Family-of-Origin Maltreatment, Posttraumatic Stress Disorder Symptoms, Social Information Processing Deficits, and Relationship Abuse Perpetration

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In this study, the authors examined the interrelations among family-of-origin maltreatment variables, posttraumatic stress disorder (PTSD) symptoms, social information processing deficits, and male-to-female psychological and physical intimate relationship abuse perpetration in adulthood among a community sample of 164 men and their partners. In bivariate analyses, higher family-of-origin childhood parental rejection was associated with the perpetration of psychological and physical abuse in adulthood, and childhood exposure to interparental violence was also associated with adult psychological abuse perpetration. Structural equation modeling analyses indicated that when childhood variables and other study variables were considered together, only childhood parental rejection was associated with the abuse perpetration outcomes, and these effects were indirect through PTSD symptoms and social information processing deficits. Results indicate a need for further investigation into the mechanisms accounting for the impact of early maltreatment on the development of abusive intimate relationship behavior.

Keywords: child maltreatment, posttraumatic stress disorder, information processing, domestic abuse, relationship aggression

Partner violent men report higher rates of childhood abuse victimization and exposure to interparental violence than do non-violent men, and numerous studies have shown that such potential trauma exposure is associated with the perpetration of abusive relationship behavior in adulthood (see Delsol & Margolin, 2004, for a review). These findings are typically interpreted as supporting social learning models of intimate partner abuse whereby individuals model parental behavior and fail to learn constructive conflict resolution methods (O’Leary, 1988). However, relatively little work has tested models that may help explain the associations between early trauma exposure and abuse in adulthood. In the current study, we examined posttraumatic stress disorder (PTSD) symptoms and social information processing deficits as pathways for the development of partner abuse among those exposed to family-of-origin maltreatment.

Consistent with the broader literature (e.g., Widom, 1999), some preliminary evidence among partner abuse perpetrators suggests an association between family-of-origin maltreatment variables and PTSD symptomatology. Dutton (1995) found parental rejection and lack of warmth to be associated with trauma symptoms among a clinical sample of men in treatment for partner abuse. Associations were also found between trauma symptoms and self-reported physical abuse, as well as self- and partner-reported psychological abuse perpetration. In another clinical sample of abusive men, Rosenbaum and Leisring (2003) found higher levels

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This research was supported by National Institute of Mental Health Grant R01-MH5935 awarded to Amy Holtzworth-Munroe.

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PTSD SYMPTOMS AND RELATIONSHIP ABUSE

and to examine whether the subtypes continue to differ over time (Holtzworth-Munroe, Meehan, Herron, Rehmam, & Stuart, 2003). Primarily through newspaper ads and flyers, couples were recruited from a large, Midwest city. To be included in the larger study, both partners had to be willing to participate, literate, and married or living together as if married. Couples who qualified for the study were invited to the laboratory, where they independently completed study measures. Eleven couples were excluded from the present study because they did not complete the relevant measures, thus yielding a total sample size of 164.

During the initial screening, 102 couples reported on the Conflict Tactics Scale (CTS; Straus, 1979) that the man had engaged in at least one act of physical abuse during the past year. Among an additional 62 couples, the man had not been physically abusive in the 5 years prior to the initial assessment and had never perpetrated severe physical abuse.

On average, male participants were 35.62 years old (SD = 9.26 years). Most were Caucasian (75%), although 21% were African American, and 4% were of other ethnicities. Most men were employed full time (85%), although 10% were employed part time, and 5% were unemployed. Men reported an average monthly income of $2,150 (SD = $1,161). Their female partners averaged 32.64 years old (SD = 9.49 years). The majority of these women were Caucasian (79%), whereas 20% were African American, and 2% were Hispanic. Approximately half of the women were employed full time (54%), although 18% were employed part time and 28% were unemployed. Female participants reported an average monthly income of $906.24 (SD = $800.91). The mean relationship length was 9.47 years (SD = 8.04 years), and couples had an average of 1.10 (SD = 1.42) children together. Full details on participant recruitment, sample characteristics, and study procedures can be found in Holtzworth-Munroe et al. (2000).

Measures

Childhood exposure to interparental violence was examined with a 32-item measure based on the Revised CTS (CTS2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996). Each male participant indicated how often his father and mother each had perpetrated each of 16 behaviors (e.g., choked, slapped, kicked) toward the other parent prior to when the respondent was 18 years old, on a scale of 0 (never) to 6 (more than 20 times). Responses to each item were summed, and higher scores indicate a greater frequency of violent behaviors perpetrated by both the father and the mother. The internal consistency reliability estimate was .89 for this measure.

