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# The Moderating Effects of Assertiveness, Religiosity, and Perceived Social Support on the Relationship between Sexual Assault Severity and Posttraumatic Stress Disorder Symptom Severity

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## Abstract

This study examined how moderating variables may reduce trauma-related symptoms for females who have experienced sexual assault. The study examined whether higher levels of assertiveness, religiosity, and perceived social support would result in fewer Posttraumatic Stress Disorder (PTSD) symptoms for female sexual assault survivors. Moderation analysis was used to determine if any of the moderator variables significantly reduced PTSD symptom severity for these women, thus leading to potential evidence based treatment for female sexual assault survivors. The results indicated that assertiveness was the only statistically significant moderator in reducing PTSD symptom severity.

**Keywords:**

Sexual assault, PTSD, Moderators, Women.

## Introduction

Sexual assault is a horrific interpersonal crime and the biopsychosocial impact it has on the survivor can be severe [1-5]. Approximately 80% of women meet clinical criteria for Acute Stress Disorder two weeks after an incident of rape and 39% of women who were raped meet a diagnosis of Posttraumatic Stress Disorder (PTSD) six months following the incident [6]. Further, 91% of women reported posttraumatic health issues due to the assault that impacted their education and career goals [7]. Thus, it is vital to assess the ways in which women can reduce the severity of PTSD-related symptoms following sexual assault [8-10].

The current study examined the potential moderating effects of assertiveness, religiosity, and perceived social support on the relation between sexual assault severity and PTSD symptom severity. Specifically, this research assessed whether women who experience severe levels of sexual assault and who exhibit high levels of assertiveness, religiosity, and/or more perceived social support may have a reduced risk for experiencing severe PTSD-related symptoms following sexual assault.

### Understanding Sexual Assault Severity, PTSD, and their Relation to One Another

Recent research has used the term non-consensual sexual experiences (NSE) to describe sexual abuse, sexual assault, and rape [11]. The definition of rape was revised by the FBI Uniform Crime Reporting (UCR) Program in 2013 as the "penetration, no matter how slight, of the vagina or anus with any body part or object, or oral penetration by a sex organ of another person, without the consent of the victim" [12]. Sexual assault has been defined by the UCR NIBRS (2018) as "Any sexual act including Rape, Sodomy, Sexual Assault With An Object, or Fondling directed against another person, without the consent of the victim, including instances where the victim is incapable of giving consent; also unlawful sexual intercourse" [12].

Based on these definitions, in 2020 there were 298,628 reported incidents of sexual assault against women in the United States [13]. Of these incidents, 65,490 were attempted rapes, and 104,760 were classified as sexual assault (e.g. fondling, grabbing, verbal threats) [13]. The rates for rape or sexual assault for women age 12 or older are 2.7 per 1,000 per year [11]. These statistics note the high incidence of sexual assault at the varying severity levels.

Just as the severity of sexual assault can range from mild (i.e., sexual contact) to moderate (i.e., attempted rape) to severe (i.e., rape) [14], so too can the effects of sexual assault. Some female sexual assault survivors experience few negative psychological effects from sexual assault, whereas others develop severe cases of PTSD [15-17]. Koss and colleagues (2002) explained how Posttraumatic Stress symptoms are most common in rape survivors [17]. Feeling as though one was re-experiencing the rape was associated with more severe PTSD-related symptoms [17].

Posttraumatic Stress Disorder (PTSD) is defined in the *Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*, "the development of characteristic symptoms follows exposure to one or more traumatic events…" involving "exposure to actual or threatened death, serious injury, or sexual violence…" " [18]. The general diagnostic criteria for PTSD include, "a) exposure to actual or threatened death, serious injury, or sexual violence, b) intrusive thoughts about the event, c) continuous avoidance of stimuli associated with the traumatic event(s), d) negative alterations

in cognitions and mood, e) marked alterations in arousal and reactivity associated with the traumatic event(s)" [18]. Additionally, the relevant symptoms must begin or worsen from the time of the traumatic event, last longer than a month, be impairing across various functional domains, and must not be due to substance abuse [18].

