse and wife abuse (Campbell & Lewandowski, 1997), and even children who witness abuse but are not physically abused themselves show levels of psychological damage similar to physically abused children (Sternberg et al., 1993).

Studies have also examined the impact that experiencing domestic violence may have on women's parenting behaviors (Holden & Ritchie, 1991; Levendosky & Graham-Bermann, 1998; Levendosky & Graham-Bermann, 2000; Levendosky & Graham-Bermann, in press; McCloskey, Figueredo, & Koss, 1995). However, these studies examined families where domestic violence is or has been part of the children's own experience. They have not examined the effects of a mother's past experience of violence on her relationship with her children. Researchers estimate that between 21% and 34% of women will experience domestic violence during their lifetime (Browne, 1993). These numbers suggest that even women who are currently in non-violent relationships and raising children may have experienced domestic violence in the past and may still suffer from its effects.

Although a lifetime incidence of 21-34% of women experiencing domestic violence suggests that the experience of abuse is alarmingly common, the degree of violence women may experience varies widely in severity, from threats to lethal assaults. Studies of women in shelters have typically focused on the effects of severe forms of violence. However, milder forms of violence such as hitting, slapping, or punching may be more common among women who do not come to the attention of shelters or emergency rooms (Straus, 1979; Tjaden & Thoennes, 2000). Less is known about the effects of mild to moderate levels of violence, although this kind of violence may be more common in the general population. A study which found that 56% of individuals had experienced partner violence also found that the majority of the violence experienced fell into the "mild' category, such as threats, pushing, holding down, shaking, and slapping (Marshall & Vitanza, 1994). While the effects of severe levels of violence on women may be seen and measured in injuries, the harm caused by mild to moderate levels of violence may be less obvious but more pervasive. The present study examines the effects of mild to moderate violence on women living in the community, including but not limited to woman living in shelters.

There is evidence that the majority of battered women eventually leave their battering partners (Campbell & Lewandowski, 1997). There is also evidence that even those who raise children in the context of domestic violence are perceived by their children as nurturing, effective mothers (Levendosky, 1995). What are the factors that enable women to be effective mothers to their children despite past or current experiences of domestic violence? The present study examines two potential mitigating factors: positive romantic relationships and secure adult romantic attachment style.

The goal of this study is to examine the potential for a supportive romantic relationship to buffer the negative effects of past domestic violence on prenatal maternal attachment behavior. Specifically, this study assessed the effects of high satisfaction in romantic relationships on adult attachment styles and maternal representations of the fetus in the context of past and current experiences of domestic violence. Abuse was defined in this study as male-to-female physical assault or threat of assault. The present study is an effort to understand whether the healing effects of a positive romantic relationship subsequent to a battering relationship can affect a woman's internal working models to a degree that extends to her mental representations of her unborn child.

Studies suggest that adult attachment style is related to current relationship status (Feeney & Noller, 1990; Main, 1996; van IJzendoorn, 1995). Attachment style has been assumed to be relatively stable over time, however, there is evidence that an individual's attachment style may change in response to life changes or new relationships (Davila, Burge, & Hammen, 1997). Infant attachment has also been shown to change when the mother's life circumstances change (Egeland & Sroufe, 1981). The mother's relationships may thus influence both her own attachment style as well as her infant's attachment to her, either to make it more secure or more insecure. It is hypothesized that experiences of domestic violence would be associated with insecure adult attachment, and that this would also lead to more negative maternal representations of the unborn child. However, a supportive romantic relationship might counteract the effects of past violence, leading to secure adult attachment and more positive maternal representations. Central to this is the possibility that adult attachment style can change in response to new models of relationships.

Attachment Theory

Attachment theory predicts that infants coordinate their behavior with that of their caregivers to maintain life-preserving contact with their primary source of nurturance, modifying their behavior to receive the maximum contact that their caregivers can tolerate (Slade, Belsky, Aber, & Phelps, 1999b). Bowlby (1988) conceived of attachment as a system of infant behaviors closely coordinated with the mother's own behavior, which functions to evoke certain responses in her: specifically, to maintain her proximity and prevent abandonment. Such a system of behavior would necessarily involve acute sensitivity to potential abandonment, and thus would develop in such a way that it would be activated by the mere threat of separation. The infant would then adapt its behavior to preserve the relationship with the primary caregiver (Bowlby, 1988).

The Strange Situation was created as an experimental way of eliciting and observing such separation behavior. Mary Ainsworth (1979) observed that infants tended to use their mother as a "secure base" from which to explore the world. As long as the mother was available, the child would explore, periodically looking back or returning to the mother for reassurance. Using the Strange Situation to observe separation behavior in a laboratory setting, Ainsworth categorized the babies' style of separation and reunion into three types. *Secure* children would explore as long as their mother was present, become upset when she left, and would reach to her for comfort when she returned. *Avoidant* babies seemed to explore independently whether their mother was there or not, and to be indifferent to her return. *Ambivalent* children would cling to their mother but appear not to be comforted by her; they would become upset when she left, but even more upset when she returned.

These infant attachment styles are initially specific to the relationship with the primary caregiver, but gradually become internalized as a set of beliefs and expectations about relationships in general. These internal working models become the basis of the children's interactions with others, influencing how they see themselves in relationships and how they interpret others' behavior (Bowlby, 1973). Relationship experiences shape internal working models, which, in turn, influence future relationship behavior. For example, a child with a secure attachment history is likely to expect that others are trustworthy, and so will behave in an open way and interpret situations in this light. A child who expects others to disappoint or abandon them may interpret others' behaviors accordingly. Longitudinal studies have found that infant attachment styles are predictive of behavior outcomes in later childhood; children who were securely attached as infants tend to be more confident, have better problem solving skills, and better peer relations than those who were insecurely attached as infants (Main, 1996).

Adult Internal Working Models

While infant attachment style is behaviorally assessed, measures of adult attachment style purport to directly tap the internal working models of self and others, rather than measuring attachment behavior. These internalized representations, or internal working models, develop in the context of specific relationships and may be assessed in regard to those relationships. For example, the Adult Attachment Interview (AAI) (Main & Goldwyn, 1984) assesses working models of the early childhood relationship with the primary caregiver. The Working Model of the Child Interview (Zeanah & Benoit, 1995) assesses maternal representations of the child, while measures of adult romantic attachment style assess internal representations of romantic relationships. Adult attachment style also differs from infant attachment in that it is generalized to other relationships. Adults carry with them the memory of the early care-giving relationship, and also develop a new attachment relationship with their romantic partner. Measures of adult romantic attachment are intended to tap generalized beliefs about relationships. However, the theory behind these measures is that the romantic bond between partners is the primary adult attachment, in Bowlby's sense of the word, and the only one that is analogous to the parent-infant bond (Hazan & Zeifman, 1999).

Bowlby defined attachment behavior as any behavior that ensured the individual's proximity to another person perceived as better able to cope with the world, as a mother would be perceived by her infant (although, theoretically, this would apply to an individual at any age) (Bowlby, 1988). Such behavior would be most evident when the individual was feeling unable to cope with the world themselves, such as when they were ill, tired, or frightened. Bowlby observed that, even in healthy infants, attachment behavior could be evoked by separation or threat of separation from the primary caregiver. He hypothesized that in this instance the infant's behavior was a response to their perception of potential danger (being alone in the world) rather than actual danger. The behavior is also a manifestation of the infant's internal working model of the relationship with the primary caregiver, because the behavior reflects what the infant believes is most likely to ensure the caregiver's proximity. For example, if the infant expects the mother to recoil if he clings to her, his act of indifference will reflect this.

Adult attachment researchers have studied the effects of this "threat of separation" on individuals in romantic relationships by assessing how the individuals react to conflict with their partner (Collins & Read, 1990; Simpson, Rholes, & Phillips, 1996). In addition to assessing conflict as a "threat of separation," they have also examined the effects of actual separation due to death or the break-up of a relationship (Hazan & Zeifman, 1999). The results of these studies suggest that the romantic bond is unique among adult relationships (Hazan & Zeifman, 1999). Researchers have found that, when separated, partners in romantic pairs describe levels of stress and proximity seeking behavior that are greater than those described when separated from siblings and friends (Hazan & Shaver, 1987). Consistent with attachment theory, individuals also differ in their behavioral reaction to the threat of separation, with some becoming aloof and others becoming more clingy. In other words, it would appear that attachment *behavior* is invoked within adult romantic relationships in a way that is not evident in other relationships.

The generalization of internal working models continues when individuals become parents: they bring their mental representations of others to this new relationship, and become the partner for the attachment behavior of the child. Researchers interested in continuity of attachment style within individuals over time have used the Adult Attachment Interview to compare parents' early childhood memories of their primary attachment relationship (internal working models) with their infants' attachment behavior in the Strange Situation (van IJzendoorn, 1995).

Recently researchers have begun looking at an intermediate step in the transmission of attachment: the parent's working model of the child (Zeanah & Benoit, 1995). Adult memories of early childhood relationships, adult romantic relationships, and maternal representations of the child have all been the subject of attachment studies. Theoretically, they should all be related as generalizations of the original working model internalized by the individual from the early primary caregiving relationship. While researchers have found that parents' adult AAI styles are predictive of their infants' attachment classifications (van IJzendoorn, 1995), no research has been done on the relationship between these various kinds of adult attachment. It is not clear from the literature whether these are different manifestations of one working model, or if individuals have specific working models for specific relationships, just as children may have different attachment styles with each parent. The continuity of working models within individuals over time was an important component of Bowlby's theory (Bowlby, 1988), yet much of the literature on adult attachment has compartmentalized working models by assessing only one area of adult relationships. Attachment researchers have examined either romantic relationships or adult memories of early relationships, but not both.

Adult State of Mind Regarding Early Childhood Relationships

Working models of early childhood attachment figures may be assessed with a semi-structured interview, such as the AAI, which is coded by trained coders, and yields three major adult attachment classifications: autonomous, preoccupied, and dismissing. Autonomous is considered analogous to the secure attachment classification in infants, while preoccupied and dismissing are considered to be forms of insecure attachment and are thought to be analogous to the anxious/ambivalent and avoidant forms of infant attachment, respectively (van IJzendoorn, 1995). The AAI also yields a fourth classification; unresolved/disorganized with respect to experiences of trauma or loss. Individuals classified as unresolved also receive a classification according to the autonomous/preoccupied/dismissing categories. The AAI assesses adult representations of early childhood relationships and is used primarily in research that focuses on the transmission of attachment from parent to child (Beckwith, Cohen, & Hamilton, 1999; Benoit & Parker, 1994; Main & Hesse, 1990; Schuengel, Bakermans-Kranenburg, & Van IJzendoorn, 1999; Slade & Aber, 1992; van IJzendoorn, 1992; van IJzendoorn, 1995). A meta-analysis found that parental AAI classification is predictive of infant attachment as assessed using the Strange Situation; secure parents are more likely to have secure children, while preoccupied and dismissing parents are more likely to have insecure children (van IJzendoorn, 1995).

