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PTSD Symptoms and Self-Rated Recovery among Adult Sexual Assault Survivors:

The Effects of Traumatic Life Events and Psychosocial Variables

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Abstract

Prior research has demonstrated that self-blame is predictive of more PTSD symptoms and poorer recovery (Frazier, 2003; Koss, Figueredo, & Prince, 2002), and perceived control over recovery is associated with less distress (Frazier, 2003) in adult sexual assault (ASA) survivors. A structural equation model was tested to examine the role of traumatic events, self-blame, perceived control over recovery, and coping strategies on PTSD symptoms and self-rated recovery in women ASA survivors. Adaptive coping partially mediated the effects of other traumas, self-blame, and perceived control over recovery on PTSD symptoms, and showed a small positive association with increased PTSD symptoms. As hypothesized, maladaptive coping partially mediated the effects of other traumas, self-blame, and perceived control over recovery on both PTSD symptoms and self-rated recovery; greater maladaptive coping was associated with increased PTSD symptoms and lower self-rated recovery. Implications and directions for future research are discussed.

Keywords: rape, sexual assault, PTSD, traumatic life experiences, self-blame, perceived control, coping

PTSD Symptoms and Self-Rated Recovery among Adult Sexual Assault Survivors:

The Effects of Traumatic Life Events and Psychosocial Variables

Approximately 18% of women experience adult sexual assault (ASA) during the course of their lives (Tjaden & Thoennes, 2000), almost half of whom continue to suffer from posttraumatic stress disorder (PTSD) several months following the trauma (Rothbaum, Foa, Riggs, Murdock, & Walsh, 1992). Women survivors of ASA who report more psychological symptoms also accurately perceive themselves as having poorer current recovery (Ullman, 1997). Research has identified several correlates of post-assault adjustment. For example, more PTSD symptoms and poorer self-rated recovery from ASA are associated with the experience of other traumatic life events, including child sexual abuse (e.g., Arata 1999; Koss, Figueredo, & Prince, 2002; Nishith, Mechanic, & Resick, 2000; Ullman, 1997) and with both characterological and behavioral self-blame in survivors (e.g., Arata, 1999; Frazier, 1990; 2000; 2003; Frazier & Schauben, 1994; Littleton & Breitkopf, 2006; Meyer & Taylor, 1986; Wyatt, Notgrass, & Newcomb, 1990), although some research has failed to find relations between behavioral self-blame and mental health outcomes (e.g., Breitenbecher, 2006; Hill & Zautra, 1989; Koss et al., 2002; Startup, Makgekgenene, & Webster, 2007; Ullman, Filipas, Townsend, & Starzynski, 2007). Hall, French, and Marteau's (2003) meta-analysis of attributions following negative life events showed that, just as in the ASA literature, behavioral self-blame is either unrelated to adjustment or tends to be related to poorer adjustment, whereas characterological self-blame has a consistent, strong negative relationship to adjustment.

In contrast, perceived control over recovery is associated with better adjustment in ASA survivors (Frazier, 2003; Frazier, Steward & Mortensen, 2004; Ullman, Filipas, et al., 2007). Perceived control refers to survivors' current beliefs about their ability to control the impact of

ASA on their lives in the present (e.g., “I know what I must do to help myself recover from the assault”; “I am confident that I can get over this if I work at it”; Frazier, 2003). As ASA survivors’ perceptions of control over their recovery increase, they have been found to experience less PTSD, depression, anxiety, and distress symptoms (Frazier, 2003; Frazier et al., 2004; Ullman, Filipas, et al., 2007).

The strategies in which survivors engage to cope with the experience of ASA may be important mediators of the relations between recovery and psychosocial variables such as self-blame and perceived control over recovery (e.g., Ullman, 1996; Ullman, Townsend, Filipas, & Starzynski, 2007; for review, see Taylor & Stanton, 2007), but possible mediating effects have yet to be examined. Specifically, depending upon survivors’ specific coping responses, post-assault recovery may be facilitated or thwarted. Maladaptive coping includes strategies that Carver, Scheier, and Weintraub (1989) described as those that reduce distress by denial or withdrawal without actually addressing the source of distress itself. Maladaptive coping has been shown to have a negative impact on ASA survivors’ recovery, including predicting more severe PTSD (Arata, 1999; Frazier & Burnett, 1994; Frazier, Mortenson, & Steward, 2005; Gutner, Rizvi, Monson, & Resick, 2006; Santello & Leitenberg, 1993; Ullman, 1996; Ullman, Townsend, et al., 2007; Valentiner, Riggs, Foa, & Gershuny, 1996).