Childhood parental rejection was measured with the Rejection subscale of the Egna Minnen av Barnoms Uppfostran (EMBU; Perris, Jacobsen, Lindstrom, von Knorring, & Perris, 1980). This subscale consists of 25 items examining the respondent’s reports of their parents’ behavior while the participant was growing up. Male respondents indicated how often each of their parents used rejection-based rearing techniques (e.g., “my parent wished I had been like somebody else”) on a scale of 1 (never occurred) to 5 (always occurred). Responses were summed, with higher scores indicating greater rejection. Participants completed all 25 items with respect to their mother or mother figure and father or father figure, individually. Scores were computed individually for the participant’s mother and father, and these scores were summed to arrive at a total score reflecting overall parental rejection. The construct validity and reliability of the EMBU have been demonstrated (Arrindell, Emmelkamp, Brilman, & Monsma, 1983; Livansos-Aldana & Rojo-Moreno, 2003). In the current study, the internal consistency reliability estimate was .95.

Childhood physical abuse victimization was assessed with 26 CTS-based (Straus, 1979) items capturing parent-to-child physical abuse. Male participants indicated how often their father and mother each had directed each of 13 behaviors (e.g., slapped) toward them during childhood (prior to age 18). Responses were given on a scale of 0 (never) to 6 (more than 20 times), and each item was recoded to reflect the estimated frequency of the behavior (e.g., 3 to 5 times equals a score of 4; see Straus, 1990). These scores were then summed to arrive at a total score. The CTS has been shown to be a valid measure of physical maltreatment of children (Straus & Hamby, 1997). The internal consistency reliability estimate for this measure in the current study was .81.

Adulthood trauma exposure was assessed with 21 items drawn from a larger measure of specific traumatic events occurring in childhood and adulthood (e.g., physically abused by caretakers, serious motor vehicle accident, robbery, rape). For the index of adulthood trauma exposure used for the current study, items reflected endorsement of events that they experienced after, but not before, age 18, and positively endorsed items were summed to arrive at a total score. The internal consistency reliability estimate for these items was .63.

Depressive symptoms were measured with the Major Depression subscale of the Millon Clinical Multiaxial Inventory (MCMI-III; Choca & Van Denburg, 1997; Millon, 1983), which assesses various aspects of major depressive disorder (e.g., depressed mood, difficulty sleeping, hopelessness, psychomotor retardation). This subscale has good internal consistency and convergent validity (Choca & Van Denburg, 1997). The internal consistency reliability estimate for this subscale in the present study was .70.

PTSD symptoms were measured with the 17-item Modified PTSD Symptom Scale (MPSS; Falsetti, Resnick, Resnick, & Kilpatrick, 1993). Male participants reported how frequently they experienced each symptom during the prior 2 weeks, using a scale from 0 (not at all) to 3 (5 or more times per week), and how distressed they were as a result of the symptom on a scale, from 0 (not at all) to 4 (extremely). PTSD symptom items were keyed to participants’ most traumatic event reported on the trauma exposure measure. Subscales for the three PTSD symptom clusters— reexperiencing (Cluster B), avoidance and numbing (Cluster C), and hyperarousal (Cluster D)—were derived based on the Diagnostic and Statistical Manual of Mental Disorders (4th ed.; DSM-IV; American Psychiatric Association, 1994) diagnostic criteria, and subscale scores were computed by summing frequency and severity scores for each item. The MPSS possesses good internal consistency reliability and concurrent validity with diagnostic measures of PTSD (Falsetti, Resnick, Resnick, & Kilpatrick, 1992; Falsetti et al., 1993). The internal consistency reliability estimate for the MPSS was .91.

Social information processing deficits were assessed with two measures, one intended to partially measure decoding skills (specifically, interpretation of social stimuli) and one intended as a global measure of decision-making skills. The Negative Intentional Questionnaire (NIQ; Holtzworth-Munroe & Hutchinson, 1993) was used to assess decoding skills. The NIQ assesses men’s attributions for their partner’s potential negative intentions toward them, and it was de-
of childhood physical and emotional abuse among those with PTSD than among those without the disorder. These researchers also found significantly higher levels of physically abusive relationship behavior among those with PTSD relative to PTSD-negative participants over the previous year, suggesting that PTSD may potentially account for the effects of childhood maltreatment on partner abuse perpetration.