PTSD was initially diagnosed in war veterans exposed to traumatic events in combat [19]. PTSD is now often diagnosed in sexual assault survivors due to sexual assault being one of the most traumatizing life experiences; in fact, even after a year, 30% of people who endured sexual assault still face clinical Posttraumatic Stress Symptoms [20]. Moreover, incidents of sexual assault that include perceived threat to life increase posttraumatic symptom severity, which may be why in incidents of wartime rape approximately 92% of women meet the criteria for PTSD [21-23].

Several studies have sought to understand the relation between sexual assault severity and PTSD-related symptoms for female sexual assault survivors [14,22,24,25]. Studies have found that women who have been sexually assaulted at a severe level, such as rape, are at a higher risk for developing PTSD-related symptoms, including sexual functioning issues and risk-taking behaviours [14,26]. Sexual assaults that include high violence and alcohol-related assaults are also associated with worse PTSD than moderate sexual assaults [22].

**Empirical Evidence Related to the Protective Factors and PTSD**

Since women who have been sexually assaulted at differing levels may develop differing severities of PTSD-related symptoms, the severity of PTSD may also be buffered by protective factors [14,24,25]. The empirical evidence provides a strong and logical rationale for the hypotheses that assertiveness, religiosity, and perceived social support may buffer the relation between sexual assault severity and the severity of PTSD-related symptoms [27,28].

**Assertiveness**: Improving sexual assertiveness may lessen vulnerability to potential victimization and increase the likelihood of women reporting incidents of sexual assault to the police [29,30]. Sexual assertiveness and prior sexual victimization consistently predicted subsequent sexual victimization, meaning the association between sexual assertiveness and sexual victimization is reciprocal [3]. Sexual assertiveness in particular, as opposed to general assertiveness, mediates between prior and subsequent sexual victimization [3]. The capacity to be sexually assertive with a new partner during a first-time penetrative sexual encounter predicted the use of more positive (i.e., direct verbal) and less indirect and passive modes of communication [31]. Sexual refusal is linked to a decreased likelihood of rape acknowledgement among rape survivors [32]. Findings suggest that improving assertive behavioural response to threat is an effective risk reduction intervention that empowers women to identify and respond to high-risk scenarios [23].

**Religiosity**: Most of the literature concerning religiosity as a buffer for PTSD varies greatly between ethnicities, with minorities reporting much higher rates of religiosity [33-34]. Research both supports and disproves religion as an effective safeguard against PTSD and sexual assault severity [33]. However, sexual assault survivors who utilize more positive religious coping experience increased levels of psychological well-being [33]. Additionally, religious coping was associated with decreased heavy drinking among very religious sexual assault survivors [34].

**Perceived Social Support**: Perceived social support may also play a role in the reduction of PTSD-related symptoms for female sexual assault survivors [28,35,36]. Having supportive individuals around following sexual assault may allow survivors to discuss and process their feelings and thoughts related to the event leading to a reduction in negative psychological symptoms such as avoidance coping behaviour and self-blame [20,35]. Yap and Devilly (2004) found that perceived social support was a buffer against stress for rape victims [36]. If a sexual assault survivor has social support and does not feel alone in her healing process, she may feel less stressed and possibly have fewer PTSD symptoms.

**Definitions:** The following is a list of operational definitions for variables addressed in this study:

- Sexual Assault - Illegal sexual contact that usually involves force upon a person without consent or is inflicted upon a person who is incapable of giving consent (as because of age or physical or mental incapacity) or who places the assailant (as a doctor) in a position of trust or authority [37].
- Sexual Assault Severity - Non-victimization to mild (i.e., sexual looks or teasing) to moderate (i.e., sexual fondling) to severe (i.e., rape or unwanted sexual intercourse) [3,38].
- Assertiveness – Saying no, making reasonable demands, setting limits, and/or giving constructive criticism [3].
- Religiosity – Believing in a god or a group of gods and following the rules of a religion [37].
- Perceived Social Support - The physical and emotional comfort provided to us by friends, family, peers, and others [39].
- PTSD - "The development of characteristic symptoms following exposure to one or more extreme traumatic events" [18] involving "exposure to actual or threatened death, serious injury, or sexual violence" [18].
- PTSD Severity – Experiencing one or more of the following symptoms: "a) exposure to actual or threatened death, serious injury, or sexual violence, b) intrusive thoughts about the event, c) continuous avoidance of stimuli associated with the traumatic event(s), d) negative alterations in cognitions and mood, e) marked alterations in arousal and reactivity associated with the traumatic event(s)" [18].