Adult Romantic Attachment Style

Adult romantic attachment has been most frequently measured using self-report questionnaires which require less training to administer than the AAI, making it feasible to do studies with larger samples (Bartholomew & Horowitz, 1991; Collins & Read, 1990; Feeney & Noller, 1990; Feeney, Noller, & Hanrahan, 1994; Kirkpatrick & Davis, 1994; Kobak & Hazan, 1991; Simpson et al., 1996). These questionnaires differ from the AAI in that they measure representations of current relationships rather than representations of memories (Feeney, 1999). Attachment researchers initially hypothesized categories of romantic attachment style analogous to the infant categories developed by Ainsworth and the adult categories yielded by the AAI: secure, avoidant (AAI "dismissing"), and anxious/ambivalent (AAI "preoccupied") (Feeney & Noller, 1990). Early measures were designed as forced choice questionnaires in which participants were given three or four paragraphs describing relationship styles and asked to choose the one that best described themselves (Bartholomew & Horowitz, 1991; Feeney & Noller, 1990; Hazan & Shaver, 1987; Kobak & Hazan, 1991). Later studies rated romantic attachment style dimensionally rather than categorically, based on the hypothesis that the three classifications might not be mutually exclusive, and that individuals might lie along dimensions within each category (Collins & Read, 1990; Davila et al., 1997; Feeney et al., 1994; George & West, 1999). This hypothesis was supported by findings that indicated that secure romantic attachment was negatively correlated with insecure romantic attachment, but that the two insecure styles were independent of each other (Feeney et al., 1994). In other words, insecurely attached adults might rate themselves highly on dimensions of ambivalence as well as dimensions of avoidance. In developing a dimensional measure, Feeney (1994) proposed five dimensions of romantic attachment: Confidence, Discomfort with Closeness, Need for Approval, Preoccupation, and Relationships as Secondary. Discomfort with Closeness and Relationships as Secondary correlated with the avoidant or dismissing category, while Need for Approval and Preoccupation correlated with the anxious/ambivalent or preoccupied category. In the present study, individuals' scores on the different dimensions will be converted into a categorical variable: with a secure and an insecure group.

Maternal Representations

In addition to mental representations of their parents and romantic partners, parents also have internal working models of the parent-child relationships, even before the child is born. Interest in parents' working models of the infant grew out of research on infant temperament. Infant temperament was initially assessed using parental report measures. When it became clear that the parents' report said more about their perceptions and expectations than about the infant per se, temperament researchers began using direct observation to assess infants, while other researchers focused on the parents' perceptions (Zeanah & Benoit, 1995). Zeanah & Benoit (1995) developed an interview similar to the AAI to assess maternal representations of the child. The Working Model of the Child Interview is a semi-structured interview which assesses maternal representations of the child. It may be administered either during pregnancy or after birth. The Maternal-Fetal Attachment Scale (MFAS) is a questionnaire that was developed to assess the mother's engagement in behaviors thought to contribute to the development of the infant attachment bond (Cranly, 1981). These maternal behaviors are not "attachment behaviors" in Bowlby's sense: attachment behaviors in the truest sense refer to infant behaviors that serve to ensure the mother's proximity to the infant. Rather, the maternal behaviors tapped by this measure are analogous to the observable parental behaviors that have been associated with different types of infant attachment (Ainsworth, 1978; van IJzendoorn, 1995). This study hypothesizes that the maternal behaviors measured by the MFAS reflect the mother's working model of the relationship between herself and her unborn child.

Intergenerational Transmission of Attachment

Studies of adult romantic attachment and research on the transmission of attachment from parent to child have proceeded largely independently of each other. Studies of the predictive relationship between parental and infant attachment style have used adult memories of early childhood attachment as the predictive factor rather than adult representations of current romantic relationships. The relationship between adult AAI status and infant Strange Situation classification has been well established (van IJzendoorn, 1995). Studies have found between 68% - 75% correspondence between secure/insecure adult attachment representations (dismissing, autonomous/secure, preoccupied, and disorganized) and infant status (respectively, avoidant, secure, anxious-ambivalent, and disorganized) (Benoit & Parker, 1994; Van IJzendoorn, 1995). In a meta-analysis, van Ijzendoorn (1995) noted that correspondence rates varied depending whether the study used a classification system of three groups, (autonomous, dismissing, preoccupied) or if a fourth group (unresolved) was added. When using three groups, there was an overall correspondence of 75% between parental AAI classifications and infant Strange Situation status for the secure/insecure split (when the two insecure categories were collapsed into one group) and a 70% correspondence rate for the three-way classification. When using four groups, the predictive correspondence was less, at 63%. Van Ijzendoorn also notes that there is a difference in predictability between the groups, with the secure group (also the largest) having the strongest predictive power, and the preoccupied group (the smallest in most samples) having the least predictive power.

Despite studies supporting the predictive validity of parental AAI status with regard to infant Strange Situation classification, the mechanism of transmission is only partly understood (van IJzendoorn, 1995). It is hypothesized that parental representations of past and present attachment figures influence the degree of sensitivity and responsiveness with which parents react to infant attachment signals (van IJzendoorn, 1995). Parents who are confident in their relationships with others may be better able to respond to their infants. Insecure parents, who may be uncomfortable with intimacy or preoccupied with their own attachment experiences, may be less available to their infants or may have distorted perceptions of their infant which interfere with their ability to interpret infant attachment signals. Insecure attachment in infants has been shown to be associated with an insecure adult attachment style and maternal experience of unresolved trauma or loss (Main & Hesse, 1990; van IJzendoorn, 1995).

The administration and coding requirements of the AAI make it difficult to use in large studies. In addition, it has been used primarily with white, middle class samples (Schuengel et al., 1999; van IJzendoorn, 1995), with some exceptions (Main & Hesse, 1990). The self-report design used in most measures of adult romantic style has made it possible to use with larger samples (Collins & Read, 1990; Simpson et al., 1996).

According to attachment theory, internal working models that were developed in the context of a specific relationship are generalized to other relationships and may influence the individual's expectations of and behavior toward others. This study hypothesizes that women's internal working models of romantic others will influence their working model of their infant. There is evidence for such generalization: attachment researchers have found that the mother's way of being with her infant is associated with varying outcomes in infant attachment (Ainsworth, 1978; Main & Cassidy, 1988; Main & Hesse, 1990; van IJzendoorn, 1995), and part of this variance has been attributed to the mother's state of mind with regard to her own early attachments (Benoit & Parker, 1994; Main & Hesse, 1990; van IJzendoorn, 1992). For the present study, it was hypothesized that the mother's "way of being" with her fetus reflects her internal representations of her unborn child. The present study tests the hypothesis that adult romantic working models influence maternal working models, much as research has already shown that parents' working models of their own childhood appear to influence their infants' developing working models of self and others.

Romantic Pairs as Attachment Relationships

Following the premise that internal working models are carried through into adulthood, attachment dynamics will continue in adult relationships. As children develop, they shift some of their attachment behaviors to seek support from peers, but the parent remains the central attachment figure until the attachment bond is transferred to a romantic partner in adulthood (Hazan & Zeifman, 1999). Hazan and Zeifman (1999) argue that pair bonds are unique among adult relationships in their resemblance to the infant attachment relationship. They analyzed adolescent and adult relationships with friends and with romantic partners for components that would be psychologically and functionally similar to attachment behavior in infants: proximity maintenance, safe-haven, separation distress, and secure base. They found that proximity maintenance and safe-haven behavior was present both in romantic relationships and friendships, but that separation distress and secure base behavior was found exclusively in romantic relationships. They concluded that, in adults, "full blown attachment relationships" (p. 350) were seen in only in romantic relationships.

Studies have shown that romantic attachment styles are relatively stable within individuals (Feeney, 1999; van IJzendoorn, 1995). However, there is also evidence of a reciprocal relationship between relationships and romantic attachment styles. As individuals shift their primary attachment from parent to romantic partner, they bring the attachment style from the former relationship into the new romantic relationship. As with any adaptive behavior developed in response to a specific context, the individual's romantic attachment style may be maladaptive in the new (romantic) context. Each partner brings his or her own working models to the situation, and each perceives the other's behavior through this filter.

In a 1991 study, Kobak and Hazan hypothesized that, in order to be adaptive, working models must be flexible enough to change in response to new circumstances, to assimilate new information about the other into their working model. They speculated that secure individuals would be more adaptive, more flexible in response to new information, and thus more accurate in attributing intentions to their partner's behavior. Therefore, in addition to assessing the romantic attachment styles and observing the couple engaged in problem solving, the researchers assessed the accuracy of each partner's perceptions of the interaction. The results suggested that internal working models did influence perceptions of a stressful interpersonal interaction (Hammen et al., 1995). Individuals rated as secure made more accurate attributions about their partner's behavior than did individuals rated as insecure. Insecure individuals were less likely to adapt their working models in response to their partner's behavior, and this negatively affected relationship functioning.

The interaction of a couple's working models can be predictive of the longevity of the relationship in some instances. Not surprisingly, secure adult romantic attachment style appears to be associated with high satisfaction as well as stability in romantic relationships (Collins & Read, 1990). However, couples in which the woman is classified as preoccupied and the man as dismissing have also been found to be stable and long-lasting, despite low relationship satisfaction ratings expressed by both partners (Simpson et al., 1996). Simpson et al. hypothesized that these relationships were perpetuated because each partner confirmed the expectations of the other; for example, the woman expected her partner to be less interested in intimacy than she was, and her dismissing male partner confirmed her expectations. The man, on the other hand, expected his partner to be intrusive and clingy, and his expectations were confirmed by his preoccupied partner's efforts to re-engage him in the relationship.

The correlation between adult romantic attachment status and relationship status may be confounded by a reciprocal relationship between the two. Secure adult romantic attachment style appears to be associated with high satisfaction in romantic relationships, as well as with the longevity of the relationship (Collins & Read, 1990). In their study of married couples, Kobak & Hazan (1991), found that their study contained a high number of secure couples and speculated that marriage itself might lead to greater security of attachment. Evidence for reciprocal influence is provided by a study that found that individuals classified as insecure who became involved in a romantic relationship were more likely to be classified as secure six months later (Davila et al., 1997). Understanding the reciprocal effects of romantic attachment and intimate relationships may be further confounded when researchers use a sample of couples, which limits the data to a self-selected group of people who are able to initiate and sustain (however briefly) a romantic relationship.

A reciprocal relationship between romantic attachment style and relationship status suggests that an individual's romantic attachment style may change in a new relationship. Davila et al. (1997) found that the most common change was from insecure to secure. They hypothesized that this change occurred when an insecure individual developed a relationship with a supportive partner who disconfirmed their expectations of rejection. On the other hand, the association of insecure romantic attachment and the experience of emotional abuse suggest that change in status from secure to insecure may also occur (O'Hearn & Davis, 1997). In the O'Hearn & Davis (1997) study, it was hypothesized that secure romantic attachment would be negatively correlated with the experience of emotional abuse, while each of the insecure styles would be positively correlated with the experience of emotional abuse. Subjects were asked to fill out self-report questionnaires indicating how often they and their partners had received and inflicted certain abusive behaviors, such as yelling, making the other person feel guilty, or destroying something belonging to them. Emotional abuse was also assessed in an interview. Romantic attachment style was assessed with a semi-structured interview and subjects were categorized according to Bartholomew's four attachment styles (Bartholomew & Horowitz, 1991). Sixty-one undergraduates were interviewed, 19 male and 42 female. Results from the males were inconsistent, so the discussion focused on data from the female subjects. Preoccupied attachment was positively related to both experiencing and inflicting emotional abuse. Woman with a fearful-avoidant style were more likely to have received emotional abuse and less likely to have inflicted it. Secure romantic attachment was negatively associated with having received or inflicted emotional abuse. One explanation for this was that adults with secure romantic attachment styles were less likely to become involved with emotionally abusive partners; alternatively, the experience of emotional abuse may evoke a preoccupied romantic attachment style in the partner.

Intimate Relationships and Attachment in Adults: Potential for Harm and Healing

Adult romantic attachment style is both stable and, to varying degrees, adaptable; it influences an individual's romantic relationships but also adapts to new experiences by assimilating new beliefs about self and others (Davila et al., 1997). The devastating effects of domestic violence on women's capacity for relatedness are well documented (Browne, 1993; Campbell & Lewandowski, 1997). The traumatic repercussions of violence in intimate relationships include distrust of others, distorted relationship boundaries, lowered self-esteem, and malevolent beliefs about other's intentions (Herman, 1992): all fundamental dimensions of the construct of adult romantic attachment (Feeney et al., 1994). It would therefore be expected that domestic violence would be associated with insecure adult romantic attachment, and this is supported by two of the few studies on this subject (O'Hearn & Davis, 1997; Zeanah et al., 1999).