In contrast to the scant literature on the relation between measures of PTSD symptomatology and partner abuse perpetration among civilian adult samples, numerous studies have demonstrated this association among samples of male military veterans (Byrne & Riggs, 1996; Jordan et al., 1992; Orcutt, King, & King, 2003). In the representative National Vietnam Veterans Readjustment Study (NVVRS; Kulka et al., 1990), approximately one third of male veterans with PTSD were identified as partner violent during the previous year, a rate 2 to 3 times higher than veterans without PTSD (Jordan et al., 1992). In addition, large associations have been found between PTSD symptoms and psychological abuse severity among male veterans (Byrne & Riggs, 1996). It is important to note that analyses indicate that PTSD symptoms largely account for the positive relation between trauma exposure and partner abuse perpetration among veterans (Byrne & Riggs, 1996; Orcutt et al., 2003).

A recent longitudinal study of adolescents in dating relationships further suggests the possible salience of PTSD symptoms (Wolfe, Wekerle, Scott, Straatman, & Grasley, 2004). Specifically, trauma symptoms, attitudes justifying dating violence, and empathy and self-efficacy were examined as mediators of the effects of childhood maltreatment on dating abuse, with cross-lagged data obtained at two assessment points spaced 1 year apart. For both girls and boys, trauma symptoms represented the only significant mediator of childhood trauma, predicting increases in relationship abuse perpetration across the two time points.

In the current study, we propose that deficits in social information processing may serve as a mediating variable in the association between PTSD symptoms and aggressive behaviors. Social information processing models include the basic notion that one must trace the progress of information from stimuli to responses, with a framework of sequential stages through which social stimuli are transformed into behaviors. McFall’s (1982) social information processing model, which has previously been applied to the study of intimate partner violence (see Holtworth-Munroe, 1992), outlines three fairly independent sequential stages in which one transforms situational task demands into behaviors. The first stage, involving decoding skills, includes the processes involved in reception, perception, and interpretation of information. During the second stage, involving decision-making skills, one generates potential responses, matches these options to the specific demands of the task, selects the best response, searches for that response in one’s own repertoire, and subjectively evaluates the usefulness of that response’s likely outcomes relative to other options. The final stage, involving enactment skills, includes behaviorally executing the selected option, continuously evaluating its impact on the environment, and making necessary changes to achieve the desired outcome. This final step initiates the beginning of the entire process, as examining the impact on the environment requires use of one’s decoding skills. Skillful processing at each stage is necessary, but not sufficient, to be considered socially competent. Interpersonal, intrapersonal, and contextual factors may also influence the sequence of processes resulting in incompetent behavior.

Crittenden and Ainsworth (1989) have noted that maltreated children may become hypervigilant to potential threat and may thus develop a tendency to misinterpret social situations and to respond aggressively, suggesting that PTSD symptoms may potentially lead to aggressive behavior due in part to their impact on social information processing skills. Dodge and colleagues (Crick & Dodge, 1994) have repeatedly shown that negative social information processing patterns (e.g., inadequate decoding of relevant social cues, hostile attributional biases, ready accessing of aggressive responses, favorable evaluation of aggressive responses) that develop in childhood as a result of maltreatment are predictive of aggressive behavior. In a prospective study of children, these researchers demonstrated that such information processing deficits partially mediated the effects of early childhood maltreatment on subsequent aggressive behavior (Dodge, Pettit, Bates, & Valiente, 1995).

In studies of adults, PTSD has been linked with potentially problematic information processing variables, such as a heightened perception of threat in ambiguous situations and a negative interpretative bias (see Constans, 2005, for a review). Chemtob and colleagues (Chemtob, Novaco, Hamada, Gross, & Smith, 1997) have argued that among combat veterans with PTSD, responses to perceptions of threat include an overly hostile appraisal of events, an inclination toward threat confirmation, increased vigilance in recognizing a threat, and a lower threshold for responding to the threat, increasing the likelihood for aggressive behavior. Given the apparent link between PTSD and information processing deficits, and because social information processing deficits have been associated with relationship abuse perpetration (Eckhardt, Barbour, & Davison, 1998; Holtworth-Munroe, 2000), we hypothesized that they will partially account for the influence of PTSD symptoms on the outcomes of interest in the current study.

A structural equation modeling (SEM) framework was used to examine potential pathways whereby family-of-origin maltreatment exposure influences male-perpetrated intimate partner abuse in adulthood. Childhood exposure to interparental violence, childhood parental rejection, and childhood physical abuse victimization were examined separately, as the relative impacts of each stressor variable is poorly understood. We also included adulthood trauma and depressive symptoms as predictor variables in SEM analyses to control for their effects on abuse perpetration and to isolate the unique effects among the primary study variables of interest. Two primary hypotheses were examined: Family-of-origin maltreatment exposure variables would be associated with adulthood intimate partner psychological and physical abuse perpetration at the bivariate level, and family-of-origin variables would be associated with relationship abuse perpetration, both directly and indirectly through their linkage with PTSD symptoms and social information processing deficits in SEM analyses.