Survivors of sexual violence commonly cope with their experiences by attempting to understand why they happened (Draucker, 2001). Although meaning-making (e.g., “How much meaning have you made or found from this event?”; Wright, Crawford, & Sebastian, 2007) has been found to have beneficial effects on the current functioning of survivors of sexual violence, these positive outcomes are not universal (Park & Ai, 2006; Ullman, 1996). For example, Wright et al. (2007) found that 48% of women reported finding positive meaning (e.g., self-acceptance,

strengthened faith) in their child sexual abuse experience, and those women were less socially isolated than others. Thirteen percent of those women also reported finding negative meaning (e.g., lack of control, damaged interpersonal trust), however. Further, 22% reported finding only negative meaning and an additional 22% reported finding no meaning in their abuse experience. Silver, Boon, and Stones (1983) concluded that extended searches for meaning (e.g., “Why me?”) are associated with negative outcomes in incest survivors. This may be because unresolved attempts to attach meaning to a trauma experience result in maladaptive rumination, known to be common in women victims and to lead to psychological symptoms (Cutler & Nolen-Hoeksema, 1991; Nolen-Hoeksema, 2001). In samples of ASA survivors, searching for meaning has been related to more psychological symptoms, including PTSD, and poorer self-rated recovery (Frazier & Schauben, 1994; Ullman, 1997).

Research examining the relation between adaptive coping strategies and recovery for ASA survivors suggests that adaptive coping is associated with better outcomes (e.g., Frazier & Burnett, 1994; Gutner et al., 2006; Meyer & Taylor, 1986; Valentiner et al., 1996). For example, Gutner et al. (2006) recently reported that increases in adaptive coping (i.e., cognitive restructuring, expressed emotion, social support coping strategies) over a 3-month period were associated with decreases in PTSD severity for women survivors of ASA and physical assault. Thus, it is important to understand the role of coping strategies in explaining the effects of other traumatic life events, self-blame, and perceived control over recovery on post-assault recovery.

Traumatic Life Events and Coping

Other traumatic life events, including child sexual abuse, may shape the strategies that women engage in to cope with ASA. For example, Matheson, Skomorovsky, Fiocco, and Anisman (2007) found that prior assaults (i.e., child physical or sexual abuse, physical assault by

a stranger, rape, being stalked, or threats of violence from someone other than their intimate partner) predicted more avoidant coping (e.g., self-blame, emotional containment, passive resignation) in a sample of women who were currently in psychologically or physically abusive dating relationships. Leitenberg, Gibson, and Novy (2004) found that women reported using more disengagement coping when faced with stress as the number of adverse or abusive events (i.e., sexual abuse, physical abuse, witnessing domestic violence, having an alcoholic parent, and parental rejection) they had experienced in childhood increased. Although these studies suggest that prior traumas influence strategies used to cope with a subsequent ASA, it is probable that the cumulative effect of traumatic life events, including traumas that occur after an ASA, is to increase maladaptive coping. Maladaptive strategies developed in response to cumulative traumas may in turn predict psychological outcomes (Aldwin, 2007; Aldwin & Yancura, 2004).

In support of this possibility, Rayburn et al. (2005) found that, in a sample of low-income women, the number of traumatic life events experienced (e.g., childhood sexual abuse, living in a shelter, physical violence, childhood physical abuse, death or injury of a friend or relative) predicted avoidant coping, which in turn predicted depression. Avoidant coping has also been associated with poorer outcomes among child sexual abuse survivors (e.g., increased distress, less resolution of the experience, more depression and PTSD symptoms; Brand & Alexander, 2003; Coffey, Leitenberg, Henning, Turner, & Bennett, 1996; Johnson, Sheahan, & Chard, 2003; Leitenberg, Greenwald, & Cado, 1992; Merrill, Thomsen, Sinclair, Gold, & Milner, 2001; Wright et al., 2007). In addition, searching for meaning has been found to be associated with poorer recovery among women with a history of child sexual abuse (Draucker, 1989; Silver et al., 1983), even in samples of ASA survivors (Ullman, 1997). Research has yet to examine, however, whether maladaptive coping strategies mediate the effect of traumatic life events other

than ASA on measures of adjustment such as PTSD and subjective ratings of recovery in samples of ASA survivors. It is also possible that the experience of traumatic life events may result in the development of adaptive coping by providing knowledge regarding what strategies are effective in reducing distress. That is, because women may have learned from a prior trauma that adaptive strategies such as reaching out for emotional or instrumental support helped to alleviate the negative sequelae of the trauma, they may be more likely to engage in those tactics again. Although Matheson et al. (2007) found no relation between traumas and adaptive coping strategies (e.g., problem-focused coping, emotional engagement coping) in women in abusive dating relationships, research has yet to examine relations between these factors in ASA survivors.

Self-Blame and Coping

Self-blame has been found to relate to the coping strategies used by ASA survivors. For example, Ullman (1997) reported that greater self-blame was significantly related to less searching for meaning in one's victimization, perhaps because attributing the assault to one's own character or behavior eliminates the need to search for meaning. Littleton and Breitkopf (2006) found that self-blame predicted disengagement coping in a sample of ASA survivors, however, and they suggested that self-blaming cognitions result in maladaptive coping strategies because they are difficult to resolve. That is, women who think they are responsible for their ASA experience may have more difficulty coming to terms with their assault, and may be more likely to engage in strategies such as denial or disengagement to avoid persistent self-blaming cognitions. Thus, the strategies survivors engage in to cope with ASA may mediate the effect of self-blame on survivors' recovery.