While only two studies have examined changes in adult romantic attachment in the aftermath of domestic violence, the literature on trauma (such as childhood sexual abuse) suggests that new relationships with caring therapists or members of a support group can bring about positive changes in the victims' beliefs and perceptions of relationships (Herman, 1992; Saunders & Edelson, 1999). Although there is evidence that women who have experienced domestic violence are more likely to show insecure adult romantic attachment (O'Hearn & Davis, 1997), their beliefs about self and others may be open to change, particularly if they become involved with a new partner whose behaviors disconfirms their malevolent expectations. One hypothesis of the present study was that, even for women who have experienced violence in the past, a current positive relationship with a non-violent partner will be associated with a secure attachment style.

The Effects of Trauma on Adult, Maternal, and Infant Attachment

Research has found that trauma that occurs in the context of relationships over time, such as incest or domestic violence, has particularly devastating effects on the victim's capacity for relationships (Herman, 1992). "Where the trauma has been repeated and prolonged, the patient's expectations of perverse or malevolent intent can prove especially resistant to change" (p. 138). From an attachment theory perspective, the experience of abuse alters the victim's working models of self and others in a way that makes the models particularly rigid; in attachment terms, this would be expected to produce the extremes of dismissing or preoccupied representations of others. One study that examined adult romantic attachment and partner abuse found that secure adult romantic attachment was negatively correlated with experiencing abuse, while both preoccupied and dismissing styles were positively correlated with experiencing abuse (O'Hearn & Davis, 1997).

If abuse is predictive of insecure adult romantic attachment, and the mother's attachment style is predictive of her infant's attachment style (van IJzendoorn, 1995), then it would be expected that maternal experiences of abuse would predict an insecure attachment style in her infant. In support of this hypothesis, studies have found a particular type of infant insecure attachment, disorganized attachment, to be associated with unresolved maternal experiences of trauma (Main & Hesse, 1990; Schuengel et al., 1999; Zeanah et al., 1999). Disorganized attachment is associated with child maltreatment (Egeland & Sroufe, 1981) and later child adjustment problems (Lyons-

Ruth, 1996). Unresolved trauma is therefore associated with problems in the attachment relationship and with later child adjustment problems as well. While there is evidence for a relationship between unresolved maternal trauma and insecure attachment in the child, the way in which a history of trauma affects the mother-child relationship is still unclear.

One potential explanation for the relationship between maternal trauma and child attachment style is the theory that "frightened and frightening" maternal behavior toward the infant contributes to disorganized attachment (Main & Hesse, 1990; Schuengel et al., 1999). In Main & Goldwyn's study, frightening behaviors were seen in the majority of mothers with unresolved loss. However, they were also observed to co-occur with the sensitive parenting behaviors associated with secure attachment. Secure mothers with unresolved loss showed fewer frightening behaviors, and unresolved loss in secure mothers did not predict disorganized attachment status in their infants. Secure attachment representations in these mothers may have acted as a protective factor in these cases. The findings were replicated in another study which found that unresolved loss predicted frightening behavior and disorganized infant attachment in insecure mothers but not in secure mothers (Schuengel et al., 1999).

Thus, adult attachment style appears to influence infant attachment in at least two ways. Secure and insecure adult styles are predictive of infant attachment style, with the infant style correlating with the analogous adult style. Secure adult attachment also appears to buffer infant attachment in the context of unresolved maternal trauma (Schuengel et al., 1999). However, there is evidence that the experience of trauma itself is associated with insecure adult attachment styles, and thus might influence infant attachment directly (O'Hearn & Davis, 1997).

Domestic Violence and Parenting

One form of trauma that appears to be common among women and mothers is domestic violence (Cokkinides & Coker, 1998). Recent research has focused on the impact domestic violence has on the family, including parenting behavior and child adjustment (Levendosky & Graham-Bermann, 2000; Levendosky & Graham-Bermann, in press; McCloskey et al., 1995; Sternberg et al., 1993). However, no studies have measured the prospective effects of domestic violence, past or current, on maternal representations of the fetus during pregnancy. This is an important area to consider, given what is known about the negative effects of domestic violence on parenting behavior and child adjustment (Fantuzzo et al., 1991; Levendosky & Graham-Bermann, in press; Sternberg et al., 1993). The consequences of violence may begin before the child is born, at the source of the attachment relationship, the mother's bond with her unborn child.

Children who are victims or witnesses of domestic violence are more likely to be depressed, to have both internalizing and externalizing behavior problems, as well as symptoms associated with posttraumatic stress (Fantuzzo et al., 1991; Graham-Bermann & Levendosky, 1998; Sternberg et al., 1993). Marital distress has been shown to have negative effects on the parent-child relationship (Erel & Burman, 1995). There is also evidence that witnessing violence may have direct negative effects on children (Kilpatrick & Williams, 1998). It may be doubling frightening to a child to witness a physical or emotional assault on their mother, who is presumably seen by the child as a protective figure: not only is the child in close proximity to the violence, but the person who might protect them from it is a victim herself.

Recent research has attempted to identify how these outcomes may be moderated or mediated through parenting, usually maternal parenting. Studies have found that domestic violence predicts higher levels of parenting stress, which in turn negatively affected child adjustment (Levendosky & Graham-Bermann, 1998; Wolfe, Jaffe, Wilson, & Zak, 1985). Women interviewed in a qualitative study on mothers who had experienced partner violence reported that physical health problems and single parenting, both sequellae of their violent relationships, made parenting more difficult for them (Levendosky, Lynch, & Graham-Bermann, 2000). Children may also be affected by violence through its effect on their mothers' psychological functioning (Levendosky & Graham-Bermann, in press). For example, depression is a common symptom among victims of domestic violence, and children of depressed parents are at increased risk for adjustment problems (Downey & Coyne, 1990). The toll of living with violence and the fear of violence, including depression, physical health problems, isolation, and single parenting, may mean that these mothers are less available and able to respond to their children's needs.

In one study of observed parenting and child behavior, domestic violence was shown to affect maternal warmth, an important aspect of parenting (Levendosky & Graham-Bermann, 2000). In this study, mothers who had experienced physical abuse were observed to be less warm in an interaction with their children, while psychological abuse to the mother was associated with increased observed antisocial behavior on the part of the child. The finding that the experience of domestic violence decreased observed warmth in mother-child interaction is particularly relevant to the possible relationship between domestic violence and maternal-fetal attachment. Warmth was defined in this study as "The degree to which the mother is positive to the child, nice to the child, enjoys being with the child, and is supportive of the child" (Hetherington, Hagan, & Eisenberg, 1992; as cited in Levendosky and Graham-Berman, 2000). Maternal positive affect and expressed pleasure with the child were factors used in another study to assess quality of maternal attachment representations (Slade et al., 1999b). By extension, if domestic violence negatively affected warmth in observed mothering, it is possible that this would also be reflected in the attachment relationship, as measured by maternal representations of the infant.

Studies on domestic violence and parenting usually focus on women who are currently in or have recently been in a violent relationship. Less is known about how a past history of domestic violence might affect a woman's parenting. Given that a history of abuse in childhood has been shown to affect later psychological functioning, which in turn affects parenting (Levendosky & Graham-Bermann, in press), it would be expected that experiences of violence in intimate relationships would have repercussions long after the relationship is over. This would be consistent with research findings that the effects of unresolved maternal trauma carry over to the infant's attachment to the mother. (Main & Hesse, 1990; Schuengel et al., 1999). If the effects are seen in the infant's attachment behavior, it is likely that they were influencing the mother's perception of the child even prenatally, given the evidence for the correlation between maternal representations and infant attachment (Slade, et al, 1999b). To understand the transmission of attachment, it would be important to trace the development of the attachment relationship back to its earliest beginnings, during pregnancy.

Hypotheses and Rationale

One of the ways in which domestic violence may negatively affect women and children is by affecting the mother's ability to nurture and parent her child. Studies have documented the negative effects that the presence of domestic violence may have on the parent-child relationship and child functioning (Fantuzzo et al., 1991; McCloskey et al., 1995; Sternberg et al., 1993). One measure of the parent-child relationship is assessment of child attachment style. Evidence that unresolved maternal trauma is associated with disorganized attachment in children suggests that violence may have important consequences for the attachment relationship (Schuengel et al., 1999), and that the damage may occur at a very early stage in the mother-child relationship, i.e. prenatally. If domestic violence does affect the mother-fetal relationship, it is likely that the effects would be seen in the maternal attachment behaviors toward the unborn child, as this is the first manifestation of the mother-child relationship. Yet no studies have examined the effects of domestic violence at this point in the attachment relationship. This study compared women who were currently experiencing violence in a romantic relationship with those who had experienced violence with a previous romantic partner in order to understand 1) the effects of partner violence on the maternal-fetal relationship and 2) the potential for a healing relationship to mitigate those effects.

If the abuse occurred in a past relationship, it is unclear what effects the experience will have in the context of later parenting; some studies suggest that unresolved trauma has long lasting effects (Benoit & Parker, 1994; Main & Hesse, 1990; Schuengel et al., 1999), while other studies indicate that the current partner relationship is the most predictive of current parenting or maternal attachment style (Lindahl, Clements, & Markman, 1997; Zeanah et al., 1999). This study hypothesized that women who were experiencing violence in a current relationship would be less engaged in maternal-fetal attachment behaviors than women who had experienced violence in the past but were not experiencing it with their current partner.

Furthermore, the consequences of domestic violence may begin prior to the maternal-fetal relationship by negatively affecting the mother's adult romantic attachment style. There is some evidence for the influence of trauma on adult attachment status (O'Hearn & Davis, 1997). Women who have experienced violence in a romantic relationship may have more insecure working models of others, and their romantic working models might then influence their working model, or maternal representation, of their unborn child. The insecure quality of their maternal representation would be manifest in their behavior, and they would therefore be less engaged in maternal-fetal attachment behaviors than women who have experienced partner violence in the past but who are not currently experiencing it in their present relationship.

Adult attachment style in regard to early childhood memories (as measured by the AAI) has been shown to account for some of the variance in differences in parenting behavior (Slade et al., 1999b; van IJzendoorn, 1995). According to attachment theory, adult romantic attachment style would be influenced by the same internal working models that are manifested in the Adult Attachment Interview. If adult attachment style with regard to early childhood memories and adult romantic attachment style are thus connected, adult romantic attachment style should also be associated with variation in parenting behavior. Therefore, the second hypothesis of this study was that secure adult romantic attachment would mediate the relationship between domestic violence and maternal-fetal attachment behaviors, whether the violence was experienced with a previous or current romantic partner (see Figure 1). One way in which this study differs from other studies on the effects of domestic violence on women and children is that it examined the effects of past experiences of domestic violence with a former partner as well as the presence of domestic violence in a current relationship. No prior studies have examined the romantic attachment styles of women with battering histories who are currently in non-battering relationships. If adult romantic attachment style does mediate the effects of domestic violence on maternal-fetal attachment behavior, it would be important to examine whether it was a mediator for past experiences as well as current ones.

Given the evidence for a reciprocal relationship between adult relationship and attachment status (Davila et al., 1997), it would be expected that the negative effects of the abuse on the woman's working models of others might be ameliorated if the new partner no longer confirms her negative working models of others. If the new relationship is experienced as a satisfying one, then it may serve as a healing relationship, i.e. it may moderate the effects of past experiences of domestic violence on current adult romantic attachment status. Therefore, the third hypothesis of this study was that, within the group of women who had experienced violence in the past but were not currently battered, high relationship satisfaction in the current relationship would buffer the effects of past domestic violence on adult romantic attachment style. It was also hypothesized that in relationships where there was on-going domestic violence, the effects of the violence would overcome any potential mitigating effects that high relationship satisfaction might have, and the buffering effect would not be seen (see Figure 2).