Method

Participants and Procedures

Participants were drawn from a larger group (N = 175) who had taken part in a project designed to identify subtypes of violent men (Holtworth-Munroe, Meehan, Herron, Reichman, & Stuart, 2000).
sioned for use among maritally violent men. Participants are presented with 10 problematic marital situation vignettes (see below) and are asked to indicate the degree to which they agree that their wife exhibited five specific negative intentions (i.e., "She was trying to... make me angry, hurt my feelings, put me down, get something for herself, pick a fight") on a scale of 1 (disagree strongly) to 6 (agree strongly). A score for each of the 10 scenarios is first computed by calculating the mean of the responses to each of the five negative intentions, and a total NIQ score is then arrived at by taking the mean of the 10 scenario scores. The NIQ has strong internal consistency and discriminant validity (Holtzworth-Munroe & Hutchinson, 1993). In the present study, the internal consistency reliability estimate for the NIQ was .94.

To measure decision-making skills, male participants completed a laboratory task during which they were presented 15 problematic situation vignettes (10 were specific to the marital relationship and 5 were not marital specific; Anglin & Holtzworth-Munroe, 1997) and were asked what they would say or do in each situation. Only responses to the marital situation vignettes were examined for the purposes of this investigation (i.e., the wife is not interested in the husband's sexual advances, the wife teased the husband about a new shirt he bought, the wife won't stop talking about an uncomfortable topic after the husband tells her he wants to stop discussing it). Each of these vignettes was found to generate a variety of responses and to be considered by men in relationships as realistic and moderately important, but difficult, to handle well (Holtzworth-Munroe & Anglin, 1991). Participant responses to each vignette were coded on a scale from 1 (competent) to 4 (incompetent) by undergraduate coders who were blind to study hypotheses and participant groups. Specific guidelines were developed for the evaluation of responses to each vignette by our asking happily married, nonviolent men and women to define and give examples of competent, slightly competent, slightly incompetent, and incompetent responses. A competent response was defined as one that would solve the current problem and make problems of the same type less likely in the future (e.g., negotiating mutually agreeable compromises and explaining thoughts and feelings), whereas an incompetent response was defined as one that does not solve the current problem and that may make the situation worse. Intercoder reliability was adequate (κ = .68 and α = .96). Competency ratings (i.e., the mean across coders) were summed across vignettes to arrive at a total score, with higher scores indicating greater deficits in social information processing. The internal consistency reliability estimate for this measure was .75 in the present study. For complete details on the situation vignettes, please see Holtzworth-Munroe & Anglin (1991) and Anglin & Holtzworth-Munroe (1997).

Relationship abuse perpetration was measured with the 12-item Physical Assault (e.g., "I choked my partner") and the 8-item Psychological Aggression (e.g., "I called my partner fat or ugly") subscales of the CTS2 (Straus et al., 1996). Both male and female participants reported on the man's abusive behavior during the prior 6 months, on a scale ranging from 0 (never) to 6 (more than 20 times). Items were recoded to reflect the estimated frequency of the behavior (e.g., 3 to 5 times received a score of 4), and individual frequency scores were summed. The score of the partner who reported a greater frequency of abuse was used in all analyses. From these scores, men perpetrated an average of 6.07 acts of physical abuse (SD = 15.76; range = 0–147) and 37.15 acts of psychological abuse (SD = 31.56; range = 0–150). The CTS2 has excellent psychometric properties (Straus et al., 1996). In this study, CTS2 internal consistency reliability estimates for men's reports of psychological and physical abuse, respectively, were .84 and .92. For women's reports, internal consistency estimates for psychological and physical abuse were .83 and .90, respectively.

Analyses

Prior to computing the multivariate models, an estimated bivariate correlation matrix of the latent study variables was examined and was interpreted according to Cohen (1988). SEM was used to test the hypothesized models. Measurement models were computed to test the adequacy of the hypothesized latent variable models in explaining the observed data. An initial structural model solution was then computed and presented. To improve model parsimony, the structural model was trimmed and recalculated until all nonsignificant model pathways were eliminated.1 Model trimming was viewed as particularly advantageous in the current study, given the substantial number of tests that would be required in testing all possible indirect pathways within the initial structural model solution. SEM analyses tested the direct and indirect associations of model predictor variables with abuse perpetration. The full information maximum likelihood (FIML) method was used to account for missing data (9% of the total dataset). As can be seen in Table 1, several variables had skewed statistical distributions. Prior to computing SEM analyses, physical abuse perpetration was inverse transformed, and the three PTSD symptom clusters were logarithmically transformed to produce variables that met the assumption of being normally distributed (Tabachnick & Fidell, 2003). Because the inverse transformation of physical abuse perpetration results in a scale valence that is opposite to its original, untransformed version, we reversed the reported valence of relations between this inversely transformed variable and other variables to avoid confusion over the interpretation of these relations. The maximum likelihood method was used as the estimator in all analyses. For all analyses, raw data were submitted to the Mplus program (Version 4.1; Muthén & Muthén, 2006).