Consistent with this possibility, Frazier et al.'s (2005) longitudinal study of ASA

survivors showed that, although cognitive restructuring and expressing emotions (i.e., adaptive coping) did not mediate the relation between self-blame and distress, behavioral self-blame for ASA led to greater social withdrawal (i.e., maladaptive coping), which in turn predicted greater symptoms of depression, anxiety, and hostility. Similarly, Arata (1999) found that self-destructive coping mediated the negative effect of characterological self-blame on post-assault adjustment and that self-blame predicted less expressive coping, which in turn predicted poorer adjustment. Thus, there is evidence that coping strategies mediate the effect of self-blame on post-assault outcomes, such that self-blame predicts more maladaptive coping and less adaptive coping, which both, in turn, predict poorer recovery. More research is necessary, however, to understand whether these relations also explain PTSD and self-rated recovery among ASA survivors and to elucidate the role of adaptive coping in models of recovery.

Perceived Control over Recovery and Coping

Frazier, Berman, and Steward (2002) suggested that focusing on controllable aspects of ASA recovery might be more adaptive than other coping strategies (e.g., problem reappraisal, expressing emotions). Perceiving that one has some control over recovery from ASA may be a necessary precursor to implementing adaptive coping strategies. In fact, Frazier et al. (2005) found that ASA survivors who perceived greater control over their recovery were more likely to engage in adaptive coping strategies (e.g., cognitive restructuring) and less likely to engage in maladaptive coping strategies (e.g., social withdrawal), which, in turn, predicted less depression, anxiety, and hostility. These findings are consistent with research suggesting that perceived control is associated with better post-traumatic adjustment and that negative expectancies are associated with maladaptive coping and poorer outcomes (see Updegraff & Taylor, 2000, for review). Given that perceived control over recovery is one of the few factors found to promote

better recovery in samples of ASA, more research is necessary to provide a better understanding of its impact on maladaptive and adaptive coping strategies and how they, in turn, relate to PTSD and self-rated recovery.

Present Study Hypotheses

In the present study, we examined how traumatic life events, self-blame, perceived control over recovery, and coping strategies were related to PTSD symptoms and self-rated recovery in ASA victims. There is no agreement among researchers about how to classify strategies as adaptive or maladaptive (Folkman & Moskowitz, 2004; Littleton, Horseley, John, & Nelson, 2007; Skinner, Edge, Altman, & Sherwood, 2003) following sexual assault. Also, we found that zero-order correlations indicated that all approach forms of coping related to more PTSD and either negatively or nonsignificantly related to self-rated recovery in these data. Because research shows little consistent evidence of positive effects of distinct forms of adaptive coping, we used a combined measure of potentially adaptive forms of coping, following Carver et al. (1989). Because maladaptive coping strategies are associated with poorer recovery for ASA survivors, we predicted that a composite measure of maladaptive coping (avoidance forms of coping such as mental and behavioral disengagement, denial, and ruminative coping assessed as searching for meaning) would be positively related to PTSD symptoms and negatively related to self-rated recovery. The relation between adaptive coping (approach forms of coping such as acceptance, humor, venting, religion, support seeking, emotional expression, problem solving) and recovery for ASA survivors is less well understood, but we expected that adaptive coping would be associated with fewer PTSD symptoms and greater self-rated recovery. It was also expected that part of the effects of traumatic life events, self-blame, and perceived control over recovery on self-rated recovery and PTSD symptoms would be mediated by maladaptive and

adaptive coping. Thus, we predicted that traumatic life events and self-blame would increase PTSD symptoms and decrease self-rated recovery and that these effects would be partially accounted for by greater maladaptive coping and lesser adaptive coping. Conversely, we expected that perceived control over recovery would be related to fewer PTSD symptoms and greater self-rated recovery, and that this effect would be partially explained by less use of maladaptive coping and greater adaptive coping.

Method

Participants and Procedure

A large, diverse sample of ASA survivors was recruited via advertisements in local newspapers and fliers distributed throughout the Chicago metropolitan area on college campuses, around the community (e.g., bookstores), to mental health agencies, and rape crisis centers, which invited women aged 18 or older with unwanted sexual experiences since age 14 to participate in a confidential mail survey. Interested women were mailed the survey along with a cover letter and information sheet describing the study and a list of community resources for women survivors of violence. Women received \$20 for completing the survey and were offered a summary of the results. Of those women who requested the survey, 1,084 returned it, a 90% response rate. Our final sample included 969 women who reported having experienced ASA. Participants reported their age at the time of the survey ($M = 32$, $SD = 11$), highest level of education completed (13% reported less than 12th grade, 14% reported graduating from high school, 39% had some college experience, and 33% graduated from college or beyond), current employment status (50% were employed), sexual orientation (77% were heterosexual, 6% lesbian, and 12% bisexual), marital status (58% were single, 27% were cohabitating or married, 13% were separated or divorced, and 1% were widowed), parental status (41% had children),

ethnicity (40% were Caucasian, 43% were African American, 6% were Hispanic, 3% were Asian, 1% were other, and 7% were of mixed ethnic background), and income (38% made less than or equal to \$10,000 annually; 19% made between \$10,001 and \$20,000; 16% made \$20,001 to \$30,000; 10% made \$30,001 to \$40,000; 7% made \$40,001 to \$50,000; and 9% made over \$50,000). All participants were treated in accordance with the ethical guidelines of the University of Illinois at Chicago.