Much of the research on the transmission of attachment has used samples from middle-class, married, White/Caucasian populations. Less is known about the connection between adult romantic attachment and maternal attachment behavior in the context of poverty and trauma, and among single mothers and minorities. There is evidence for a higher incidence of unresolved trauma in mothers from low socioeconomic groups (van IJzendoorn, 1996), yet only one study has examined infant attachment in the context of domestic violence (Zeanah et al., 1999), and this study did not measure maternal attachment behaviors, only infant attachment style. The present study examines the relationship between adult romantic attachment style and maternal prenatal attachment behavior in the context of past and current experiences of domestic violence, providing a prospective assessment of the effects of domestic violence on unborn children. The participants in this study came from a range of backgrounds, but were primarily from low socioeconomic groups. This was important in evaluating whether existing hypotheses about the transmission of attachment are applicable in the context of poverty and domestic violence and among an economically and ethnically diverse population.

METHOD

Research Participants

This study was done in conjunction with a larger study conducted by Alytia Levendosky, G. Anne Bogat, William Davidson and Alexander von Eye at Michigan State University. Participants included 106 pregnant women recruited to participate in the Mother-Infant Study, a longitudinal study on the effects of domestic violence on mother-infant relationships. The 106 women selected for this study from the total sample of 207 were divided into two groups: those who had been battered by a previous partner but not by their current one (n=45, 43%) and those who had been battered by their current partner (n=61, 57%). Women who reported that they had never experienced domestic violence or who reported that they had experienced domestic violence with their current partner in the year prior to but not during their pregnancy were excluded from the total sample of 106. Participants were recruited by posting fliers in public areas and businesses in Lansing and surrounding urban and rural counties in Southeast Michigan. In addition, fliers were posted in and referrals obtained from agencies, hospitals and programs that provided financial, legal, and health services to pregnant women or victims of domestic violence.

Women called the project office, where they were screened for eligibility, which was determined by their age, current relationship status, and history of battering. Women who were not involved in a relationship during their pregnancy or who were under the age of 18 or over the age of 40 were excluded. The women were told the study was about women's relationships with the important people in their life, including partners, family members, and children, and that if they participated in the study they would be asked about their thoughts and feeling about their relationships and recent life events, including domestic violence. They were also told that they did not necessarily need to have experienced domestic violence in order to be eligible for the study. If they were interested in participating, they were then told that they would be asked some questions about themselves and their relationships over the telephone in a five-minute interview. The screen was explained as an effort to ensure that the study included all different kinds of women from the community, so that if they answered the questions in a similar way to the women already enrolled in the study, they might not be eligible to participate. The purpose of this telephone screen, which included the Conflict Tactics Scale (Straus, 1979), was to enroll equal numbers of battered and non-battered women in the study. For the purpose of the study, women were categorized as "battered" if they had experienced violence during pregnancy. Women who were categorized as "non-battered" by the telephone screen were then asked if they had ever experienced violence in any romantic relationship. Women were excluded if they had experienced violence in the past but were not battered during pregnancy, in order to ensure that non-battered group would be more likely to include women who had never experienced domestic violence. The woman's battering status for the purpose of this study was determined by her answers on the SVAWS during the in-person interview; while this often was consistent with their battering status according to the telephone screen, this was not true all of the time (e.g. a woman who was categorized as "battered" on the telephone screen may not have met the criteria for the "battered" category in the interview). Therefore, careful count of the battering status of the completed interviewees was kept, and the telephone screen was used to screen out women once there were enough "non-battered" participants to make up the control group. Toward the end of the study, many women who were otherwise eligible but did not screen as "battered" were excluded. Once women were determined to be eligible, they were scheduled for an interview during the third trimester of their pregnancy.

In the group of women who had experienced domestic violence with a previous partner but not their current partner (n=45), over half the women in the study identified themselves as White/Caucasian (65.2 %), with 21.7% identifying themselves as Black/African American, 4.3% Latina, 3% Biracial, and 1% other. The average age of women in this group was 25 years. In this group, 22% had a high school diploma or the equivalent, and 18% had some high school education, 46.7% of the women had some college education, and 11.1 % had a college or graduate degree; 43.5% were working outside of the home at the time of the interview, and 37% had worked outside the home in the past year; the mean monthly income was $2012. Half of the women who were not currently experiencing domestic violence were married (50%); 32.6% were single, never married, and 8% were either separated or divorced.

In the group of women who experienced domestic violence during their pregnancy (n=61), similarly to the first group, over half identified themselves as White/Caucasian (65.6 %), with 24.6% identifying themselves as Black/African American, 6.6% Biracial, and 3.3% Latina. The average age was 25 years. In this group, 34% had a high school diploma or equivalent, 25% had some high school education, 36% had at least some college education, and 3.2 % had a college of graduate degree; 31% were working out of the home at the time of the interview and 52% had worked outside of the home in the past year; the mean monthly income was \$1173. Three quarters of the women who were currently experiencing domestic violence were single, never married (75.4%); 13.1% were married, and 7% were either separated, divorced, or widowed.

In summary, the two groups were demographically similar except on the variables of income and marital status. Women in the group that had experienced domestic violence during pregnancy were more likely to have a lower household income ($p < .001$) and more likely to be single, never married, ($p < .001$) than women in the group that had not experienced violence during the current pregnancy (see Table 1).

Table 1

Demographic Information on Study Participants

Characteristics	Current Partner DV n=61	Previous Partner DV n=45
Racial/Ethnic Group		
Caucasian/White	65.6 %	64.4 %
African American/Black	24.6 %	22.2 %
Latina/Hispanic/Chicana	3.3 %	4.4 %
Biracial	6.6 %	6.7 %
Other	0 %	2.2 %
Marital Status		
Single, never married	75.4 %*	31.1 %*
Married	13.1 %	51.1 %
Separated	8.2 %	8.9 %
Divorced	1.6 %	8.9 %
Widowed	1.6 %	0 %
Educational Status		
Grades 7-12	59.0 %	40.0 %
Some College	36.1 %	46.7 %
Bachelor's Degree	1.6 %	4.4 %
Graduate Degree	1.6 %	6.7 %
Other	1.6 %	2.2 %

*$p < .001$

Characteristics	Current Partner DV	Previous Partner DV
	n=61	n=45
	Mean	
Income	$1173*	$2012*
Age	25	25

*p < .001

Measures

Demographics.

A brief questionnaire was administered to obtain basic demographic information such as marital or relationship status, ethnicity, parental education, parental employment, number of children, and family income.

Dyadic Adjustment Scale. (DAS) (Spanier, 1976)

This is a 32-item, self-report scale that assesses the quality of a romantic relationship. Only the current or most recent relationship were assessed with this measure. The overall quality of dyadic adjustment scale were used. Examples of items include "How often do you discuss or have you considered divorce, separation, or terminating your relationship," "Do you kiss your mate," and "How often do you and your mate engage in outside interests together." Participants responded on a number of different scales. In this measure, participants chose their level of agreement, based on a 6-point scale; they rated the amount of common outside interests on a 5-point scale; they chose one of six statements that best described the future of their relationship, and they rated the happiness of their relationship based on a 7-point scale. A coefficient alpha of .95 was obtained in this study.

Maternal Fetal Attachment Scale. (MFAS) (Cranly, 1981)

The MFAS is a 24-item questionnaire developed to measure maternal-fetal attachment behavior during pregnancy. It yields five sub-scales scores and one overall score. For the purpose of his study, the overall score of maternal-fetal attachment was used. Examples of items include "I talk to my unborn baby," "I do things to take care of myself that I would not do if I were not pregnant," and "I try to picture what the baby will look like." Participants responded on a 5-item scale, ranging from "Definitely Yes" to "Definitely No." A coefficient alpha of .74 was obtained in this study.

Attachment Style Questionnaire. (ASQ) (Feeney et al., 1994)

Adult romantic attachment style was assessed by using the Attachment Style Questionnaire, a 40-item measure assessing attitudes about self and others in the context of relationships. There are five sub-scales: 1) Confidence; 2) Discomfort with Closeness; 3) Need for Approval; 4) Preoccupation with Relationships and 5) Relationships as Secondary. Examples of items include "I find it hard to trust other people," and "I am too busy with other activities to put much time into relationships." Respondents rated their level of agreement on a 6-point scale ranging from "Totally Disagree" to "Totally Agree." Internal reliabilities ranging from .76-.84 have been reported for the individual scales, with test-retest reliabilities of .67-.78 (Feeney et al., 1994). In this study, a coefficient alpha of .80 was obtained.

Romantic attachment style is rated on a dimensional scale, according the individual's combined ratings on the four scales. A "secure" profile consists of high scores on the Confidence subscale and low scores on everything else. An "insecure" profile indicates high scores on Discomfort, Approval, Preoccupation, and Relationships as Secondary, and low scores on Confidence. For the purpose of this study, each individual's scores on the five dimensions was converted into a single score by subtracting the higher of the scores on the two insecure dimensions from the individual's score on the Confidence dimension.

Severity of Violence Against Women Scales. (SVAWS) (Marshall, 1992)

The type and severity of domestic violence, defined here as male-to-female violence by a romantic partner, was measured by the Severity of Violence Against Women Scales. This is a 46-item questionnaire assessing violent behaviors and threats the woman may have experienced. There are nine categories of abuse: symbolic violence, threats of mild violence, threats of moderate violence, threats of serious violence, mild violence, minor violence, moderate violence, serious violence, and sexual violence. Respondents rated their experiences of abuse on a 4-point scale ranging from "Never" to "Many Times." Women were asked to complete the scale for the period of current pregnancy, the year before pregnancy, and most recent previous relationship. In this study, coefficient alphas of .94-.98 for the three time periods were demonstrated.

For the purpose of this study, a woman met criteria for being battered if she endorsed any item in the following categories: threats of serious violence, mild violence, minor violence, moderate violence, serious violence, and sexual violence. Women were included in the "past battered but not current" group if they indicated that they had experienced domestic violence in a previous romantic relationship but not in their current relationship (as measured during their current pregnancy or the year prior to pregnancy).

Women were included in the "currently battered" group if they indicated they had experienced domestic violence during their current or pregnancy, regardless of experiences in previous relationships. Women were excluded who indicated that they had experienced violence in their current relationship during the year prior to pregnancy but not during their pregnancy. Each item in the SVAWS has a physical harm impact weight according to the level of seriousness, abusiveness, and aggressiveness of the act. Severity of violence was calculated by multiplying each item's score by its physical harm impact weight and summing the products (Marshall, 1992).

Procedures

Research assistants, both undergraduate and graduate level, were trained to administer the questionnaires and to conduct a semi-structured interview. The training period lasted approximately three months, and the trainees did several interviews under supervision until they could conduct the interview according to a standard of 95% inter-rater reliability. The interviewers were trained to maintain a neutral, non-judgmental stance throughout the interview. They were also trained in how to maintain confidentiality and handle difficult situations, such as the intrusion of partners or family members who were unhappy about the subject's participation in the study. The majority of the interviews were conducted by a single interviewer, but a second interviewer would accompany and observe the primary interviewer if the interview was to be conducted in an unsafe neighborhood. The interviewer would begin by explaining the procedure, telling the woman that the interview was completely confidential, and obtaining the participant's written consent to take part in the interview. Participants were also told that they could withdraw from the study at any time without any penalty or negative consequences. The interviewers read all questions aloud and marked down the women's responses. The questionnaires were administrated orally to control for any variation in the level of literacy among participants. Interviewers were blind to the battering status of the woman; this was ensured by administering the questionnaires on domestic violence at the end of the interview. Confidentiality was maintained by assigning all participants an identification number which was placed on all data rather than the participant's name, and the participant list was kept apart from the data. At the end of the interview, participants were paid $50.00. All participants received a list of community resources available for women and children.

RESULTS

This study tested three hypotheses about the effects of domestic violence on attachment styles and the relationship between romantic and maternal attachment. Table 2 includes the characteristics of the variables measured by the Severity of Violence Against Women Scales (SVAWS), the Dyadic Adjustment Scale (DAS), the Attachment Style Questionnaire (ASQ), and the Maternal-Fetal Attachment Scale (MFAS). Table 3 shows the correlation for the data reduction done on the ASQ. The results for each of the hypotheses are then presented.