Results

Bivariate Correlations Among Study Variables

Bivariate correlations among all study variables are presented in Table 2. Regarding associations between the family-of-origin maltreatment variables and abuse outcomes, only parental rejection was significantly correlated with both psychological and physical abuse perpetration, with these effects in the small to medium range of magnitude. Childhood exposure to interparental violence exhibited a significant, but small, association with psychological abuse perpetration. Childhood parental rejection also exhibited the strongest bivariate associations with PTSD symptoms and social information processing deficits among the family-of-origin variables, with these relations in the medium range. The other two childhood

1 Identical results were found for the models presented in this article. Whether model trimming was based on eliminating nonsignificant model pathways or was based on eliminating pathways in which the bootstrap 95% CI for unstandardized path values included zero.
variables evidenced significant, small associations with PTSD symptoms and social information processing deficits in the expected direction. As expected, PTSD symptoms were positively related to social information processing deficits, psychological abuse perpetration, and physical abuse perpetration, with these associations generally falling within the medium range of magnitude. Also as expected, social information processing deficits were positively related to both psychological abuse and physical abuse, with large effect sizes obtained for these relations.

**Multivariate SEM Analyses**

SEM was used to test hypotheses of direct and indirect effects among study variables. A measurement model was first calculated to determine the adequacy of the hypothesized latent model structure in explaining the underlying observed data. The model involved seven variables that were singly identified by their corresponding observed scale scores: interparental violence exposure, rejecting childhood environment, physical abuse victimization, adulthood trauma exposure, depressive symptoms, psychological abuse perpetration, and physical abuse perpetration. The measurement model also included two latent variables: PTSD symptoms and information processing deficits. PTSD symptoms were identified by three observed indicators: PTSD Cluster B symptom score, PTSD Cluster C symptom score, and PTSD Cluster D symptom score. The latent information processing deficits variable was identified by two observed indicators: marital social skills vignettes and NIQ scores. Singly identified model variables and latent model variables were allowed to freely intercorrelate because these variables were hypothesized to be interrelated. Model fit indices suggested that the measurement model effectively accounted for the underlying latent data structure, $\chi^2(28, N = 164) = 41.21, p = .05$, comparative fit index (CFI) = .98, Tucker-Lewis index (TLI) = .95, root-mean-square error of approximation (RMSEA) = .05, standardized root-mean-square residual (SRMR) = .06.

Next, an initial structural model was calculated to test the associations of family-of-origin variables, adulthood trauma exposure, depressive symptoms, PTSD symptoms, and information processing deficits with abuse perpetration. The overall model fit indices indicated that the initial structural model effectively accounted for the observed data, $\chi^2(50, N = 164) = 68.42, p < .05$, CFI = .97, TLI = .96, RMSEA = .05, SRMR = .08 (see Figure 2). One notable difference was found between the initial, untrimmed and final, trimmed structural model, in that childhood exposure to interparental violence was positively associated with

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**Table 1**

*Descriptive Statistics for Observed Study Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood exposure to interparental violence</td>
<td>10.71</td>
<td>17.32</td>
<td>0–84</td>
<td>1.72</td>
<td>2.56</td>
</tr>
<tr>
<td>Childhood parental rejection</td>
<td>90.12</td>
<td>30.44</td>
<td>50–219</td>
<td>1.30</td>
<td>1.93</td>
</tr>
<tr>
<td>Childhood physical abuse victimization</td>
<td>19.82</td>
<td>14.80</td>
<td>0–70</td>
<td>0.99</td>
<td>0.86</td>
</tr>
<tr>
<td>Adult trauma exposure</td>
<td>1.58</td>
<td>1.84</td>
<td>0–8</td>
<td>1.25</td>
<td>0.82</td>
</tr>
<tr>
<td>Depressive symptoms</td>
<td>3.02</td>
<td>4.40</td>
<td>0–22</td>
<td>1.96</td>
<td>3.67</td>
</tr>
<tr>
<td>PTSD Cluster B symptoms</td>
<td>2.52</td>
<td>4.45</td>
<td>0–20</td>
<td>2.06</td>
<td>3.78</td>
</tr>
<tr>
<td>PTSD Cluster C symptoms</td>
<td>3.98</td>
<td>7.12</td>
<td>0–36</td>
<td>2.20</td>
<td>4.92</td>
</tr>
<tr>
<td>PTSD Cluster D symptoms</td>
<td>3.20</td>
<td>5.41</td>
<td>0–30</td>
<td>2.38</td>
<td>6.81</td>
</tr>
<tr>
<td>NIQ social information processing deficits</td>
<td>2.43</td>
<td>0.84</td>
<td>1–4.74</td>
<td>0.14</td>
<td>-0.57</td>
</tr>
<tr>
<td>Problem situation social information processing</td>
<td>25.47</td>
<td>5.48</td>
<td>14–30</td>
<td>0.39</td>
<td>-0.004</td>
</tr>
<tr>
<td>Psychological abuse perpetration</td>
<td>49.21</td>
<td>40.89</td>
<td>0–190</td>
<td>1.18</td>
<td>1.30</td>
</tr>
<tr>
<td>Physical abuse perpetration</td>
<td>12.26</td>
<td>28.51</td>
<td>0–190</td>
<td>3.99</td>
<td>17.78</td>
</tr>
</tbody>
</table>