Measures

ASA. ASA at age 14 years or older was assessed dichotomously (*yes/no*) using the Sexual Experiences Survey (SES; Koss, Gidycz, & Wisniewski, 1987). The sample used in this study includes only women who experienced an ASA (77% completed rape, 9% attempted rape, 10% sexual coercion, and 4% unwanted sexual contact). The SES has reported internal consistency reliability of .69 and test-retest reliability at one week apart of 93% (Koss & Gidycz, 1985). Participants were an average of 21 years old at the time of the assault ($SD = 7$), and reported that their ASAs occurred an average of 13 years ago ($SD = 11$).

Traumatic life events. Traumatic life events were assessed with Goodman, Corcoran, Turner, Yuan, and Green's (1998) Stressful Life Events Screening Questionnaire (SLESQ), a self-report measure of 10 traumatic events of an interpersonal nature (i.e., life-threatening illness or accident; physical abuse as a child or adult; a robbery or mugging involving physical force or a weapon; being otherwise threatened with a weapon; someone close suffered a violent death; witnessed interpersonal violence; serious injury or life was in danger; or some other extremely frightening or horrifying situation). This measure was scored as the summed number of events experienced by each respondent. If respondents reported the same incident under more than one item, it was counted as one event. The SLESQ has good test-retest reliability (median $\kappa = .73$)

and adequate convergent validity with a lengthier interview (median $\kappa = .64$). Prevalence rates for specific events were similar to those reported by Norris (1992) and Kessler, Sonnega, Bromet, Hughes, and Nelson (1995) in two large probability samples.

Following Koss et al. (1987), child sexual abuse history (*yes/no*) was measured with a modified version of the SES, which assessed abuse experiences before age 14 years. Fifty-six percent ($N = 542$) of women in our sample reported experiencing child sexual abuse (48% completed rape, 14% attempted rape, 9% sexual coercion, and 29% unwanted sexual contact). We added 1 to the summed number of traumatic life events experienced by these women to account for child sexual abuse experiences. For example, if a participant reported experiencing two of the previously outlined traumatic events (e.g., witnessing interpersonal violence and physical abuse as a child) and also reported experiencing child sexual abuse, her total on this measure would be 3. Our sample reported experiencing a range of 0 to 11 traumatic life events, with an average of 3.73 ($SD = 2.30$).

Self-blame. Two 5-item subscales of the Rape Attribution Questionnaire (RAQ; Frazier, 2002), a self-report measure of ASA survivors' attributions about why the assault occurred, assessed behavioral (e.g., "I should have resisted more") and characterological (e.g., "I am unlucky") self-blame. Each item was answered with respect to the past 30 days on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Combining these subscales to measure self-blame generally, Frazier (1998) reported alphas of .88 and .89 in a sample of women who visited an emergency room after being sexually assaulted and a sample of ASA survivors identified by a random telephone survey, respectively.

Participants also completed the Brief COPE, a 28-item self-report scale of coping strategies (Carver et al., 1989). Various coping strategies used in the past 30 days to cope with

the assault were assessed with Likert items ranging from 1 (*I didn't do this at all*) to 4 (*I did this a lot*). Self-blaming was computed as the unweighted sum of responses to 2 items composing this subscale of the COPE (e.g., “I blamed myself for the things that happened”). The COPE has been widely used in studies of stressed populations and has adequate internal consistency reliability (all subscale alphas $\geq .60$ except one) and test-retest reliability (*rs* of .46 to .86).

We created a composite measure for self-blame which included the items from the characterological and behavioral self-blame subscales of the RAQ and the self-blaming subscale of the COPE. All items were standardized using Z-scores and averaged to create a reliable self-blame measure (Cronbach's $\alpha = .86$).

Perceived control over recovery. Perceived control over recovery from ASA was assessed using five items from the RAQ to assess present control (e.g., “I feel like the recovery process is in my control”; Frazier, 2002; Frazier, 2003). On a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), women were asked specifically to rate their perceptions of control over recovery from their ASA in the past 30 days ($M = 3.71$, $SD = .71$). Frazier (2003) reported an average alpha of .75 for perceived control over recovery from assault across four time periods in one year. The scale was also reliable in our sample (Cronbach's $\alpha = .64$; $M = 3.95$; $SD = .70$).

Maladaptive coping. We created a composite measure of maladaptive coping, which captured searching for meaning and the self-distraction (e.g., “I turned to work or other activities to take my mind off things”), denial (e.g., “I refused to believe that it happened”), and behavioral disengagement (e.g., “I gave up trying to deal with it”) subscales of the Brief COPE (6 items; Carver et al., 1989). Searching for meaning, a ruminative form of coping, was assessed with two items: “How often do you find yourself wondering ‘Why me?’ with regard to this experience,”

and “How often do you find yourself searching for some reason, meaning, or way to make sense out of this experience?” (Silver et al., 1983). Responses to these items were made on a scale ranging from 1 (*never*) to 5 (*always*). Because the Brief COPE subscales were assessed on a scale ranging from 1 to 4, all items were standardized and averaged to create the maladaptive coping measure, which had adequate internal consistency (Cronbach's $\alpha = .77$). All items referred to participants' feelings in the past 30 days.

