Posttraumatic Stress Symptoms as a Mediator between Sexual Assault and Adverse Health Outcomes in Undergraduate Women

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This study investigated the links between sexual assault experiences, posttraumatic stress symptoms, and adverse physical health outcomes among undergraduate women. Existing research has demonstrated that posttraumatic stress disorder mediates the relationship between trauma exposure and physical health in general, but this has yet to be tested for sexual assault specifically. Using structural equation modeling, support was found for a model in which posttraumatic stress symptom severity partially mediates the association between sexual assault severity and self-reported health outcomes. An alternative model using depression symptoms did not meet the criteria for mediation. Implications for the physical health of sexual assault survivors are discussed.

Sexual assault is a relatively common trauma experience among women that has a high probability of leading to posttraumatic stress disorder (PTSD; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995), thus making sexual assault survivors an important population for trauma research. Although a variety of traumatic events have been linked to the development of trauma symptoms, rape is the trauma most likely to lead to PTSD (Kessler et al., 1995; Kilpatrick, Saunders, Veronen, Best, & Von, 1987). Assault-related PTSD occurred in 46% of sexually assaulted women in the National Comorbidity Study (Kessler et al., 1995) and in 57% of women with a history of rape in Kilpatrick et al.'s criminal victimization study. These are considerably greater than rates of PTSD in general populations of trauma-exposed women (e.g., 20–30%; Breslau, Davis, Andreski, & Peterson, 1991; Kessler et al., 1995), suggesting that sexual assault survivors are at particular risk of developing PTSD.

Across a diverse range of populations, trauma exposure has been consistently linked to adverse physical health outcomes such as self-reported health problems, poorer perceptions of overall health, higher rates of medical service utilization, greater likelihood of being diagnosed with a medical condition, and increased mortality (Friedman & Schnurr, 1995; Schnurr & Green, 2004). The association between trauma and physical health problems often increases with trauma severity (Friedman & Schnurr) and remains even after controlling for age, socioeconomic status, stressful life events, and psychiatric history (e.g., Ullman & Siegel, 1996). Notably, trauma survivors who are at greatest risk for poor health appear to be those who develop PTSD, as they report more physical symptoms, physician-diagnosed medical disorders, and chronic health conditions, and hold poorer health perceptions (Andreski, Chilcoat, & Breslau, 1998; Kimerling, Clum, & Wolfe, 2000).

Like other traumas, sexual assault has been linked to a variety of health problems such as more frequent and severe somatic symptoms, poorer health perceptions, higher rates of chronic disease, increased utilization of medical services, and greater functional limitations (Golding, 1994; Kimerling & Calhoun, 1994; Waigandt, Wallace, Phelps, & Miller, 1990). Importantly, sexual assault has also been associated with sexual health symptoms including pelvic pain, excessive menstrual bleeding, urinary problems, and sexual difficulties (Golding, 1994; Waigandt et al., 1990). Chapman's (1989) longitudinal study showed roughly equal proportions of battered and sexually assaulted women (about 60%) reported either gynecological problems or long-standing sexual dysfunction. Explanations for a direct link between sexual assault and health problems include assault-related injuries and sexually transmitted infections contracted during the assault. Moreover, researchers have theorized (e.g., Zoellner, Goodwin, & Foa, 2000) that there is an important indirect pathway whereby chronic or posttraumatic stress following the assault is a principal third variable that links sexual assault to health problems.
Zoellner and colleagues (2000) demonstrated that the severity of chronic PTSD symptoms among sexually assaulted women predicted health concerns beyond the contributions of depression, anger, and negative life events. Similarly, Clum, Calhoun, and Kimerling (2000) found that, in sexually assaulted college women, PTSD was associated with global health perceptions and both general and reproductive health symptoms after controlling for childhood sexual victimization, assault severity, and post-assault physical reactions. Neither of these studies included non-sexually assaulted women; hence inclusion of appropriate comparison groups will be important in establishing the generalizability of these findings.

With empirical evidence of the links between trauma, PTSD, and health, researchers have begun to investigate PTSD as a potential mediator of the relationship between trauma and health. Posttraumatic stress disorder partially mediates the relationship between trauma and perceived health in female war veterans (Wolfe, Schnurr, Brown, & Furey, 1994) and in civilian bus drivers (Vedantham et al., 2001). Using a psychiatric control group, Weisberg et al. (2002) showed that PTSD was a better predictor of medical problems than was trauma exposure alone and that those with PTSD reported more physical health conditions than individuals with other anxiety disorders.