Note. PTSD = posttraumatic stress disorder; NIQ = Negative Intentions Questionnaire; Cluster B = reexperiencing; Cluster C = avoidance and numbing; Cluster D = hyperarousal.

**Table 2**

*Estimated Correlation Matrix of the Latent Study Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Childhood exposure to interparental violence</td>
<td>—</td>
<td>.32*</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>2. Childhood parental rejection</td>
<td></td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>3. Childhood physical abuse victimization</td>
<td>.57*</td>
<td>—</td>
<td>.46*</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>4. Adulthood trauma exposure</td>
<td>.21*</td>
<td>.15*</td>
<td>.19*</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>5. Depressive symptoms</td>
<td>.25*</td>
<td>.24*</td>
<td>.12</td>
<td>.15*</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>6. PTSD symptoms</td>
<td>.25*</td>
<td>.37*</td>
<td>.20*</td>
<td>.44*</td>
<td>.50*</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>7. Social information processing deficits</td>
<td>.15*</td>
<td>.30*</td>
<td>.21*</td>
<td>.06</td>
<td>.12</td>
<td>.36*</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>8. Psychological abuse perpetration</td>
<td>.16*</td>
<td>.32*</td>
<td>.12</td>
<td>.07</td>
<td>.01</td>
<td>.31*</td>
<td>.59*</td>
<td>—</td>
<td>—</td>
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<tr>
<td>9. Physical abuse perpetration</td>
<td>.01</td>
<td>.19*</td>
<td>.11</td>
<td>.00</td>
<td>.00</td>
<td>.28*</td>
<td>.50*</td>
<td>.61*</td>
<td>—</td>
</tr>
</tbody>
</table>

Note. PTSD = posttraumatic stress disorder.

*p < .05.
depressive symptoms in the initial model, and this relation was not obtained in the subsequent, trimmed model. This pathway was therefore dropped from the final, trimmed structural model. A comparison of the initial structural model and final, trimmed structural model revealed an otherwise similar pattern of results. Specifically, significant model pathways were observed from childhood parental rejection to PTSD symptoms and depressive symptoms. In both models, adulthood trauma exposure was significantly associated with PTSD symptoms but not depressive symptoms, and PTSD symptoms, but not depressive symptoms, were associated with social information processing deficits. Both PTSD symptoms and social information processing deficits had a direct, positive relation with physical abuse perpetration in each model. Finally, social information processing deficits was the only variable with a direct relation to psychological abuse perpetration in the initial and final, trimmed structural models.

We next examined the direct and indirect effects of the predictors on psychological and physical abuse perpetration within the final, trimmed structural model. To accomplish this, standardized direct and indirect effects were calculated with the Mplus program (Muthén & Muthén, 2006). Results showed indirect effects of childhood parental rejection, adulthood trauma exposure, and PTSD symptoms on psychological abuse perpetration (see Table 3). The only variable to exhibit a direct effect on psychological abuse perpetration was information processing deficits. Thus, the indirect effects of childhood parental rejection and adulthood trauma exposure were fully explained through the pathway involving PTSD symptoms to information processing deficits to psychological abuse perpetration.