Adaptive coping. We created a composite measure of adaptive coping by computing the average of responses to the 18 items composing the active coping (e.g., “I concentrated my efforts on doing something about my situation”), use of emotional support (e.g., “I got comfort and understanding from someone”), use of instrumental support (e.g., “I got help/advice from other people”), venting (e.g., “I said things to let my unpleasant feelings escape”), positive reframing (e.g., “I looked for something good in what was happening”), planning (e.g., “I tried to come up with a strategy about what to do”), humor (e.g., “I made jokes about it”), acceptance (e.g., “I learned to live with it”), and religion (e.g., “I tried to find comfort in my religion or spiritual beliefs”) subscales of the Brief COPE (Carver et al., 1989; $M = 2.20$, $SD = .63$). This scale assessed participants' feelings in the past 30 days and had acceptable internal consistency (Cronbach's $\alpha = .88$).

PTSD symptoms. The Posttraumatic Stress Diagnostic Scale (PDS; Foa, 1995), a standardized 17-item self-report instrument, was used to assess the total number of PTSD symptoms women reported experiencing. This scale was selected because it has been validated with sexual assault survivors (Foa, Cashman, Jaycox, & Perry, 1997). Women rated how often each symptom (i.e., re-experiencing/intrusion, avoidance/numbing, hyperarousal) in relation to the ASA had bothered them during the past 30 days on a scale ranging from 0 (*not at all*) to 3

(*almost always*). The PDS has been shown to have acceptable test-retest reliability ($\kappa = .74$) for a PTSD diagnosis over a two-week interval, 87% agreement, and a Pearson r of .83 between two administrations. The PDS has also demonstrated good internal consistency ($\alpha = .92$) and convergent validity ($\kappa = .59$) with the Structured Clinical Interview for the DSM-IV Axis I Disorders (SCID-I) PTSD module, indicating 79% agreement between the two measures (Foa et al., 1997). The measure was also reliable in our sample (Cronbach's $\alpha = .92$). Sixty-seven percent of participants ($N = 647$) met the criteria for a diagnosis of PTSD, reporting a range of 0 to 51 symptoms ($M = 18.84$, $SD = 12.24$).

Self-rated recovery. Following Ullman (1996), we asked women to report, during the past 30 days, how much they felt they have recovered overall from their ASA experience on a scale ranging from 1 (*not at all recovered*) to 4 (*completely recovered*; $M = 2.61$, $SD = .85$).

Results

An observed variables path analysis was conducted with a structural equation modeling framework to test a partially mediated model of PTSD symptoms and self-rated recovery in ASA survivors using Amos 7 (Arbuckle, 2006). The model included 969 participants, exceeding the suggested ratio of 10 cases for each model parameter (Kline, 1998). All measures were univariate normal with skew ranging from -.71 to .42 and kurtosis ranging from -.67 to .63 (Kline, 1998). First order correlations are presented in Table 1. None of the first-order correlations was greater than (+/-) .56, indicating that multicollinearity across variables was not a problem with these data at the measurement level (Kline, 1998).

The hypothesized path model was tested using maximum likelihood estimation. Self-blame was correlated with traumatic life events and perceived control over recovery in the model because these variables were associated with each other in zero-order correlations. Similarly,

based on zero-order correlations, maladaptive coping and adaptive coping were allowed to covary, as were PTSD symptoms and self-rated recovery. To improve the fit and identify the most parsimonious model, one nonsignificant path was removed from the preliminary path model based on the significance of the betas (adaptive coping did not predict self-rated recovery, $p > .005$). See Figure 1 for the final path model with standardized beta weights and fit statistics.

Results of the model indicated that, in our sample of ASA survivors, traumatic life events and self-blame each had a direct positive effect on PTSD symptoms, such that women experienced more PTSD symptoms as the number of traumatic life events they had experienced increased and the more they blamed themselves for the ASA. There were also indirect effects of traumatic life events and self-blame on PTSD symptoms. Specifically, the effect of traumatic life events on PTSD symptoms was partially mediated¹ by maladaptive coping and adaptive coping. That is, women who experienced more traumatic life events reported more maladaptive coping and more adaptive coping, which each predicted more PTSD symptoms. The effect of self-blame on PTSD symptoms was similarly partially mediated by maladaptive coping and adaptive coping.

There was also a direct effect of perceived control over recovery on PTSD symptoms: Women who reported feeling greater control over their recovery process experienced fewer PTSD symptoms. Thus, feeling greater control over recovery appeared to be a protective factor for women in our sample. This effect was also partially mediated by maladaptive coping and adaptive coping. Specifically, feeling greater control over recovery predicted significantly less maladaptive coping, which predicted more PTSD symptoms. Further, increased perceptions of control over recovery also predicted greater adaptive coping, which predicted more PTSD symptoms. It may be that perceived control over recovery is a protective factor associated with

the use of fewer maladaptive coping strategies and more adaptive coping strategies, but increased coping of any kind (i.e., maladaptive or adaptive) is also associated with greater psychological symptoms, thus masking the beneficial effects of perceived control over recovery on PTSD symptoms through adaptive coping.