Table 2

Summary Statistics for Variables

Variable	Alpha	Mean	SD	Possible range	Range in this study
SVAWS: Current partner	.94	6.41	11.97	0-99	0-47
SVAWS: Previous partner	.98	19.24	28.56	0-99	0-80
DAS	.95	99.05	26.06	0-151	20-140
ASQ	.80	4.84	10.37	-54 to 48	-32 to 25
MFAS	.74	97.66	8.26	28-116	79-115

Data Reduction

Because a single romantic attachment style score for each woman was calculated from a combination of her scores on the five subscales of the Attachment Style Questionnaire (ASQ), an analysis was done to assess whether the calculated attachment style score correlated in the expected ways with the original ASQ subscale scores. As can be seen in Table 3, correlations between the calculated score and the five subscales were significant and in the expected direction in each case, suggesting that the calculated score was a valid indicator of the individual's attachment style profile as measured by the ASQ.

Table 3

Correlations Between Calculated Romantic Attachment Style Score and ASQ Subscale Scores: Both Groups (N=106)

	Relationships as Secondary	Need for Approval	Discomfort with Closeness	Preoccupation with Relationships	Confidence
Calculated romantic attachment style score	-.560***	-.599***	-.818***	-.641***	.911***

*** $p < .001$

Level of Engagement in Maternal-Fetal Attachment Behavior

The results of this study did not support the first hypothesis, that domestic violence would be associated with a lower level of engagement in maternal fetal attachment behaviors. A t-test was used to test for mean differences on the Maternal-Fetal Attachment Scale (MFAS) between the two groups of women. As can be seen in Table 4, there was no difference in mean MFAS score between the group of women who had experienced violence with a current partner during pregnancy and those who had experienced violence with a previous partner.

Table 4

Results of t-test Comparing Mean MFAS Scores for Women Who Experienced Domestic Violence (DV) With a Current Partner or With a Previous Partner

Group	Mean MFAS score	Std deviation
Group 1:		
Current partner DV (n=61)	97.7	8.3
Group 2:		
Previous partner DV (n=45)	97.6	8.3

t=.041

Romantic Attachment as a Mediator for the Effects of Domestic Violence on Maternal Fetal Attachment Behavior

The hypothesis that adult romantic attachment style would mediate the effects of domestic violence on maternal-fetal attachment behavior was partially supported by a path-analytic model. See Tables 2 and 5 for variable characteristics and bivariate correlations. All SEM analyses were conducted using Lisrel 8.3 (Jöreskog & Sörbom, 1999). Analyses were based on observed variables. A variety of Goodness of Fit indices can be examined in determining model fit; for the purposes of this study, the chi-square statistic (X^2) and the Goodness of Fit Index (GFI) were used, as recommended by Hoyle and Panter (1995). The chi-square is a direct derivation of the fitting function which indicates how much the model deviates from a perfect fit. The GFI is analogous to R^2 used in multiple regression analyses, indicating the amount of variance accounted for by the model. Overall, a small chi-square is desired, because it indicates non-significant data-model discrepancies, and the GFI should be greater than .90.

Path models were tested separately for each group. The parameters associated with the model for each group are shown in Figure 3, with $\underline{R}^2$ values shown in each endogenous variable. The model fit for Group 1 (Current DV) was $X^2(1, \underline{N}=61) = .37$, $\underline{p} > .05$, GFI = 1.00. The path coefficient for the effects of domestic violence on adult romantic attachment style was significant ($\beta = -.25$, p = 0.05, one-tailed), and the path coefficient between adult romantic attachment style and maternal-fetal attachment behavior was also significant ($\beta = .44$, p =.001, one-tailed). The overall fit of the model was good, supporting the hypothesis that adult romantic attachment serves as a mediator for the effects of domestic violence on maternal-fetal attachment behavior. When the indirect effect of domestic violence on maternal-fetal attachment behavior was tested, the path coefficient was insignificant ($\beta = -.07$), and the model was saturated so that it did not yield statistics on the fit of the data.

The model fit for Group 2 (Previous DV) was $X^2(1, \underline{N}=45) = .79$, $\underline{p} > .05$, GFI .99). The path coefficients were non-significant (see Figure 3) but the overall fit of the model was good, suggesting that for this group adult romantic attachment does not serve as a mediator between domestic violence and maternal-fetal attachment behavior. The indirect correlation for severity of DV on maternal-fetal attachment behavior was .032. As with Group 1, when the indirect effect of domestic violence on maternal-fetal attachment behavior was tested, the path coefficient was insignificant ($\beta = .13$), and the model was saturated so that it did not yield statistics on the fit of the data.

Table 5

Bivariate Correlations for Severity of Domestic Violence (DV), Relationship Satisfaction, Adult Romantic Attachment Style, and Maternal-Fetal Attachment Style

Variable	Severity of violence	Romantic attachment style	Maternal-fetal attachment style
	Group 1: Current partner DV (n=61)		
Severity of violence			
Romantic attachment style	-.23		
Maternal- fetal attachment style	-.16	.42***	
	Group 2: Previous partner DV (n=45)		
Severity of violence			
Romantic attachment style	-.20		
Maternal-fetal attachment style	.08	.20	

*** $p < .001$

Relationship Satisfaction as a Moderator for the Effects of Domestic Violence on Adult Romantic Attachment Style

The third hypothesis was that high relationship satisfaction would modify the effects of domestic violence on adult romantic attachment only for women who had not experienced domestic violence with their current partner. This was tested with hierarchical multiple regressions, which were performed separately for each group. Relationship satisfaction, severity of battering, and the interaction of these terms were entered as predictors and adult attachment style as the outcome. The results offer partial support for the hypothesis. For Group 1, as predicted, the beta weight for the interaction term was not significant (see Table 6). It was predicted that there would be a significant moderating effect of relationship satisfaction on the effects domestic violence on the level of engagement in maternal-fetal attachment behavior for Group 2, however, this was not supported by the analyses (see Table 7). Furthermore, although relationship satisfaction was highly correlated with adult attachment style in both groups, the moderator hypothesis was not supported because the interaction between relationship satisfaction and severity of domestic violence accounted for little of the variance in adult attachment style (see Tables 6 and 7). The analysis was also run using standardized scores for all variables, with no difference in the results.

Table 6

Moderating Effects of Relationship Satisfaction on Adult Romantic Attachment Style in Group 1: Current Partner DV

	β	ΔR^2	p
Step 1		.35	.000
Severity of DV: Current partner	-.097		.39
Relationship Satisfaction	.557***		.000
Step 2		.003	.61
Severity of Current DV x Relationship Satisfaction	.171		.61

***p <.001.

Table 7

Moderating Effects of Relationship Satisfaction on Adult Romantic Attachment Style in Group 2: Previous Partner DV

	β	ΔR^2	p
Step 1		.34	.000
Severity of DV: Previous partner	-.132		.31
Relationship Satisfaction	.550***		.000
Step 2		.003	.34
Severity of Previous DV x Relationship Satisfaction	1.48		.34

***p <.001.

DISCUSSION

The results of this study provide limited support for the theory that internal working models in adults are consistent within the individual across relationships, so that a woman's romantic attachment style may be associated with the development of her attachment relationship with her child, even before the child is born. A mediated link between domestic violence and the mother's attachment to her unborn child was demonstrated, providing preliminary support for the hypothesis that the negative effects of domestic violence on the mother-child relationship may begin before birth.

Contrary to the first hypothesis, this study found no difference in the level of engagement in maternal-fetal attachment behaviors between the group of women who had experienced domestic violence with a current partner during pregnancy and the women who had experienced domestic violence with a previous partner. There are several possible explanations for this finding. It may be that even in the context of domestic violence experienced during pregnancy a woman may nonetheless preserve hope and warm feelings for her unborn child and maintain a positive image of her child's future. However, other studies of parenting with older children have found that domestic violence negatively affects maternal expression of warmth (Levendosky & Graham-Bermann, 2000), and is associated with an increase in maternal depression and parenting stress (Levendosky & Graham-Bermann, 1998; Wolfe et al., 1985).

Another possible explanation for the difference between these findings and those of other studies is that in this study maternal-fetal attachment was calculated as a linear variable reflecting the level of engagement in certain behaviors as opposed to the categorical variable yielded by the Strange Situation procedure. The endorsement of a high level of engagement in attachment behaviors by this sample is contrary to the findings of one of the few studies that has been done on domestic violence and infant attachment style in a high-risk sample. Zeanah, et al. (1999) found a high rate of disorganized infant attachment (56.9%) in a sample that included low-income women, over 60% of whom had experienced domestic violence with a current or a previous partner . If level of engagement in maternal-fetal attachment behavior is related to infant attachment style, it would be expected that a high-risk sample, such as the one used for this study, would contain a number of women who would have low scores on the MFAS, corresponding with insecure infant attachment.

A restricted range on the level of violence experienced during pregnancy may have contributed to the similarity of the two groups' MFAS scores. The mean score on the SVAWS for the group that had experienced violence during pregnancy was relatively low (see Table 2), so that perhaps the level of violence that Group 1 experienced during pregnancy was mild enough not to significantly impact that group's level of engagement in attachment behaviors. The mean score of severity of violence for Group 2 was approximately three times the mean severity of violence experienced by Group 1 (see Table 2). Perhaps experiencing severe violence in the past and experiencing mild violence during pregnancy has a similar impact on MFAS score. There may be an interaction between the severity of the violence and the immediacy or duration of the violent relationship. In other words, the lingering effects of severe violence with an ex-partner may be similar to the effects of milder but more recent violence with a current partner. Future studies could assess this by using a comparison group of women who had never experienced domestic violence. By comparing the MFAS scores of women who had experienced current and past partner violence with the scores of women who had never experienced violence, it would be possible to assess whether the experience of domestic violence at any time made a difference in the MFAS score.

Finally, the lack of difference between the two groups scores may be a reflection of their common experiences. Both groups of women shared a history of domestic violence. Perhaps the significant factor was that they had experienced domestic violence at some point, rather the degree of severity or whether it was with a current or previous partner. However, it is difficult to assess this from these results, given the restricted range in both the SVAWS and the MFAS.

The second hypothesis, that adult romantic attachment style would mediate the relationship between domestic violence and maternal-fetal attachment behavior, was partially supported by the results of this study. A path-analysis model of Group 1 found that adult romantic attachment mediated the relationship between domestic violence and maternal-fetal attachment behaviors. For women in Group 2, who had only experienced violence with a previous partner, the path analysis did not show romantic attachment as a mediator. This may be because violence with an ex-partner may have less impact than current violence on a woman's psychological functioning, and by extension, on her parenting. A recent study on domestic violence and parenting found that the effects of violence did not directly impact the women's parenting but affected it indirectly, mediated through the woman's psychological functioning (Levendosky & Graham-Bermann, in press). It may be the case in this study that adult romantic attachment is a component of psychological functioning, and therefore mediates the effects of current domestic violence on maternal-fetal attachment. It may not mediate the relationship between past experiences of domestic violence because the current non-violent relationship has more effect on the woman's adult romantic attachment style than past experiences of violence. This would be consistent with the findings of a study on marital relationships and parenting that indicated that the parents' relationship at the time of the birth of their child was more predictive of their parenting style than their relationship style prior to the birth (Lindahl et al., 1997).

The idea that a woman's romantic attachment style may reflect the influence of a current positive relationship over the influence of past experiences of violence suggests a resilience in adult attachment style. In the context of a new, non-violent relationship the woman may rework her internal working models. This is consistent with a recent longitudinal study on adult romantic attachment, which found that attachment style was related to relationship status and changed from insecure to secure after the beginning of a new relationship (Davila et al., 1997).