Results showed indirect effects of childhood parental rejection, adulthood trauma exposure, and PTSD symptoms on physical abuse perpetration (see Table 4). The indirect effects of childhood parental rejection on physical abuse perpetration were explained by the pathways from childhood parental rejection to PTSD symptoms to physical abuse perpetration (standardized effect = .06, z = 2.03) and from childhood parental rejection to PTSD symptoms to social information processing deficits to physical abuse perpetration (standardized effect = .08, z = 2.81). Likewise, the indirect effects of adulthood trauma exposure on physical abuse perpetration were explained by the pathways from adulthood trauma exposure to PTSD symptoms to physical abuse perpetration (standardized effect = .06, z = 2.07) and from adulthood trauma exposure to PTSD symptoms to social information processing deficits to physical abuse perpetration (standardized effect = .08, z = 2.99). PTSD symptoms demonstrated both a significant direct effect on physical abuse perpetration and an indirect effect on
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Figure 2. Final, trimmed standardized Mplus structural equation modeling results showing the association of family-of-origin maltreatment exposure variables, posttraumatic stress disorder (PTSD) symptoms, and social information processing deficits predicting relationship abuse. Cluster B = reexperiencing; Cluster C = avoidance and numbing; and Cluster D = hyperarousal. All pathways shown are significant at \( p < .05 \).

Discussion

The hypotheses for this study were partially supported. Childhood parental rejection was positively associated with both psychological and physical abuse at the bivariate level, and a positive bivariate relation was also found between childhood exposure to interparental violence and psychological abuse perpetration. When the family-of-origin variables were considered together and with the other variables in the model, only childhood parental rejection evidenced significant positive effects on the outcomes, and these effects were indirect through PTSD symptoms and social information processing deficits. PTSD symptoms exhibited direct effects on psychological abuse perpetration and indirect effects on this outcome through social information processing deficits in the final SEM model.

Table 3

<table>
<thead>
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<th>Variable</th>
<th>Direct effects</th>
<th>Indirect effects</th>
<th>Total effects</th>
</tr>
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<tr>
<td></td>
<td>Effect</td>
<td>Effect</td>
<td>Effect</td>
</tr>
<tr>
<td>Childhood exposure to interparental</td>
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<td>3.11</td>
<td>.11</td>
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<td>violence</td>
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<td></td>
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<td>.11</td>
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<td>Adulthood trauma exposure</td>
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<tr>
<td>Depressive symptoms</td>
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<tr>
<td>PTSD symptoms</td>
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<td>5.89</td>
<td>.64</td>
</tr>
<tr>
<td>Social information processing deficits</td>
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</tbody>
</table>

Note. PTSD = posttraumatic stress disorder.
Table 4

<table>
<thead>
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<th>Variable</th>
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<th>Indirect effects</th>
<th>Total effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Effect</td>
<td>z</td>
<td>Effect</td>
</tr>
<tr>
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<td>Adulthood trauma exposure</td>
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<td>Depressive symptoms</td>
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<td>PTSD symptoms</td>
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<tr>
<td>Social information processing deficits</td>
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<td></td>
</tr>
</tbody>
</table>

Note. PTSD = posttraumatic stress disorder.

Previous investigations in this area have typically examined global child maltreatment variables, rather than different forms of maltreatment exposure (Rosenbaum & Leisring, 2003; Wolfe et al., 2004). In this study, examination of the differential effects of interparental violence exposure, childhood parental rejection, and childhood physical abuse victimization was informative. Current study findings are consistent with a recent study among another clinical sample of abusive men, in which it was found that experiences of psychological abuse and neglect were stronger predictors of trauma symptoms and abuse perpetration in adulthood than was the experience of childhood physical abuse (Bevan & Higgins, 2002). These results are also consistent with a growing literature among samples of children (Levendosky & Graham-Bermann, 1998) and women (e.g., Taft, Murphy, King, Dedeyn, & Musser, 2005) exposed to family violence, suggesting that psychological abuse exposure is a relatively stronger predictor of PTSD symptoms than is physical abuse victimization. Nonphysical forms of abuse exposure may have a stronger impact on the victim in part because these behaviors are evidenced more frequently, creating an atmosphere of fear and undermining victims’ overall sense of well-being and self-worth (Levendosky & Graham-Bermann, 1998; Taft et al., 2005). Results suggest that the experience of psychological maltreatment may be particularly likely to lead to distress and trauma symptoms, and taken together with modest effects of the other childhood maltreatment variables on abuse perpetration, it appears that psychological factors in addition to social learning may play an important role in the intergenerational transmission of abusive behavior.

SEM findings involving the role of PTSD symptoms are consistent with prior work among male military veteran samples, which has shown PTSD symptoms to partially account for the effects of combat trauma exposure on relationship abuse perpetration (e.g., Orcutt et al., 2003). These results are also consistent with research among abuse perpetrators from nonveteran samples, suggesting the possibility that PTSD may represent a pathway for the effects of early trauma on abuse (Rosenbaum & Leisring, 2003), and with a recent investigation of adolescents in which trauma symptoms mediated the effects of child maltreatment on dating abuse perpetration (Wolfe et al., 2004).