Traumatic life events and self-blame were each negatively related to self-rated recovery. That is, women reported lower rates of recovery as the number of traumatic life events they experienced increased and as they engaged in more self-blame. Our model suggests that the effects of traumatic life events and self-blame on self-rated recovery were partially mediated by maladaptive coping. That is, women who experienced more traumatic life events and more self-blame also reported more maladaptive coping, and increased maladaptive coping predicted less reported recovery.

Greater perceived control over recovery was significantly associated with more self-rated recovery. This effect was partially mediated by maladaptive coping. Specifically, feeling greater control over recovery predicted less maladaptive coping, which in turn predicted greater self-rated recovery. In contrast to the paths predicting PTSD symptoms, adaptive coping did not partially mediate the effects of traumatic life events, self-blame, or perceived control over recovery on self-rated recovery.

Discussion

This study examined the mediating role of coping strategies on the effects of traumatic life events, self-blame, and perceived control over recovery on PTSD symptoms and self-rated recovery in women ASA survivors. We tested a partially mediated model in a large, diverse sample of ASA survivors using structural equation modeling. Consistent with previous research (e.g., Arata 1999; Frazier, 1990, 2000; 2003; Koss et al., 2002), more traumatic life events and

more self-blame were each related to more PTSD symptoms and less self-rated recovery, whereas greater perceived control over recovery was related to fewer PTSD symptoms and more self-rated recovery. These relations were partially mediated by the strategies in which survivors engaged to cope with the ASA experience, consistent with Frazier et al.'s (2005) research suggesting that maladaptive coping mediates the effect of self-blame on post-assault distress. In our study, the effects of traumatic life events, self-blame, and perceived control over recovery on PTSD symptoms and self-rated recovery were all partially explained by maladaptive coping. Thus, women who engage in maladaptive coping may be aware that the strategies they are using are not effective in alleviating their psychological distress. Alternatively, women experiencing greater symptomatology may have had a negative response bias, which could have resulted in the endorsement of maladaptive coping strategies and poorer outcomes. Adaptive coping also partially explained the effects of traumatic life events, self-blame, and perceived control over recovery on PTSD symptoms, but not on self-rated recovery.

Of interest, increased adaptive coping was associated with experiencing more PTSD symptoms. Thus, psychological symptoms associated with increased coping of any kind may mask the beneficial effects of perceived control over recovery on PTSD symptoms through adaptive coping. Perceived control over recovery was more strongly associated with PTSD symptoms in zero-order correlations than in our model, suggesting that other variables in the model accounted for variance in PTSD symptoms that was previously explained by perceived control.

Research findings on outcomes associated with adaptive coping are mixed. Some stress and coping researchers have found that some forms of adaptive coping are related to better adjustment (e.g., Littleton et al., 2007; Taylor & Stanton, 2007). For example, Littleton et al.'s

(2007) meta-analysis of trauma survivors' coping strategies showed problem-focused coping specifically was related to less distress, although there was no significant effect of approach forms of coping on distress overall. Similarly, other researchers have found no relations between adaptive coping and adjustment in survivors of sexual violence (e.g., Wright et al., 2007). Our study is not the first to suggest that adaptive coping may relate to greater distress. For example, Johnson and Kenkel (1991) found that seeking social support, an adaptive coping strategy, was related to greater psychopathology in teenaged survivors of child sexual abuse. Also, Brand and Alexander (2003) found that seeking support was related to greater psychological distress in adult abuse survivors. Further, Johnson et al. (2003) found that avoidant coping was associated with PTSD in adult survivors of child sexual abuse. Rather than suggesting that ineffective adaptive coping strategies led ASA survivors to experience more PTSD symptoms, however, our results may reflect that experiencing greater psychological symptoms increased the need to engage in coping of any kind (Taylor & Stanton, 2007). Due to the retrospective design of our study, it is also possible that, rather than coping affecting recovery, poorer recovery may have affected survivors' cognitions and coping strategies. Further, Littleton et al. (2007) highlighted problems with certain coping measures that may confound coping and adjustment outcomes, but this problem is not unique to the COPE. Our results may also differ from previous findings because different measures of coping have been used across studies (e.g., Ways of Coping; Folkman & Moskowitz, 2004).

Matheson et al. (2007) found that, in addition to lower problem-focused coping and greater avoidant coping, greater emotional-engagement was associated with more depressive symptoms in a sample of women in abusive relationships. Their study highlights one possible explanation for why adaptive coping is found to relate to greater psychological symptoms in

some studies. Specifically, Matheson et al. (2007) used factor analysis to determine which coping strategies formed the class of emotional-engagement coping. These strategies included emotional expression, which indeed seems to be adaptive, but also rumination and other-blame, which have been found to be detrimental to ASA survivors' recovery in other research (e.g., Frazier, 2003; Ullman, 1997). Thus, to the extent that researchers attempt to cluster coping strategies together into broad classes, understanding exactly what those clusters represent may be challenging and may result in conceptual ambiguity and conflicting findings in the literature. Unfortunately, disaggregating our coping measures to reflect more fine-tuned coping strategies was not possible in this study because we used the short version of the COPE, and only 2 items were used to assess each coping strategy. Further, bivariate analyses did not support such disaggregation because the specific coping strategies did not differentially relate to the recovery outcomes presented here (e.g., all coping strategies related to more PTSD symptoms and poorer self-rated recovery with the exception of a few adaptive strategies that were nonsignificantly related to self-rated recovery).