## Summary

There is a need for research that includes women who have been sexually assaulted at various levels and the impact that assertiveness, religiosity, and perceived social support have on the severity of PTSD-related symptoms these women experience. An overview of sexual assault severity, PTSD diagnosis, and implications was offered. Background information explaining the effects of assertiveness, religiosity, and perceived social support in relation to sexual assault and PTSD was described.

## Materials and Methods

The following research hypotheses guided the study:

1. There will be a significant relationship between sexual assault severity and the severity of PTSD-related symptoms in that more severe types of sexual assault will be associated with more severe PTSD-related symptoms.
2. For females who experience severe levels of sexual assault, *high* levels of assertiveness, religiosity, or perceived social support

will moderate the relation such that the strength of the relation between the severity of sexual assault and the severity of PTSD will be decreased.

## Participants

The participants of this study were two hundred and twenty (n=220) women aged 18 or older who lived in the Southwest area of the U.S. A total of four hundred and three (n=403) women took the questionnaires; of these participants, two hundred and twenty (n=220) indicated experiencing some level of sexual assault. Therefore, one hundred and eighty three (n = 183) questionnaires were not used in the results of the current study and were shredded to ensure confidentiality. The mean age of participants was 20 years (SD=3.95) with an age range from 18 to 54. The ethnicity of the participants was as follows: 59% Latina (n = 130), 34% White (n=75), 2% African American (n=5), 1% Asian (n=2), 4% Biracial (n=8), and 0% other (n=0). The majority of the participants, 95%, identified as heterosexual (n=208), 2.7% as lesbian (n=6), 2.3% as bisexual (n=5), .05% as other (n=1), and 0% as gay (n=0).

The descriptive statistics regarding income, generation status, and religion provide relevant information about the participants. Most of the participants, 85%, indicated their annual income is below $10,000 (n = 186). There were 26 participants with an income of $10,000 - $19,999 (12%). The other eight participants indicated an income of $20,000 or higher. With regard to generation, the majority of participants, 41%, indicated they are second generation (n = 91) or third generation (43%; n = 94). Regarding religious affiliation, the following are the participants' responses indicating the religion which with they identify: 1% Agnostic (n = 2), 2.7% Atheist (n = 6), 57.7% Christian (n = 127), 1% Muslim (n = 2), 35.4% Catholic (n = 78), 1% Buddhist (n = 2), and 1.4% Jewish (n = 3).

## Procedures

**Recruitment:** A convenience sample of women was recruited from courses at a medium sized Southwest university. The women were recruited from a city of roughly 90,000 people. The city was approximately 52% Latina/o, 42% White, 2.3% African American, 1.7% American Indian, and 1.2% Asian.

**Data Collection**: Data collection took place in person during class time or online through Survey Monkey. Participants were instructed that their participation was entirely voluntary, and that they could discontinue participation at any time. The participants read and signed an informed consent form before completing the surveys. Risks and benefits of the study were included in the informed consent. The benefits of the study were that the information provided by the participants may lead to revised treatment plans for sexual assault survivors who suffer from PTSD. Risks were that the surveys could evoke feelings of sadness, anger, or reliving the trauma for the participants, all of which were explained to participants prior to their consent. Phone numbers for campus and community counselling options were provided in the event that such risks arise during or after completion of the surveys. The informed consent forms and surveys were collected separately to ensure the participants' confidentiality.

It took the participants between 25 and 30 minutes to complete the surveys. The completed surveys were placed in a sealed envelope. Other participants completed their surveys online through Survey Monkey. Lastly, participants were provided with a debriefing form. All of the data was kept in a locked cabinet or in a password-protected excel file that could only be accessed by the researcher.

## Measures

**Demographic Questionnaire:** A short demographic questionnaire was used in order to gain information regarding the participants' gender, ethnicity, age, sexual orientation, generational status, religion, and SES. The information gathered from the demographic questionnaire was not used in the data analysis.