Results for social information processing deficits appear to be consistent with the conceptual model of Dodge and colleagues (Crick & Dodge, 1994) and with empirical work (Dodge et al., 1995) indicating that negative childhood events lead to aggression, in part due to their deleterious influence on information processing. In the current study, the association between the family-of-origin parental rejection variable and social information processing was indirect via PTSD symptoms. We are not aware of any previous investigation in which the role of PTSD symptoms was examined with respect to the relations among negative family-of-origin variables, information processing deficits, and subsequent abusive behavior, although it has been argued that maltreated children become hypervigilant to perceptions of threat and trauma cues, which places them at increased risk for information processing deficits and aggression (Crittenden & Ainsworth, 1989). Similar processes have been theorized for combat veterans with PTSD, in attempts to explain their heightened aggressive behavior (Chemtob et al., 1997), and evidence among veterans indicates that PTSD is associated with various information processing deficits (Consman, 2005).

The current research raises some potentially important avenues for future research. First, the specific components of social information processing that are affected by PTSD symptoms and that contribute to abusive behavior have yet to be fully explicated. Riggs and Gallagher (2000) theorized that among those with PTSD symptoms, the activation of trauma memories leads to attentional bias, biased goal generation, limited response generation, biased response selection, and impaired enactment skills, which places these individuals at increased risk for aggression. Given that the current social information processing measures only examine interpretation of hypothetical wife behaviors and generation of likely responses to these hypothetical situations, each of the components of the information processing model and their associations should be examined with respect to PTSD symptoms and abusive behavior, both during cued and uncued conditions, as well as in association with other relevant situational factors (e.g., emotional arousal, alcohol intoxication). The construct of social information processing includes numerous, diverse facets of cognition; it will be important to determine which of these skills is most strongly impacted by the development of PTSD symptoms and which deficits are most influential to the downstream enactment of aggressive behaviors.

Similarly, further research is needed to examine whether there are specific PTSD symptoms or clusters of symptoms that may drive the associations of interest. Some preliminary work suggests that hyperarousal symptoms may be particularly likely to confer risk for the perpetration of aggressive behavior (Taft et al., 2007). Heightened
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reactivity may lead to reduced ability to engage in self-monitoring or other inhibitory processes that otherwise restrain the expression of aggressive behavior (Novaco & Chentob, 1998).

Retrospective reports of the family-of-origin maltreatment variables are subject to recall biases (Fergusson, Horwood, & Woodward, 2000), and encoding and memory alterations have been linked with the presence of trauma symptoms and dissociation (e.g., Zoellner, Sacks, & Foa, 2003). Further, future investigations should include more comprehensive investigations of family-of-origin environment variables and downstream variables of interest. For example, degree of contact with parents, the presence of stepparents, the age of the child at which malevolent experiences occurred, and parental separation or divorce all may influence the development of adjustment problems, social information processing abilities, and problematic relationship behaviors. These factors may also interact with the childhood stressor variables in predicting PTSD symptoms and other difficulties. Thus, although childhood parental rejection was the relatively strongest predictor of adjustment problems in this study, given current study limitations, the potential salience of the other childhood stressors cannot be dismissed until additional research is conducted in these areas.

Given a lack of data on the course of PTSD symptomatology, information processing deficits, and abusive behavior, directionality of the associations of interest cannot be assumed, and prospective, developmental research is clearly needed in this area. However, it is likely that the social information processing deficits observed in the current study were present at earlier stages of development. As Crick and Dodge (1994) argued, early experiences play a large role in information processing, and early, latent mental structures for social situations become increasingly rigid over time as these mental pathways are repeatedly traversed. Finally, it is also noteworthy that although the PTSD measure used was originally based on the revised, third edition of the DSM (DSM-III-R), changes in PTSD criteria reflected in the DSM-IV have focused on revisions of the trauma criterion and the categorization of symptoms. The current study focused on PTSD symptoms (rather than diagnoses), which were essentially unchanged in the revision to the PTSD criteria, and these symptoms were clustered according to the DSM-IV.

This study represents an initial step in demonstrating that PTSD symptoms and social information processing deficits may help explain the commonly reported relation between family-of-origin maltreatment exposure and relationship abuse perpetration. It is hoped that study findings will stimulate further investigation into the effects of trauma and PTSD symptoms on relationship abuse perpetration and into the development and testing of more complex explanatory models for aggressive and abusive behavior across the lifespan.

References


Holtzworth-Munroe, A., Meehan, J., Herron, K., Reham, U., & Stuart,


Received September 20, 2006
Revision received February 14, 2008
Accepted February 18, 2008