It may also be necessary to identify more fine-grained patterns of coping strategies to gain a more complete understanding of their mediating role in ASA recovery. For example, Littleton (2007) recently identified 3 patterns of coping in a sample of ASA survivors: 1) assimilation, characterized by low avoidance and low approach coping, which involves minimizing the severity of the ASA; 2) accommodation, characterized by high avoidance and high approach coping, which involves changing schematic beliefs so that the ASA experience is consistent with such beliefs; and 3) overaccommodation, characterized by high avoidance and low approach coping, which involves the development of maladaptive or extreme beliefs about the ASA. Littleton found that overaccommodated women reported more anxiety, depression, and

PTSD than did those classified as accommodated and assimilated. To the extent that these classifications are replicable, they may provide a useful framework for examining coping strategies in samples of ASA survivors.

The current results highlight the need for longitudinal research in this field, which may reveal that the relations between coping and distress form a feedback loop, with greater distress blocking effective coping and increasing subsequent maladaptive cognitions and distress. Alternatively, longitudinal research may suggest that, despite using adaptive coping strategies, ASA survivors may experience elevated distress before distress is alleviated. For example, both women survivors in PTSD treatment and those in the community may experience initial increases in distress while processing the trauma before symptoms improve (e.g., Gilboa-Schechtman & Foa, 2001; Nishith, Resick, & Griffin, 2002). Although some longitudinal research has suggested that over time self-blame decreases and perceived control over recovery increases (Frazier, 2003), the role of coping in this process is still unclear.

This study is limited in that we used a volunteer sample to examine PTSD and self-rated recovery in ASA survivors. Women self-selected to participate in our study, and thus, our sample could potentially include women who were experiencing either poorer or better recovery than others. Another limitation of our study is that we cannot make definitive claims regarding causality because our measures of self-blame, perceived control over recovery, and coping assessed participants' experiences during the past 30 days, the same time frame assessed with regard to experiences of PTSD symptoms and recovery. Further, because our findings are cross-sectional and correlational, no conclusions can be drawn about the order of effects. Without longitudinal analyses, it is unclear whether the psychosocial factors studied here may influence PTSD symptoms and recovery, or be influenced by them. Therefore, longitudinal research on

prior traumas, self-blame, coping, and perceived control over recovery in relation to these adjustment variables is needed.

Future research should focus on understanding modifiable cognitions and coping strategies associated with better mental health outcomes in ASA survivors. Because blaming one's self for the experience of ASA is a common response among survivors (Janoff-Bulman, 1979) and given its detrimental effects on post-assault adjustment, future research should explore ways in which self-blame can be reduced (e.g., attribution retraining; Massad & Hulse, 2006). In other analyses of these data, Ullman, Filipas, et al. (2007) found that perceived control over recovery was the only pre-assault, assault, or post-assault variable that predicted fewer PTSD symptoms in ASA survivors, and this study suggests that this effect may be partially due to associated increases in adaptive coping and decreases in maladaptive coping. Thus, research should also seek ways in which perceived control over recovery can be enhanced. We also reiterate the need to examine perceived control over recovery in relation to separate PTSD symptom clusters (see Frazier et al., 2002).

Research with samples of ASA survivors should also take the experience of other traumatic life events into account. Not only are cumulative traumatic life events associated with poorer recovery, consistent with past research (e.g., Koss et al., 2002; Nishith et al., 2000), our results suggest that such traumas are associated with greater engagement in coping strategies of all kinds. Understanding the effect of cumulative traumas on the development and implementation of various coping strategies will be an important target of future research. It will also be important, however, to consider other factors related to traumatic experiences. For example, ongoing or repeated traumatic events are associated with higher rates of PTSD than are single-event traumas (Briere & Spinazzola, in press; Follette, Polusny, Bechtel, & Naugle, 1996;

Nishith et al., 2000; Ullman & Brecklin, 2002). Also, higher rates of PTSD are associated with more severe traumas (Davidson & Foa, 1993; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). Although we did not assess these factors, it will be important to take them into consideration in future research.

Coping strategies appear to play an important mediating role in determining the effects of traumatic life events, self-blame, and perceived control over recovery on PTSD symptoms and self-rated recovery from ASA. Future longitudinal studies using representative samples will garner greater understanding of these complex relations. Specifically, the results of this study suggest that future research and treatment should focus on specific coping strategies following sexual assault in conjunction with other cognitions and perceptions of survivors to better understand and facilitate their recovery process.

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Footnotes

1. Mediation regression analyses and Sobel tests were used to confirm partial mediation effects. Multiple mediators can be tested either separately or simultaneously. Testing the mediators separately confirmed partial mediation for all indirect effects (Sobel $ts \geq 3.00$, $ps \leq .003$; Preacher & Leonardelli, 2006). Testing the effects simultaneously, however, demonstrates whether a mediation effect is independent of the effect of the other mediators. We found that the effects of traumatic life events and self-blame on PTSD were partially mediated by maladaptive coping (Sobel $ts \geq 7.20$, $ps < .001$; Preacher & Leonardelli, 2006), but not adaptive coping (Sobel $ts \leq 1.52$, $ps \geq .13$; Preacher & Leonardelli, 2006). ASA victims may engage in both forms of coping, as suggested by the high correlation between the measures in this sample ($r = .42$, $p < .01$), which may make it difficult to find independent mediation, especially without longitudinal data.