**Sexual Assault Severity:** Sexual assault severity was operationally defined by participants' scores on the Sexual Experiences Survey (SES) that was developed by Koss and Gidycz (1985) [38]. The SES is a 10-item self-report scale that assesses the subject's previous experience of sexual victimization through the following categories: molestation, completed rape, verbal coercion, and physical force [38]. The scale was used in the current study to assess for sexual assault severity. The SES assesses whether the person experienced the sexual assault during the past twelve months or since the age of 14 (this excludes the past twelve months) [38]. The SES is rated on a 4 point Likert scale with 0 indicating the experience occurred zero times in the past twelve months and/or since age 14, whereas 3 indicates the experience occurred three or more times in the past twelve months and/or since age 14 [38]. Higher scores indicate more severe sexual assault while lower scores indicate less severe sexual assault. The following is a sample question from the SES: "Someone fondled, kissed, or rubbed up against the private areas of my body (lips, breast/chest, crotch or butt) or removed some of my clothes without my consent (but did not attempt sexual penetration) by: Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to" [38].

The SES has been shown to have high levels of reliability and validity in previous research. Koss and Gidycz (1985) demonstrated the internal consistency reliability (.74) and test-retest reliability of the SES (.93) [38]. The construct validity of the SES has been examined through comparing victims' answers to the questions on the SES with their responses to an interviewer [40]. The results of a Pearson product-moment correlation between responses to the SES and the interview was .73 [40]. The norms for the SES are as follows: unwanted sexual contact = 26.32%, sexual coercion = 27.63%, attempted rape = 25%, and rape = 21.05% [41].

**Posttraumatic Stress Disorder Severity**: Posttraumatic Stress Disorder symptom severity was operationally defined by participants' scores on the Posttraumatic Stress Symptoms Scale (PSS) [42]. The PSS is a self-report scale in which the participants answer 17 questions that correlate with the diagnostic criteria of PTSD [43]. The PSS questions rate symptoms such as re-experiencing, avoidance, and arousal [44]. The severity of each symptom is assessed over the two weeks prior to administration of the PSS [42]. The frequency of each symptom is rated on a 4-point scale ranging from 0 (not at all) to 3 (very much) [42]. The points are then summed to determine the total score; a total score of 10 or lower indicates either no PTSD or mild PTSD-related symptoms [42]. A score between 11 and 27 indicates moderate PTSD-related symptoms and a score of 28 or above denotes severe PTSD-related symptoms [43]. The following is a sample question from the PSS: "Have you had recurrent or intrusive distressing thoughts or recollections about the trauma?" [42].

The PSS has been tested for reliability and validity. The internal consistency of the PSS is .91 [45]. Researchers have found the PSS to have high inter-rater reliability (k=.90; k=.91) [44]. The PSS also showed a one-month test-retest reliability of .80 [45,44]. Specifically, test retest reliability was .66 for re-experiencing, .56 for avoidance, and

.71 for arousal [45]. The concurrent validity of the PSS was examined in relation to other measures (e.g. Beck Depression Inventory, Rape Aftermath Symptom Test) and found to range from .48 to .72 [45]. The convergent validity of the PSS found that it accurately predicted a PTSD diagnosis 94% of the time [45]. Research has found the mean score on the PSS to be 7.1 (SD = 10.0) [43].

**Assertiveness:** Assertiveness was operationally defined by participants' scores on the non-assertive subscale of the Inventory of Interpersonal Problems (IPP) [46]. This subscale measures assertiveness with regard to being able to say no, setting limits, arguing, being persuaded, and other items related to assertiveness [3]. The subscale is comprised of 21 items on a 5-point scale ranging from 0 (not at all) to 4 (extremely) [46]. The 21 item responses are averaged with higher scores indicating lower levels of assertiveness, and lower scores indicating higher levels of assertiveness [46]. The following is a sample question from the IIP's Non-assertive subscale: "It is hard for me to be firm when I need to be" [46].

The IIP's reliability and validity have been demonstrated. The reliability of the IIP has been found to be .96 [46]. The non-assertive subscale, which was utilized in the current study, has a reliability of .88 [46]. The authors also reported test-retest reliability across a 10-week period was between .80 and .90 [46]. Convergent validity between the IIP and the BDI-II (Beck Depression Inventory) and BAI (Beck Anxiety Inventory) is .48 and .44, respectively [46]. For females, the normative mean on the Non-assertive subscale of the IIP was 8.0 (SD = 6.1) [46].