Based on a review of the literature, Schnurr and Green (2004) developed a comprehensive model proposing that PTSD is the primary pathway through which trauma exposure leads to adverse health outcomes. Evidence supporting this model suggests that the individual’s unique psychological response to trauma, rather than the traumatic event itself, most negatively impacts health.

Due to associations among sexual assault, depression, PTSD, and health (Burnam et al., 1988; Ford, 2004; Kessler et al., 1995), depression is also a plausible mediator between sexual assault and physical health. Although some researchers have shown that the association between PTSD and health problems remains after controlling for depression (e.g., Weisberg et al., 2002), others have found that both disorders contribute significantly to adverse health outcomes (Clum et al., 2000). Furthermore, many studies on PTSD and health have failed to assess for depression. Thus, it is appropriate to consider depression as an alternative mediator of physical health.

The purpose of this study is to examine posttraumatic stress symptom (PTSS) severity as a mediator between sexual assault and adverse health outcomes using structural equation modeling (SEM). Similar models have been supported for other traumas (see Schnurr & Green, 2004), but have not yet been tested for sexual assault.

We hypothesized that the severity of sexual assaults in adolescence or adulthood would be related to greater self-reported general health symptoms and health care utilization, more sexual and reproductive health concerns, and poorer global health perceptions. Because there are established links between childhood maltreatment and adult sexual assault (Van Bruggen, Runtz, & Kadlec, 2006), as well as child maltreatment and adverse health outcomes (Runtz, 2002b), we controlled for childhood maltreatment in the present study. Finally, PTSS severity is expected to mediate the relationship between sexual assault severity and physical health. Symptoms of depression will be considered as an alternative mediator.

**METHOD**

**Participants and Procedures**

Participants were 153 female, undergraduate psychology students from a western Canadian university. Recruitment was conducted through an online system within the Psychology Department at the participating university. The study was described as a confidential and anonymous questionnaire involving questions about women’s experiences in the areas of physical and mental health, and victimization. Each participant completed paper-and-pencil questionnaires at individual desks in groups smaller than 30. They received bonus credit for their participation. The study was approved by the university’s Human Research Ethics Board.

Of the initial 160 participants, 5 were removed from analyses because of serious medical conditions (e.g., cancer) that could confound the results, and 2 were identified as multivariate outliers and subsequently removed. The remaining 153 women ranged in age from 17 to 39 years (median = 19, SD = 3). Most were Canadian citizens (90%), single (93%), Caucasian (74%), heterosexual (97%), and their primary language was English (85%). Family of origin socioeconomic status was middle- to upper-middle class (M = 48.8; SD = 9.3; Hollingshead, 1957).

**Measures**

Sexual assault after age 13 was assessed by 10 dichotomous items on the Sexual Experiences Survey (SES; Koss, Gidycz, & Wisniewski, 1987) that inquire about experiences ranging from unwanted sexual contact to rape. Previous research with undergraduate women yielded an internal consistency reliability of .74 and test-retest reliability of .93 (Koss & Gidycz, 1985). In the current sample, Cronbach’s alpha was .80. Scoring of the SES was based on the most severe item endorsed, thus creating a continuous sexual assault (SA) severity variable. The absence of victimization was coded as 0. If unwanted sexual contact was the most severe experience endorsed, this was coded as 1. If sexual coercion was the most severe experience, this was coded as 2, attempted rape as 3, and completed rape as 4. This method of scoring, which is based on increasing level of assault severity, has been used in a number of previous studies. For example, increasing assault severity has been linked to poorer psychological adjustment (Gidycz, Coble, 1987).

1 Other ethnicities included: Asian (12%), African-Canadian (1%), Aboriginal (1%), Mixed race (6%), Other (6%).
Latham, & Layman, 1993), as well as poorer sexual self-esteem and increased sexual difficulties (Van Bruggen et al., 2006). This scoring is also consistent with Koss and colleagues’ dimensional conceptualization of sexual victimization, upon which the SES is based (see Koss et al., 1987).