The third and final hypothesis of this study was that relationship satisfaction with a current partner would moderate the effects of ex-partner violence on adult romantic attachment style if the woman was not experiencing violence with that current partner. However, the results indicated that relationship satisfaction did not moderate the effects of domestic violence on adult romantic attachment style for either group. As can be seen in Tables 6 and 7, in both groups relationship satisfaction accounted for much of the variance in romantic attachment style. Domestic violence, whether with a current or a previous partner, accounted for very little of the variance, making it difficult to test whether relationship satisfaction might be acting as a moderator.

Other studies of adult romantic attachment have found that adult attachment is closely related to relationship satisfaction. A study by Feeney and Noller (1990) found that adult romantic attachment style correlated highly with subjects' ratings of attitudes towards love and romantic partners, while Collins & Read (1990) found that attachment style was strongly related to each partner's perceptions of the quality of their relationship. The finding in this and other studies that relationship satisfaction and adult romantic attachment style are highly correlated poses the question that they might be measuring the same construct. Is adult romantic attachment just another measure of current relationship functioning rather than an assessment of enduring beliefs about self and relationships? If the DAS and the ASQ were both assessing positive or negative attitudes toward romantic relationships, it would be difficult for one to moderate the other.

Despite their close association, there is evidence that relationship satisfaction and adult attachment style are not necessarily measuring the same construct. For example, Feeney & Noller (1990) found that although adult romantic attachment was closely associated with relationship quality, it was more highly correlated with generalized views of the self and relationships than were the subjects' ratings of attitudes toward romantic love. Kirkpatrick & Davis (1994) found that attachment style predicted relationship stability even between partners who gave low ratings of satisfaction with the quality of their relationship, supporting the idea that attachment style is something different than a measure of relationship satisfaction. In this study, when an analysis was done using the whole sample, the DAS and the ASQ correlated in a similar way with many variables such as anxiety, depression, and self-esteem, as would be expected if they were measuring the same construct. However, they differed in their correlation with another attachment measure: a significant relationship was found between romantic attachment and maternal-fetal attachment but not between relationship satisfaction and maternal-fetal attachment.

Measuring attachment style with a self-report instrument may be problematic, as attachment style is an unconscious process (Bowlby, 1973), a difficult thing to ask someone to report on themselves. This is a concern with much of the research on adult romantic attachment styles, which has primarily relied upon self-report measures (Bowlby, 1973; Collins & Read, 1990; Davila et al., 1997; Feeney et al., 1994; Hazan & Shaver, 1987). Because studies of adult romantic attachment style have primarily used self-report questionnaires, it is difficult to compare romantic attachment to the extensive literature on infant attachment and internal working models, which utilize behavior observation and extensive clinical interviews respectively, and are coded according to a complex system which takes into account internal processes and representations (Ainsworth, 1978; Main & Goldwyn, 1984; Schuengel et al., 1999; van IJzendoorn, 1995). Another difficulty faced by this study in comparing these two types of attachment is that the comparison is between attitudes toward relationships (romantic attachment) and specific behaviors (maternal-fetal attachment).

The findings in this study contribute to the growing evidence that domestic violence may affect the mother-child relationship through its impact on the mother, even before the birth of the child. The results support the hypothesis that for women who are currently experiencing domestic violence, adult romantic attachment mediates the impact of the violence on the developing maternal-fetal relationship. These findings provide another way of understanding the implications of domestic violence on children. In addition to what is already known about the direct effects that domestic violence may have on the health of the mother and her fetus, it may indirectly affect the child through the mother's parenting. It will be important for future researchers to consider the indirect effects of domestic violence that are mediated by the mother's romantic attachment to her partner and transmitted through her attachment to the child.

The results of this study provide support for the theoretical link between adult romantic attachment and maternal attachment to the fetus, however, the limited range yielded by some measures is indicative of some of the problems inherent in assessing attachment with self-report measures. Social desirability may affect the results, and unconscious processes may be missed. More research is needed to clarify the ways in which adult romantic attachment style differs from relationship satisfaction. Furthermore, it is difficult to test the theory that an individual's attachment style endures throughout their development if attachment is measured differently at each life stage. The self-report measures that dominate the field of adult attachment may not be the best way to address these issues.

One of the strengths of this study was that it utilized a community sample of women from a broad range of socioeconomic and ethnic backgrounds, making the results more generalizable than those of studies whose samples are limited to women in shelters. The women in this study experienced primarily mild to moderate violence. While this makes it more difficult to assess the impact of domestic violence, what is lost in statistical power is made up for by the possibility that the results are more relevant to the experiences of women in the community, as mild to moderate violence has been found to be more common than severe domestic violence (Straus & Gelles, 1990; Tjaden &

Thoennes, 2000). The nature of the community sample makes the results more clinically relevant as well. Future research in attachment and domestic violence should continue to include a broad based community sample to best understand the effects of domestic violence on the lives of women and children.

The clinical implications of these findings apply to interventions with domestic violence and with attachment problems. First, it is clear that in order to protect children from the damaging effects of domestic violence, it is necessary to protect women from these effects even before the child is born. Interventions aimed at preserving the mother-child relationship should consider the mother's adult attachment style and environmental factors that may protect or harm it. The results of this study suggest that violent romantic relationships are a factor in both adult romantic and maternal-fetal attachment. However, the results from the control group of women who experienced violence with a previous partner indicate that the impact of domestic violence on attachment style may be diminished when the woman leaves that relationship and enters a non-violent romantic relationship. This suggests some resilience in adult attachment style and offers a hopeful note for interventions aimed at helping women recover from domestic violence.

As with the harmful effects of domestic violence, the results of this study suggest that the effects of attachment problems on the mother-child relationship may begin before the child is born or even conceived, as the maternal attachment is influenced by adult romantic attachment style. Future research into attachment problems should consider further assessment of the connection between adult romantic attachment and maternal-fetal attachment. If adult romantic attachment is responsive to changes in the environment, specifically changes in relationship status, this would be an important area in which to intervene to prevent future mother-child attachment difficulties.

APPENDICES

Appendix A

MOTHER-INFANT STUDY
CONSENT FORM

This study is part of a survey of women in Michigan, some of whom may be experiencing domestic violence. We hope to learn about the strengths that you bring to your situation, your feelings and perceptions of your baby during pregnancy, and your relationships with others, including family members, partners, and friends. We hope to use this information to help plan better programs for families experiencing domestic violence.

If you decide to take part in the survey, you will be asked questions about how you have been feeling recently, events that have happened to you, your feelings about pregnancy and your baby, the people in your life who provide support to you, and your memories of your childhood. This will take a total of 2-3 hours.

All information will be kept strictly confidential. Your name will be removed from all questionnaires and an identification number will be put on them instead. All questionnaires will be kept in locked file cabinets in a locked office. Your identity will not be revealed in any reports written about this study. We will summarize information from all study participants and will not report information about individuals. The only exception is in the case of ongoing child abuse. If you indicate that child abuse is occurring in your household, we are required to make a report to Protective Services.

You have the right to withdraw from this study at any point during the interview with no penalty or negative consequences. Your decision about whether to participate or not will not affect your relationship with any agencies or Michigan State University. If you have any questions, please ask us. If you have questions later, you can contact Dr. Anne Bogat or Dr. Alytia Levendosky at (517) 432-1447.

We are also interested in recontacting you about 2 months after the birth of your baby by telephone and then we would like to meet with you and your baby at 12 months after the birth of your baby. So at the end of the interview today, we will ask you for information that will help us keep in contact with you. Your participation at <u>this</u> time does not obligate you to participate in the second telephone appointment, or the third interview. You will be paid $50 for the first interview, mailed a baby gift after the telephone interview, and $75 and a baby gift for the third interview, if you wish to participate.

****

I have read and understood the above statements. I understand that my participation in this study is completely voluntary and that I can withdraw from this study at any time without penalty or negative consequences.

Signature of Participant	Date
Witness	Date

Anne Bogat, Ph.D.
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Appendix B

Fliers

HAVE YOU BEEN HURT BY SOMEONE YOU LOVE?

ARE YOU PREGNANT AND HAVE YOU BEEN PUSHED OR GRABBED OR HIT OR SLAPPED OR KICKED (OR WORSE) BY A PARTNER OR BOYFRIEND DURING YOUR PREGNANCY?

We need women to take part in an interview about their lives and their pregnancies.

- Interview can be done at MSU or at your home.
- You will be paid **$50.00** in cash.
- All information is kept completely confidential.

!! $50.00 !!

****

If you are interested or would like more information, please call **432-1447** and ask for **Mother-Infant Study**

MOTHER-INFANT STUDY **432-1447**	**MOTHER-INFANT STUDY** **432-1447**	**MOTHER-INFANT STUDY** **432-1447**	**MOTHER-INFANT STUDY** **432-1447**	**MOTHER-INFANT STUDY** **432-1447**

ARE YOU PREGNANT?

YOU MAY BE ELIGIBLE TO PARTICIPATE IN A STUDY ABOUT MOTHER-INFANT RELATIONSHIPS

!! $50.00 !!

We are looking for pregnant women **due before April 1, 2000** to participate in a research study at Michigan State University. You will be asked about experiences and feelings during pregnancy, perceptions of your infants, and recent life events.

- Interview can be done at MSU or at your home.
- You will be paid **$50.00** in cash.
- All information is kept completely confidential.

!! $50.00 !!

****

If you are interested or would like more information, please call **432-1447** and ask for **Dr. Anne Bogat's Mother-Infant Study**

Appendix C

Pregnancy Interview
Demographic Questionnaire

1. Your date of birth: __ /__ /__
(mo) (dy) (yr)

2. Your baby's due date: __ /__ /__
(mo) (dy) (yr)

3. Have you been pregnant before? (Circle one)
1 = YES 2 = NO (If NO, go to Question 7)

If YES, to Question 3:

4. How many times? ______

5. Have you had any miscarriages, still births, or abortions? (Circle one)
1 = YES
2 = NO

6. How many biological children do you currently have?

7. How many people, including yourself, live in your household?
(If participant is living in a shelter, questions 7 & 8 refer to household composition before moving into shelter.)

8. Please list these: (Write in specific relationship to mother. Be specific--is the person (for ex.) a husband, stepfather, biological child, foster child, or partner's child?)

________________ ________________ ________________ ________________

________________ ________________ ________________ ________________

________________ ________________ ________________ ________________

9. Choose the one that best describes your current marital/relationship status (choose only one):

(a) single, never married (see below)

(b) married For how long? _____ (in months)

(c) separated For how long? _____ (in months)

(d) divorced For how long? _____ (in months)

(e) widowed For how long? _____ (in months)

If (a) is circled: Are you currently in a relationship? YES NO
If YES, go to Question 10.