**Religiosity:** Religiosity was operationally defined by participants' scores on the Religious Commitment Inventory – 10 (RCI-10) [47]. The RCI-10 is a 10 item measure of religious commitment [47]. The subscales of the RCI-10 include Intrapersonal Religious Commitment and Interpersonal Religious Commitment [47]. Each item is rated on a 5-point Likert scale ranging from 1 (not at all true of me) to 5 (totally true of me) [47]. Items 1, 3, 4, 5, 7, and 8 measure Intrapersonal Religious Commitment and items 2, 6, 9, and 10 measure Interpersonal Religious Commitment [47]. A score of 38 or higher on the RCI-10 indicates the person is highly religious and a score of 14 or below indicates the person is not very religious [47]. A sample item from the RCI-10 is, "My religious beliefs lie behind my whole approach to life" [47].

The RCI-10's reliability and validity are strong. The RCI-10 has a high level of internal consistency (alpha = .93) [47]. The three week test-retest reliability was .87 and the five month test-retest reliability was .84 [47]. The construct validity was .70, indicating that the full scale RCI-10, Intrapersonal Commitment, and Interpersonal Commitment were significantly correlated with participation in religion [47]. The RCI-10 was found to have a discriminant validity of .18 [47]. The criterion-related validity of the RCI-10 was .70 based on frequency of attendance of religious activities [47]. The normative mean on the RCI-10 was 23.1 (SD = 10.2) [47].

**Social Support:** Social support was operationally defined by participants' scores on the Social Provisions Scale (SPS) [39]. The SPS is a 24-item scale that assesses assistance or non-assistance-related support in six social support categories [48]. These categories are comprised of questions relating to guidance, reliable alliance, reassurance of worth, attachment, social integration, and opportunity for nurturance [48]. Items are rated on a 4-point scale from 1 (strongly disagree) to 4 (strongly agree) [39]. The sum of the items is calculated by adding all the scores after reverse scoring the 12 negatively worded items [39]. The higher the final scores, the greater the subject's general perceptions of social support [48]. The following is a sample question from the SPS: "There are people I can depend on to help me if I really need it" [39].

The reliability and validity of the SPS has been assessed. The reliability of the SPS ranges from .81 to .91 and the validity of the scale is widely supported [48]. The test-retest reliability was found to range from .37-.66 [48]. The predictive validity of the SPS was assessed in relation to depressive symptoms in women post pregnancy; women without the social provision measures by the SPS were found to have more depressive symptoms [48]. The SPS has also been shown to have good discriminant validity with the inter-correlations of the six provisions ranging from .10 to .51 [39]. The mean score on the SPS is 82.45 (SD = 9.89) [39].

### Analysis of Data

Correlations were run between all variables to determine which were positively correlated at the statistically significant level. Next, moderation analysis was used to further analyze the data. Moderation occurs when the addition of a third variable changes the strength of the relationship between the predictor and outcome variables [35]. Moderation investigates the unique conditions under which two variables may be related [35]. For the analysis of moderation effects, the relation between the independent and dependent variable must be different at different levels of the moderator [35]. Moderators are included in the statistical analysis as an interaction term [49]. In the current study, the moderator variables were assertiveness, religiosity, and perceived social support. These variables may moderate the impact sexual assault severity has on PTSD severity. Thus, higher levels of assertiveness, religiosity, and perceived social support may result in less severe PTSD-related symptoms due to the moderation effect [35].

Multiple regression analysis was used to examine the individual moderator effects. Thus, the effects of each moderator on PTSD-symptom severity were assessed. The moderator variables in the current study were continuous rather than categorical. Using multiple regressions with the continuous moderators results in fewer Type I and Type II errors [35].

## Summary

In summary, it was hypothesized that the protective factors of assertiveness, religiosity, and perceived social support would buffer the relation between sexual assault severity and the severity of PTSD-related symptoms in women who have been sexually assaulted. A correlation was used to determine whether the variables positively or negatively predicted the dependent variable PTSD. Moderation analysis was performed using hierarchical multiple regression to determine which of the moderator variables did indeed moderate PTSD symptoms.