On the Childhood Sexual Experiences Scale (CSE; Runtz, 2002a) reported the frequency of nine nonconsensual sexual behaviors occurring before age 14 on a scale ranging from never to more than 20 times (e.g., how often another person “got you to kiss or touch their body in a sexual way”). Because the variable was highly skewed, participants were categorized dichotomously (0 = no experience, 1 = experience of any unwanted sexual activity before age 14 perpetrated by an adult 18 or older or by someone less than 18 but more than 5 years older). The CSE previously showed excellent internal consistency with Cronbach’s alphas of .90 to .94 (Sengsouvanh, 2004). In the present sample, alphas were .87 for adult perpetrators and .77 for adolescents.

On the psychological maltreatment (PM) subscale of the Childhood Maltreatment Interview Schedule Short Form (CMIS-SF; Briere, 1992), participants reported the frequency of seven childhood events occurring in an average year before age 14, as perpetrated by parental figures. Items include “yell at you” and “ridicule or humiliate you,” and are rated on a 7-point scale ranging from 0 (never) to 6 (20+ times a year). The PM scale yielded a Cronbach’s alpha of .90 in previous research (Van Bruggen et al., 2006) and .91 in the current sample.

The Physical Abuse Questionnaire (PAQ; Demaré, 1995) is a self-report scale consisting of 16 physically abusive behaviors occurring before age 18 and perpetrated by a parental figure. Items are rated on a 5-point scale ranging from 1 (never) to 5 (very often). Previous research reported good internal consistency (α = .90; Demaré, 1996). In the current sample, Cronbach’s alpha was .82.

The Postraumatic Stress Diagnostic Scale (PDS; Foa, Cashman, Jaycox, & Perry, 1997) was used to assess PTSS. Participants rated 17 postraumatic stress symptoms associated with the diagnostic criteria of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; American Psychiatric Association, 1994) for PTSD on a scale of 0 (not at all or only one time) to 3 (five or more times a week/almost always) for the previous month. Participants rated symptoms for the traumatic event “that bothers you most.” Ratings were only included in analyses if the identified trauma met PTSD criterion A of the DSM-IV (i.e., actual or threatened death or serious injury, plus intense fear, helplessness, or horror).

The PDS assesses three dimensions of PTSD: reexperiencing (e.g., “having bad dreams or nightmares about the traumatic event”), avoidance (e.g., “trying not to think about, talk about, or have feelings about the traumatic event”), and hyperarousal (e.g., “having trouble falling or staying asleep”). A symptom severity score was computed by summing all symptom ratings for each of the three areas (i.e., postraumatic stress symptom severity in the present study). Symptom severity scores less than or equal to 10 indicate a mild level of distress. Foa et al. (1997) reported test-retest reliability of .83 and a Cronbach’s alpha of .92. In the current sample, Cronbach’s alpha was .93.

The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) was used to measure depressive symptoms. The CES-D measures 20 symptoms of depression experienced during the previous week on a scale ranging from 0 (rarely or none of the time) to 3 (most or all of the time). Radloff reported good internal consistency with alphas of .90 in psychiatric populations and .85 in the general population. Cronbach’s alpha was .92 in the current sample.

On the Health Symptom Checklist (HSC; Runtz, 2002b), participants rated the frequency of 54 physical health symptoms (e.g., nausea, backaches) over the past 6 months. Symptoms are rated on a scale from 0 (not at all) to 5 (occurs daily). The HSC previously demonstrated good internal consistency reliability (α = .89; Runtz, 2002b). Similar reliability (α = .88) was found in the current sample. Validity has been demonstrated through significant correlations with several health-related variables (e.g., medication use; social, academic, and occupational functioning; Runtz, 2002b).

Number of visits to medical professionals in the past 6 months were summed for an overall measure of health care utilization. Principal components factor analysis (with varimax rotation) and bivariate correlations of the Health Symptom Checklist and health care utilization variables indicated that they could be combined (via item parceling) for use in the structural equation model. All variables loaded on a single factor accounting for 43% of the variance.

The 40-item Reproductive Health Questionnaire (RHQ; Eadie & Runtz, 2007) was designed for the present study to assess women’s reproductive and sexual health concerns (e.g., “irregular menstrual periods,” “pain during intercourse”). Respondents report the frequency of health concerns over the past 6 months using a scale ranging from 1 (never) to 4 (often). Nine items included a (N/A) response category because they were relevant to having been sexually active during the past 6 months. Thirty women (19%) selected N/A for at least one item. These responses were coded as missing data and participants’ scores were computed as a proportion of their total possible score. For example, if a participant answered 35 of the 40 items and selected N/A for the remaining 5 items, her total score was computed out of 140 (35 items × 4 possible responses) instead of 160. Subsequently, RHQ total scores were rescaled as a value out of 100. A preliminary 33-item version of the RHQ was previously examined in a pilot study of 55 undergraduate women (Eadie, 2006) and demonstrated good internal consistency (α = .83). In the present sample, the 40-item version yielded a Cronbach’s alpha of .89.