If NO, were you in a relationship that lasted at least 6 weeks during your current pregnancy? YES NO

10. First name of your current partner **or** the partner you were with for at least 6 weeks during your pregnancy:____________________

11. Are you currently living with your partner/spouse? (Circle one)
1 = YES
2 = NO

12. If yes to Question 11, how long have you been doing so? (Circle one)
1 = less than 1 year
2 = 1-3 years
3 = 4-6 years
4 = 7-9 years
5 = 10-12 years
6 = 13-15 years
7 = 16 - 18 years
8 = 19 - 21 years
9 = 22 - 24 years
10 = 25 or more years

13. Prior to your current romantic relationship, specified in Question #10

(a) were you ever married?	1 = YES	2 = NO
(b) did you ever live with a partner?	1 = YES	2 = NO
(c) were you ever separated?	1 = YES	2 = NO
(d) were you ever divorced?	1 = YES	2 = NO
(e) were you ever widowed?	1 = YES	2 = NO

14. What is your current relationship with the father of your baby? (Circle one)
1 = spouse
2 = ex-spouse
3 = partner
4 = ex-partner
5 = friend
6 = acquaintance
7 = stranger
8 = other Please specify: ________________________

15. What is your racial or ethnic group? (Circle one)
1 = Native American
2 = Asian American/Pacific Islander
3 = Black, African American
4 = Latino, Hispanic, Chicano
5 = Biracial (mixed): Specify____________________________
6 = Caucasian, White
7 = Other: ______________________________

16. What is the baby's father's racial or ethnic group? (Circle one)
1 = Native American
2 = Asian American/Pacific Islander
3 = Black, African American
4 = Latino, Hispanic, Chicano
5 = Biracial (mixed): Specify____________________________
6 = Caucasian, White
7 = Other: ______________________________

17. What is the highest level of education you have completed? (Circle one)
1 = grades 1, 2, 3, 4, 5, or 6 **(circle specific grade)**
2 = grades 7, 8, 9, 10, 11, 12, GED **(circle specific grade)**
3 = some college Where? ____________________
4 = AA degree Where? ____________________
5 = BA/BS Where? ____________________
6 = some grad school Where? ____________________
7 = graduate degree Where? ____________________
_____ MA?
_____ Ph.D.?
_____ Law?
_____ MD?
8 = other; Specify (e.g., Beauty School, nursing school)
____

18. Do you currently work outside the home? YES NO

If NO, did you work outside the home during the last year? YES NO

19. If YES to either part of Question 18, what is/was your occupation?____________________
- *Please be specific. For example, bookkeeper, cashier, computer programmer.*
- *If there were two jobs/occupations, have participant choose the one that she feels best represents her occupation.*

20. What is the highest level of education your partner/spouse has completed? (Circle one)
1 = grades 1, 2, 3, 4, 5, or 6 **(circle specific grade)**
2 = grades 7, 8, 9, 10, 11, 12, GED **(circle specific grade)**
3 = some college Where? ____________________
4 = AA degree Where? ____________________
5 = BA/BS Where? ____________________
6 = some grad school Where? ____________________
7 = graduate degree Where? ____________________
_____ MA?
_____ Ph.D.?
_____ Law?
_____ MD?
8 = other; Specify (e.g., Beauty School, nursing school)
____

21. Does s/he work outside the home? (Circle one)
1 = YES
2 = NO

22. If yes to Question 20, what is his/her occupation? ______________________________
(Please be specific)

23. What is your total family income per month (estimate)? ____________

24. Do you currently receive any public assistance? (Circle one)
1 = YES
2 = NO

25. Are you currently residing in a shelter for battered women? YES NO # days?______

26. Have you ever stayed in a <u>shelter for battered women</u> before . . .

(a)Because of your experience of abuse? YES NO # days? _______

(b)Because of your mother's/guardian's experience of abuse? YES NO # days? _______

27. Have you ever stayed in a <u>homeless shelter</u> before . . .

(a)Because of your experiences? YES NO # days? _______

(b)Because of your parents'/guardians' experiences? YES NO # days? _______

Appendix D

Maternal-Fetal Attachment Scale

Please respond to the following items about yourself and the baby you are expecting. There are no right or wrong answers. Your first impression is usually the best reflection of your feelings. Make sure you mark only one answer per sentence.

I think or do the following:	**Definitely Yes**	**Yes**	**Uncertain**	**No**	**Definitely No**
	1	2	3	4	5

_______ 1. I talk to my unborn baby.

_______ 2. I feel all the trouble of being pregnant is worth it.

_______ 3. I enjoy watching my tummy jiggle as the baby kicks inside.

_______ 4. I picture myself feeding the baby.

_______ 5. I'm really looking forward to seeing what the baby looks like.

_______ 6. I wonder if the baby feels cramped in there.

_______ 7. I refer to my baby by a nickname.

_______ 8. I imagine myself taking care of the baby.

_______ 9. I can almost guess what my baby's personality will be from the way she/he moves around.

_______ 10. I have decided on a name for a girl baby.

_______ 11. I do things to try to stay healthy that I would not do if I were not pregnant.

_______ 12. I wonder if the baby can hear inside of me.

_______ 13. I have decided on a name for a boy baby.

_______ 14. I wonder if the baby thinks and feels "things" inside of me.

_______ 15. I eat meat and vegetables to be sure my baby gets a good diet.

_______ 16. It seems my baby kicks and moves to tell me it's eating time.

_______ 17. I poke my baby to get him/her to poke back.

_______ 18. I can hardly wait to hold the baby.

_______ 19. I try to picture what the baby will look like.

_______ 20. I stroke my tummy to quiet the baby when there is too much kicking.

_______ 21. I can tell that the baby has hiccoughs (hiccups).

_______ 22. I feel my body is ugly.

_______ 23. I give up doing certain things because I want to help my baby.

_______ 24. I grasp my baby's foot through my tummy to move it around.

Appendix E

Attachment Style Questionnaire

Show how much you agree with each of the following items by rating them on this scale:

Totally Disagree	Strongly Disagree	Slightly Disagree	Slightly Agree	Strongly Agree	Totally Agree
1	**2**	**3**	**4**	**5**	**6**

_______1. Overall, I am a worthwhile person.

_______2. I am easier to get to know than most people.

_______3. I feel confident that other people will be there when I need them.

_______4. I prefer to depend on myself rather than other people.

_______5. I prefer to keep to myself.

_______6. To ask for help is to admit that you're a failure.

_______7. People's worth should be judged by what they achieve.

_______8. Achieving things is more important than building relationships.

_______9. Doing your best is more important than getting on with others.

_______10. If you've got a job to do, you should do it no matter who gets hurt.

_______11. It's important to me that others like me.

_______12. It's important to me to avoid doing things that others won't like.

_______13. I find it hard to make a decision unless I know what other people think.

_______14. My relationships with others are generally superficial.

_______15. Sometimes I think I am no good at all.

_______16. I find it hard to trust other people.

_______17. I find it difficult to depend on others.

_______18. I find that others are reluctant to get as close as I would like.

Totally Disagree	Strongly Disagree	Slightly Disagree	Slightly Agree	Strongly Agree	Totally Agree
1	**2**	**3**	**4**	**5**	**6**

_______19. I find it relatively easy to get close to other people.

_______20. I find it easy to trust others.

_______21. I feel comfortable depending on other people.

_______22. I worry that others won't care about me as much as I care about them.

_______23. I worry about people getting too close.

_______24. I worry that I won't measure up to other people.

_______25. I have mixed feelings about being close to others.

_______26. While I want to get close to others, I feel uneasy about it.

_______27. I wonder why people would want to be involved with me.

_______28. It's very important to me to have a close relationship.

_______29. I worry a lot about my relationships.

_______30. I wonder how I would cope without someone to love me.

_______31. I feel confident about relating to others.

_______32. I often feel left out or alone.

_______33. I often worry that I do not really fit in with other people.

_______34. Other people have their own problems, so I don't bother them with mine.

_______35. When I talk over my problems with others, I generally feel ashamed or foolish.

_______36. I am too busy with other activities to put much time into relationships.

_______37. If something is bothering me, others are generally aware and concerned.

_______38. I am confident that other people will like and respect me.

_______39. I get frustrated when others are not available when I need them.

_______40. Other people often disappoint me.

Appendix F

Dyadic Adjustment Scale

*****This questionnaire refers to __________ [NAME, see Page 2, Question 10].*****
Most people have disagreements in their relationships. Please indicate below the approximate extent of agreement or disagreement between you and **NAME** for each item on the list by placing an "X" in the appropriate box.

Please give the dates of this relationship: ______/______ to ______/______
(mo) (yr) (mo) (yr)
If on-going relationship, leave 2nd mo/yr blank.

		Always Agree	Almost Always Agree	Occasionally Disagree	Frequently Disagree	Almost Always Disagree	Always Disagree
1.	Handling family finances	5	4	3	2	1	0
2.	Matters of recreation	5	4	3	2	1	0
3.	Religious matters	5	4	3	2	1	0
4.	Demonstration of affection	5	4	3	2	1	0
5.	Friends	5	4	3	2	1	0
6.	Sex relations	5	4	3	2	1	0
7.	Conventionality (correct or proper behavior)	5	4	3	2	1	0
8.	Philosophy of life	5	4	3	2	1	0
9.	Ways of dealing with parents or in-laws	5	4	3	2	1	0
10.	Aims, goals, and things believed important	5	4	3	2	1	0

		Always Agree	Almost Always Agree	Occasionally Disagree	Frequently Disagree	Almost Always Disagree	Always Disagree
11.	Amount of time spent together	5	4	3	2	1	0
12.	Making major decisions	5	4	3	2	1	0
13.	Household tasks	5	4	3	2	1	0
14.	Leisure time interests and activities	5	4	3	2	1	0
15.	Career decisions	5	4	3	2	1	0

How often do you and your partner engage in the following activities:

		All the Time	Most of the Time	More often than not	Occasionally	Rarely	Never
16.	How often do you discuss or have you considered divorce, separation, or terminating your relationship?	0	1	2	3	4	5
17.	How often do you or your mate leave the house after a fight?	0	1	2	3	4	5
18.	In general, how often do you think that things between you and your partner are going well?	5	4	3	2	1	0
19.	Do you confide in your mate?	5	4	3	2	1	0
20.	Do you ever regret that you got married? (Or lived together?)	0	1	2	3	4	5

21.	How often do you and your partner quarrel?	0	1	2	3	4	5
22.	How often do you and your mate "get on each other's nerves?"	0	1	2	3	4	5

		Every Day	Almost Every Day	Occasional ly	Rarely	Never
23.	Do you kiss your mate?	4	3	2	1	0

		All of them	Most of them	Some of them	Very few of them	None of them
24.	Do you and your mate engage in outside interests together?	4	3	2	1	0

These are some things about which couples sometimes agree, and sometimes disagree. Indicate if either item below caused a difference of opinions or were problems in your relationship during the past few weeks. (Check yes or no)

		Yes	No
25.	Being too tired for sex	0	1
26.	Not showing love	0	1

How often would you say the following events occur between you and your mate?

		Never	Less than once a month	Once or twice a month	Once or twice a week	Once a day	More often
27.	Have a stimulating exchange of ideas	0	1	2	3	4	5

28.	Laugh together	0	1	2	3	4	5
29.	Calmly discuss something	0	1	2	3	4	5
30.	Work together on a project	0	1	2	3	4	5

31. Which of the following statements best describes how you feel about the future of your relationship? (Check only one)

5	I want desperately for my relationship to succeed, and would go to almost any length to see that it does.
4	I want very much for my relationship to succeed, and will do all that I can to see that it does.
3	I want very much for my relationship to succeed, and will do my fair share to see that it does.
2	It would be nice if my relationship succeeded, but I can't do much more than I am doing now to help it succeed.
1	It would be nice if it succeeded, but I refuse to do any more than I am doing now to keep the relationship going.
0	My relationship can never succeed, and there is no more that I can do to keep the relationship going.

32. The boxes below represent different degrees of happiness in your relationship. The middle point, 'happy," represents the degree of happiness of most relationships. PLEASE CHECK THE BOX WHICH BEST DESCRIBES THE DEGREE OF HAPPINESS, ALL THINGS CONSIDERED, OF YOUR RELATIONSHIP.