Table 1

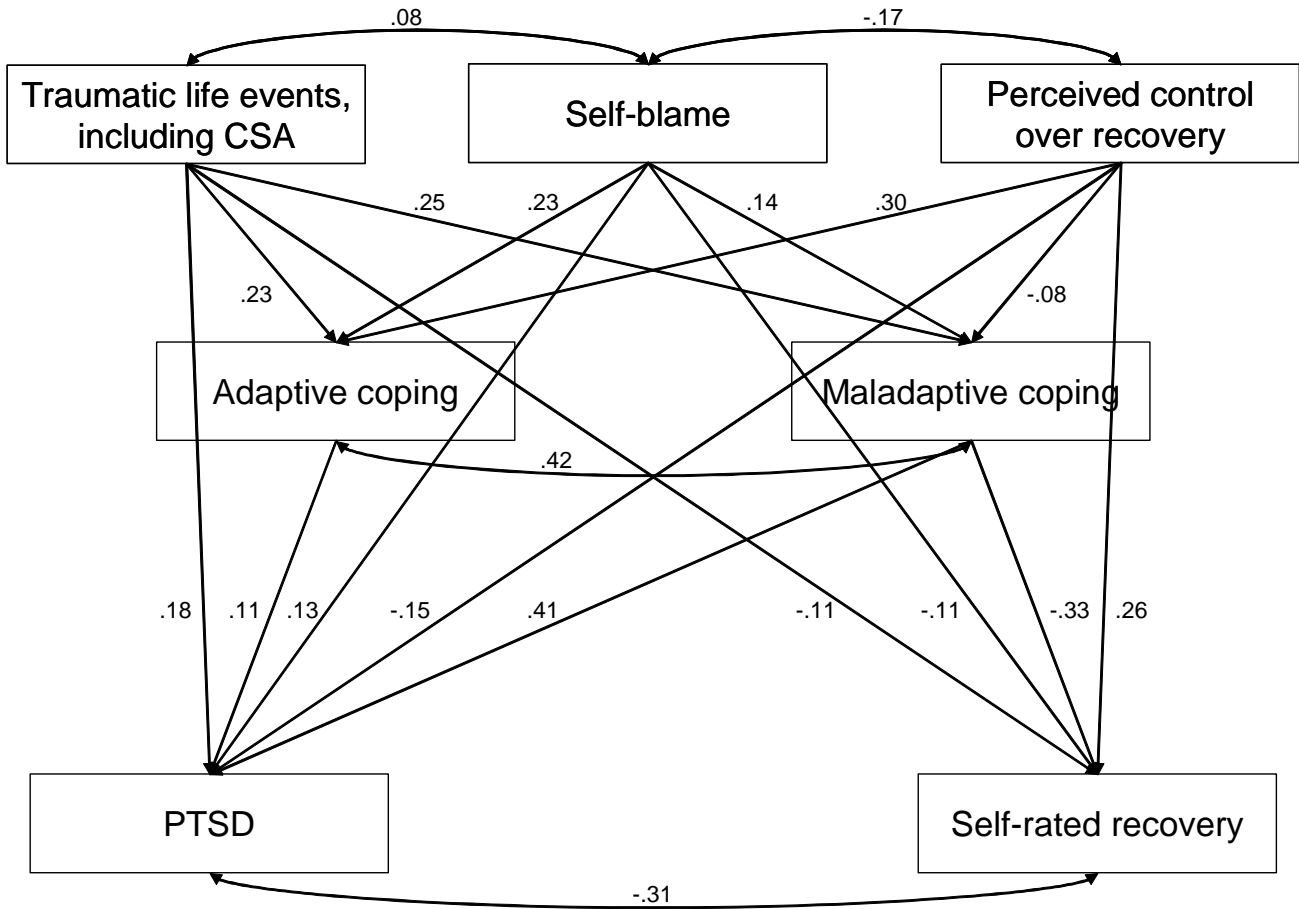
Correlation Matrix for Traumatic Life Events, Psychosocial Variables, PTSD, and Self-Rated Recovery

	1	2	3	4	5	6	7
1. Traumatic life events, including child sexual abuse	—	-.02	.08*	.27**	.23**	.32**	-.22**
2. Perceived control over recovery		—	-.17**	-.12**	.27**	-.20**	.32**
3. Self-blame			—	.27**	.10**	.29**	-.25**
4. Maladaptive coping				—	.42**	.56**	-.42**
5. Adaptive coping					—	.28**	-.06
6. PTSD						—	-.51**
7. Self-rated recovery							—

* $p \leq .05$, ** $p \leq .01$

Figure 1

Final Model of the Relations among Traumatic Life Events, Psychosocial Variables, PTSD, and Self-Rated Recovery



Note. $\chi^2(2, 969) = 3.91, p = .14$; IFI = 1.00; NFI = 1.00; RMSEA = .03.