The Cantril Self-Anchoring Ladder (Cantril, 1965) was used to assess overall health perceptions. It consists of a visual image of a ladder with rungs numbered from 1 (worst possible health) to 10 (best possible health). Participants rated their current health, past health, future health, and best health. Prior research has tended to
evaluate each health dimension separately (e.g., Hilton, Budgen, Molzahn, & Attridge, 2001). However, principal components factor analysis (with varimax rotation) showed that all four items loaded on a single factor accounting for 59% of the variance. Consequently, scores were summed to represent overall perceived health. Test-retest reliability of .79 has been previously demonstrated (Molzahn, as cited in Hilton et al., 2001). Cronbach’s alpha was acceptable (.74) in the present sample.

RESULTS

Descriptive Statistics

Table 1 contains summary statistics and intercorrelations for the present sample as well as mean values from the literature, for comparison. Overall, sample means in the current study are comparable to means from normative or similar, nonclinical samples. All items and scale totals had less than 5% missing data, with the exception of the PDS; however, this was expected because only participants who had experienced a traumatic event completed this scale. Missing values were replaced with sample means for health variables. Posttraumatic stress symptom severity and CPA were highly, positively skewed and logarithmically transformed.

More than half of this sample (53.5%; n = 83) experienced some form of sexual assault after age 13. Rape, the most severe form of sexual assault, was experienced by 19.4% (n = 30) of women. Twenty-two percent (n = 34) experienced attempted rape, 30.3% (n = 47) had been coerced into having sex, and 47% (n = 73) experienced unwanted sexual contact (fondling, kissing, etc.).

Current prevalence of posttraumatic stress disorder (PTSD), determined by self-reported symptoms on the PDS, was 11.6% (n = 18). For the purposes of the present study, PTSS severity was measured as a continuous variable, thus allowing for the examination of subdiagnostic levels and increasing severity of symptoms.

Model Testing

Structural equation model testing was conducted using AMOS 5 (Arbuckle, 2003). The following indices were used to assess model fit: the chi-square goodness-of-fit index, the comparative fit index (CFI; Bentler, 1990), the goodness of fit index (GFI; Jöreskog & Sörbom, 1984), and the root mean square error of approximation (RMSEA; Steiger, 1990). A nonsignificant chi-square value, values of .95 or greater on CFI and GFI, and RMSEA values less than .08 are indicators of good model fit (Byrne, 2001). Chi-square difference tests ($\chi^2_{\text{DIFF}}$) were used to compare alternative, nested models. A nonsignificant $\chi^2_{\text{DIFF}}$ test indicates that the overall fits of two nested models are comparable (Byrne, 2001).

The measurement model included one latent variable (adverse health outcomes), with three indicators (general health symptoms parceled with health care utilization, reproductive and sexual health, and health perceptions).

### Table 1. Intercorrelations Among Victimization, Psychological, and Health Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>M (current (previous sample) samples)</th>
<th>SD</th>
<th>Range</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. Sexual assault severity &amp; CPA</td>
<td>1.4</td>
<td>.71</td>
<td>-0.4</td>
<td>-</td>
<td>1.6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2. CSAa</td>
<td>18.4</td>
<td>10.2</td>
<td>16–39</td>
<td>-</td>
<td>0.15</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>3. CPAa</td>
<td>1.4</td>
<td>14.31</td>
<td>10.8–142</td>
<td>-</td>
<td>0.14</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>4. CFM</td>
<td>9.5</td>
<td>12.35</td>
<td>9.9–46</td>
<td>-</td>
<td>0.24</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>5. PTSD severity</td>
<td>16.0</td>
<td>7.9–10.35</td>
<td>11.0–18</td>
<td>-</td>
<td>0.13</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6. Depression</td>
<td>35.2</td>
<td>38.85</td>
<td>27.7–65</td>
<td>0.17</td>
<td>1.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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<tr>
<td>7a. General health symptoms</td>
<td>4.05</td>
<td>5.5536</td>
<td>2.3–26.5</td>
<td>1.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
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<tr>
<td>7b. Reproductive health symptoms</td>
<td>3.23</td>
<td>3.1900</td>
<td>1.9–4.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</table>