Extremely <u>Un</u>happy	Fairly <u>Un</u>happy	A little <u>Un</u>happy	Happy	Very Happy	Extremely Happy	Perfect
0	1	2	3	4	5	6

Appendix G

VAW Scales--Pregnancy Interview, Pt. I

*******This questionnaire refers to __________ [NAME, see Page 2, Question 10].*******

You and ______ have probably experienced anger or conflict. Below is a list of behaviors he may have done. Describe how often he has done each behavior at 2 different times (during your current pregnancy and the year before you became pregnant) by choosing a letter from the following scale. *[Interviewer: If participant was not involved in a relationship with _____ during the year before she became pregnant, code E]*

A	BB	C	D	E
never	once	a few times	many times	not applicable

During your current pregnancy:
The year before you became pregnant:

____ ____Hit or kicked a wall, door or furniture

____ ____Threw, smashed or broke an object

____ ____Driven dangerously with you in the car

____ ____Threw an object at you

____ ____Shook a finger at you

____ ____Made threatening gestures or faces at you

____ ____Shook a fist at you

____ ____Acted like a bully toward you

____ ____Destroyed something belonging to you

____ ____Threatened to harm or damage things you care about

____ ____Threatened to destroy property

____ ____Threatened someone you care about

____ ____Threatened to hurt you

____ ____Threatened to kill himself

____ ____Threatened you with a club-like object

____ ____Threatened you with a knife or gun

____ ____Threatened to kill you

____ ____Threatened you with a weapon

____ ____Acted like he wanted to kill you

____ ____Held you down, pinning you in place

____ ____Pushed or shoved you

____ ____Shook or roughly handled you

____ ____Scratched you

____ ____Pulled your hair

____ ____Twisted your arm

During your current pregnancy:
The year before you became pregnant:

____ ____Spanked you

____ ____Bit you

____ ____Slapped you with the palm of his/her hand

____ ____Slapped you with the back of his/her hand

____ ____Slapped you around your face and head

____ ____Kicked you

____ ____Hit you with an object

____ ____Stomped on you

____ ____Choked you

____ ____Punched you

____ ____Burned you with something

____ ____Used a club-like object on you

____ ____Beat you up

____ ____Used a knife or gun on you

____ ____Demanded sex whether you wanted to or not

____ ____Made you have oral sex against your will

____ ____Made you have sexual intercourse against your will

____ ____Physically forced you to have sex

____ ____Made you have anal sex against your will

____ ____Used an object on you in a sexual way

____ ____Grabbed you suddenly or forcefully

VAWS--Pregnancy Interview, Pt. II

How often did your most recent previous partner *(the person before [NAME])* engage in each of these activities with you?
[Interviewer: Relationship with previous partner must have lasted 6 weeks or longer in order to complete questionnaire.]
Please give the dates of this relationship: _____/_____ to _____/_____
(mo) (yr) (mo) (yr)

A	BB	C	D	E
never	**once**	**a few times**	**many times**	**not applicable/no previous partner**

How often did your previous partner:

_____Hit or kicked a wall, door or furniture

_____Threw, smashed or broke an object

_____Driven dangerously with you in the car

_____Threw an object at you

_____Shook a finger at you

_____Made threatening gestures or faces at you

_____Shook a fist at you

_____Acted like a bully toward you

_____Destroyed something belonging to you

_____Threatened to harm or damage things you care about

_____Threatened to destroy property

_____Threatened someone you care about

_____Threatened to hurt you

_____Threatened to kill himself

_____Threatened you with a club-like object

_____Threatened you with a knife or gun

_____Threatened to kill you

_____Threatened you with a weapon

_____Acted like he wanted to kill you

_____Held you down, pinning you in place

_____Pushed or shoved you

_____Shook or roughly handled you

_____Scratched you

_____Pulled your hair

_____Twisted your arm

How often did your previous partner:

_____Spanked you

_____Bit you

_____Slapped you with the palm of his/her hand

_____Slapped you with the back of his/her hand

_____Slapped you around your face and head

_____Kicked you

_____Hit you with an object

_____Stomped on you

_____Choked you

_____Punched you

_____Burned you with something

_____Used a club-like object on you

_____Beat you up

_____Used a knife or gun on you

_____Demanded sex whether you wanted to or not

_____Made you have oral sex against your will

_____Made you have sexual intercourse against your will

_____Physically forced you to have sex

_____Made you have anal sex against your will

_____Used an object on you in a sexual way

_____Grabbed you suddenly or forcefully

Were you ever pregnant during the time that any of these events occurred? (1) yes (2) no (5) n/a

Did your mother/guardian ever experience any of these events with one of her partners?
(1) yes (2) no (5) don't know

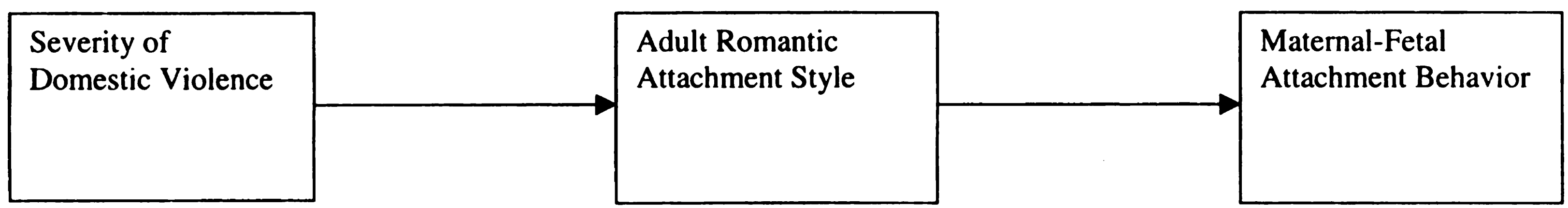

Figure 1. Adult romantic attachment as a mediator for the effects of domestic violence on maternal-fetal attachment behaviors.

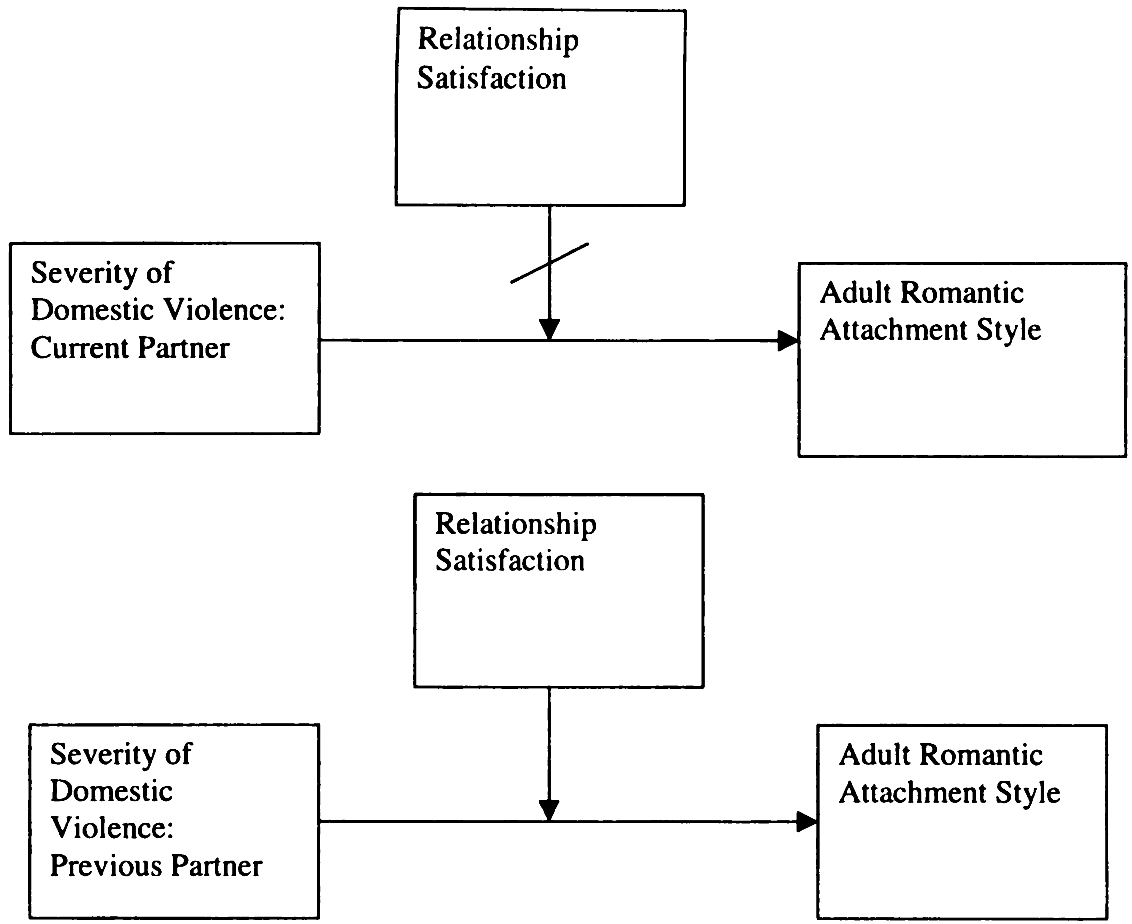

Figure 2. Relationship satisfaction as a moderator for the effects of domestic violence on adult romantic attachment style.

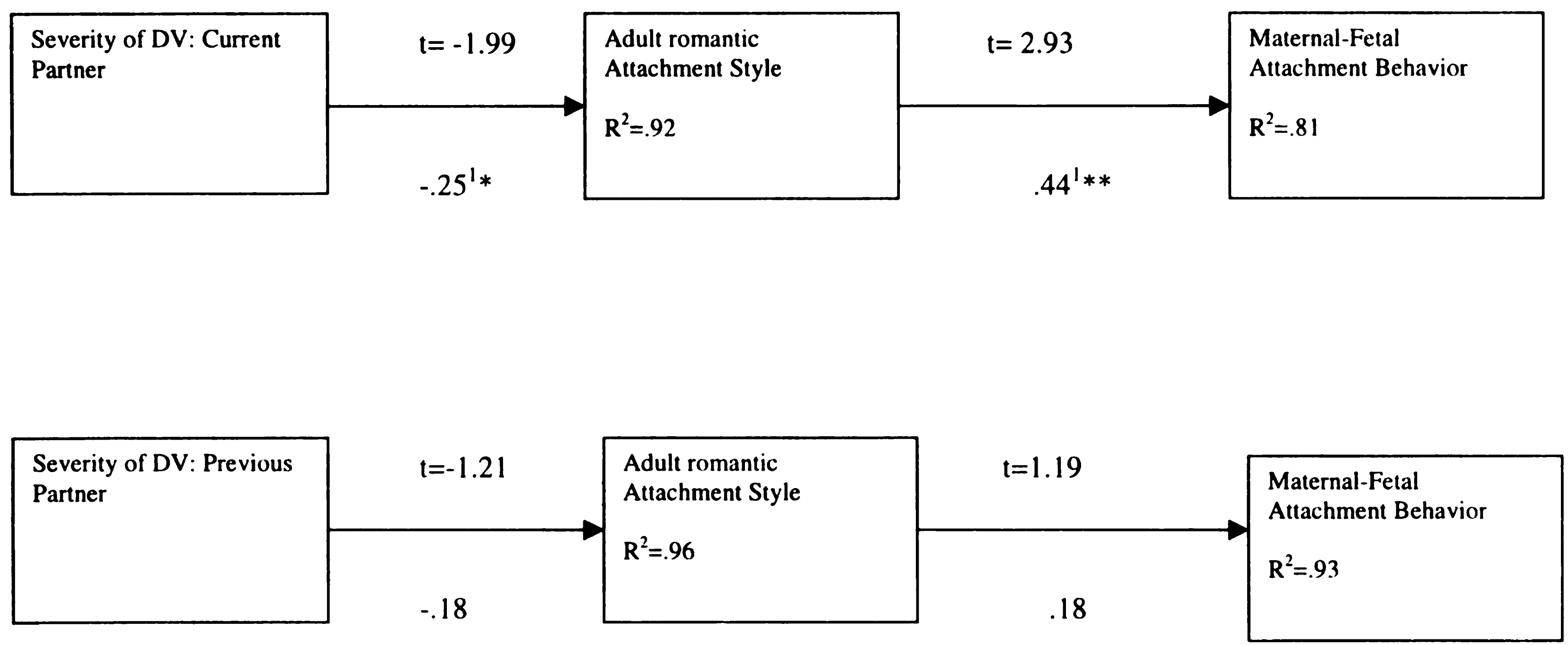

Figure 3. Path-analytic model for Groups 1 and 2: Severity of domestic violence, adult romantic attachment style, and maternal-fetal attachment behaviors.

*$p<.01$. **$p<.001$. [1]one-sided.

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