Note: CSA = child sexual abuse; CPA = child physical abuse; CFM = child psychological maltreatment; PTSD = Posttraumatic stress disorder; M = mean; SD = standard deviation; correlations for 7a and 7b are for the parceled item used in the model.

aCSA is a dichotomous variable. bvariable is logarithmically transformed. cM and SD values for reproductive health symptoms were rescaled as a proportion out of 100. dNon-clinical sample from Foa et al. (1997). eNon-clinical sample from Radloff (1977). fNon-clinical sample from Poa et al. (2001). gUnpublished pilot data.
Adverse health outcomes were associated with poorer health outcomes (related to PTSS severity). In SEM, evidence of full mediation is found when (in model 2): (a) there is good model fit, (b) the indirect paths were significant, (c) path $c$ from predictor to criterion is nonzero and significant, and (d) there is no difference in model fit, as indicated by a nonsignificant $\chi^2$ test, when comparing the mediated (model 2) and constrained models (model 3; i.e., when path $c$ is constrained to zero). Partial mediation is shown when (in model 2): criteria 1) and 2) are the same as above, but 3) the direct path from predictor to criterion (path $c$) is nonzero and significant.

The direct-effects model (model 1) revealed a significant association between SA severity and adverse health outcomes, $\beta = .27$, $p < .01$, indicating that there was a significant association to be mediated. Next, the PTSS-mediated model (model 2) was tested and resulted in good model fit, $\chi^2(4, N = 153) = 1.41, ns$, GFI = .996, CFI = 1.0, RMSEA = .00, CI .00–.07 (see Figure 1). Furthermore, the predicted indirect path coefficients were significant [i.e., SA severity was significantly related to PTSS severity (path $a$), which, in turn, was significantly related to adverse health outcomes (path $b$)].

In summary, these analyses indicate PTSS severity partially mediates the relationship between SA severity and adverse health outcomes, given that the PTSS-mediated model (Model 2) yielded good overall model fit and the indirect paths were significant. We did not find evidence of full mediation, however, because (in Model 2) the path from SA severity to adverse health outcomes (path $c$) was significant, $\beta = .23$, $p < .05$, in the presence of the mediator. As a second step to testing for full mediation, the PTSS-mediated model (Model 2) was compared to a constrained model (Model 3) in which path $c$ was set to zero. The chi-square difference test was significant, $\chi^2_{DIF} (1) = 8.12, p < .05$, indicating that the constrained (fully-mediated) model (Model 3) resulted in significantly worse fit to the data, $\chi^2(5, N = 153) = 9.54, ns$, GFI = .98, CFI = .96, RMSEA = .077. Hence, the partially mediated model resulted in better fit.

Depression was considered as an alternative mediator of the relationship between SA severity and adverse health outcomes. However, there was no significant association between SA severity and symptoms of depression, $\beta = .05$, $ns$), therefore the model did not meet the necessary criteria for mediation.

**Figure 1.** Model 2: Standardized parameter estimates for the PTSS-mediated model. PTSS = Posttraumatic stress symptoms; Gen. Health Sx = General health symptoms; HC Utilization = Health care utilization; Repro & Sexual Health Sx = Reproductive and sexual health symptoms.

* $p < .05$, ** $p < .01$, *** $p < .001$. 

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**Discussion**

Women with a history of sexual assault are at particular risk for developing symptoms of posttraumatic stress. In this study, we found that the more severe a woman's experience of sexual assault, the more likely she is to develop significant posttraumatic stress symptoms. Importantly, women who experience more severe forms of sexual assault also report more health difficulties (as indicated by the latent factor based on general health symptoms parcelled with health care utilization, sexual and reproductive health concerns, and poorer health perceptions). These findings are consistent with previous research demonstrating a link between sexual assault and physical health outcomes (e.g., Golding, 1994; Kimerling & Calhoun, 1994; Resnick, Acierno, & Kilpatrick, 1997; Waigandt et al., 1990).

Using structural equation modeling, we found that PTSS severity partially mediates the association between women's sexual assault experiences and their self-reported physical health. Therefore, the link between sexual assault experiences and poorer health outcomes can be partially, although not entirely, accounted for by the presence of trauma symptoms. Direct effects of sexual assault and the action of other mediators unmeasured in this study may also influence health outcomes after sexual assault.

As hypothesized, women’s adolescent and/or adult sexual assault experiences are related to adverse physical health outcomes, even when childhood maltreatment is controlled. This is an important finding as previous studies have shown a link between childhood maltreatment and poor health outcomes (Runtz, 2002b). Because childhood maltreatment has also been associated with an increased risk of revictimization (Van Bruggen et al., 2006) it is important that research investigating the impact of violence on women’s health examines the unique contribution of adolescent/adult assault experiences and the full range of victimization experiences across the life span.

The finding that posttraumatic stress symptoms partially account for variation in health outcomes is consistent with existing research on the mediating role of PTSD in relation to physical health. In particular, our results are similar to those of Friedman and Schnurr (1995), who found that PTSD partially mediated health outcomes in female war veterans. Furthermore, other researchers have found that the effect of trauma on health is considerably, but not entirely, reduced when PTSD is included in analyses (Kimerling et al., 2000; Wagner et al., 2000).

While these studies show that PTSD plays an important role in the link between trauma and health, it is apparent that PTSD is not the only relevant mediator. Thus, an expectation that posttraumatic stress symptoms would entirely mediate the relationship between sexual assault and physical health may be unrealistic. Additional mediators might include other psychological disorders, multiple traumas, substance abuse, coping strategies, and unsafe sexual practices. Furthermore, through injury or infection, sexual assault may also have a direct impact on physical health.

An alternative model in which symptoms of depression replace PTSS in mediating physical health outcomes was also considered; however this model did not meet criteria for mediation (i.e., a significant association between predictor and mediator). This non-significant relationship between sexual assault severity and depression symptoms was unexpected and contradicts existing research linking sexual assault with depression (e.g., Burnam et al., 1988). Certain components of the present study may account for this lack of an association. For example, we measured state depression over the past week rather than enduring symptoms that would be more characteristic of an ongoing depression. We also did not measure depression in the immediate aftermath of the sexual assault experience, when symptoms may have been most severe. Nevertheless, this unexpected result limits our conclusions regarding the role of depression in this sample.

Findings from this study are consistent with research that emphasizes the central role of posttraumatic stress symptoms as a mediator of physical health. Our study adds to this past research by explicitly investigating the mediating role of PTSS severity on health for the trauma of sexual assault. Furthermore, this study introduces a new assessment tool that measures women’s sexual and reproductive health concerns, and demonstrates the important link between sexual assault and this area of health.

Limitations of this investigation should also be considered. Participants were primarily young, single, Caucasian, female students living in a medium-sized Canadian city. Consequently, results may not generalize to more diverse populations, older women, or male sexual assault survivors. It has, however, been suggested that young university women have a heightened risk of sexual victimization (e.g., Maxwell, Robinson, & Post, 2003). Furthermore, prevalence rates and demographic characteristics of this sample are consistent with samples of young adults in other studies (e.g., Breslau et al., 1991; Koss & Gidycz, 1985).

The retrospective measures used may be influenced by bias related to memory and social desirability. Although multiple indicators of physical health were used, additional variables such as medical diagnoses, objective symptom reports, functional limitations, and health-related quality of life should be included in future investigations. In addition, length of time since the sexual assault was not explicitly measured and subjective severity of the assault was not assessed. Similarly, other relevant life experiences were not accounted for in this study (e.g., physical violence in adulthood or other traumatic events such as accidents and natural disasters). Finally, while directionally-drawn pathways (i.e., single-headed arrows) may imply causal relationships in structural equation modeling, it is important to note that causality cannot be tested in this study because the data are cross-sectional. Thus, even though the hypothesized model fits the data well, not all possible alternative models have been ruled out, and causality should not be assumed.

In conclusion, the results of this investigation support a model in which posttraumatic stress symptom severity partially mediates...
the relationship between sexual assault severity and physical health outcomes. This suggests that sexually assaulted women who experience posttraumatic stress symptoms are at increased risk for physical health problems and may be more likely to seek medical care as a result. Health care needs for sexual assault survivors are in many ways unique (e.g., because of increased risk for sexual and reproductive health problems; Golding, 1994; Waigandt et al., 1990) and thus, may require targeted integration of medical and mental health services (Resnick et al., 1997). Furthermore, appropriate treatment of trauma symptoms in sexually assaulted women should take into account the impact of the trauma on their physical as well as psychological well-being. Future research should address the relative effectiveness of sexual assault treatment interventions in relation to sexual and reproductive health as well as to overall physical and mental health.

REFERENCES