## Results

**Sexual Experiences Survey:** The data on the Sexual Experiences Survey resulted in a mean score of 15.51 (SD = 22.02). Seventy seven (35%) participants answered 'Yes' to the last question on the SES asking if they have ever been raped while 143 (65%) participants marked "No', indicating they have never been raped. Most participants indicated that they had been sexually assaulted by a male(s) only (n = 206). Thirteen participants responded that they were sexually assaulted by a female(s) only and one participant

indicated she had been sexually assaulted by both male and female perpetrators. Research assessing the reliability and validity of the SES [41] found that 26.32% of the participants' responses indicated they had experienced unwanted sexual contact, 27.63% reported sexual coercion, 25% reported attempted rape, and 21.05% reported completed raped. The results of the current study differ slightly in the degree to which participants experienced each of the sexual assault categories just mentioned (Table 1). This could be due to several factors which are discussed in more detail. However, the current study only used data that indicated sexual assault and did not include participant surveys that indicated no sexual assault experiences. It is important to note that multiple acts of sexual aggression may occur during the same incident, so the category that was most prominent based on the participants' answers was the basis for their inclusion in a specific category. Thus, participants' answers on the questionnaires may have indicated they experienced a few instances of unwanted sexual contact and rape, but since inclusion in the rape category may include positive answers on questions related to unwanted sexual contact but not all, the participant was placed in the rape category (Table 1).

**Posttraumatic Stress Symptom Scale**: The data on the Posttraumatic Stress Symptom Scale showed a mean score of 7.04 (SD = 10.58). Most participants indicated no PTSD symptoms (n = 102, 62.57%). Of those who responded that they experienced PTSD symptoms, 30% (n = 66) of participants' responses placed them in the mild PTSD symptoms category (mild = score of 1-10), 16.81% (n = 37) were placed in the moderate PTSD symptoms category (moderate = score of 11-27), and 6.81% (n = 15) were placed in the severe PTSD category (severe = score of 28 or above). Marshall and Dobson (1995) used the PSS in their study to assess PTSD symptoms in trauma-exposed medical patients; the mean score in their study was 7.1 which is comparable to the mean of 7.04 in the current study [20].

**Moderators:** Regarding the three moderators, the normative data used to validate the IIP resulted in a mean of 8.0 for the 400 females who took the non-assertive subscale [50]. Participants' responses in the current study indicated higher levels of non-assertiveness with a mean of 10.80 (SD = 6.39). The study used to validate the Religious Commitment Inventory's validity [47] resulted in a mean score of 25.7. This mean score was comparable to the mean score of 22.56 (SD = 11.87) on the RCI in the current study, though the participants in this study indicated slightly less religious commitment. In the current study, 16% (n = 26) of participants' scores indicated they identify as highly religious (highly religious = full scale score of 38 or higher). Conversely, 51% (n = 83) of participants' scores indicated they are not very religious (not very religious = full scale score of 14 or lower). Regarding perceived social support, the mean on the SPS for the current study was 78.70 (SD = 11.16), which was slightly lower than the mean (82.45) from the study in which the SPS originated [48]. Descriptive statistics for all study variables are shown in Table 2.

**Correlations:** In order to determine whether the variables were related, correlation coefficients were run and analyzed. As Table 3 indicates, sexual assault is positively correlated to PTSD symptom severity ($r = 0.23$, $p < .001$), thus there is a positive and significant relationship between sexual assault and PTSD. Assertiveness is not correlated to PTSD symptom severity ($r = 0.06$) in and of itself,

**Table 1**: Rates of Sexual Assault Victimization.

| Level of Victimization | Percentage of participants at each level |
|---|---|
| Unwanted Sexual Contact | 39.09% |
| Sexual Coercion | 29.09% |
| Attempted Rape | 11.82% |
| Completed Rape | 20.00% |
| Total | 100.00% |

Note: Data derived from participants' answers on the Sexual Experiences Survey

**Table 2:** Descriptive Statistics for all Study Variables.

| Scale | M | SD |
|---|---|---|
| Sexual Experiences Survey | 15.51 | 22.02 |
| PTSD Symptom Scale | 07.04 | 10.58 |
| Inventory of Interpersonal Problems *Nonassertive subscale | 10.80 | 06.39 |
| Religious Commitment Inventory | 22.56 | 11.87 |
| Social Provisions Scale | 78.70 | 11.16 |

Note: N = 220. Sexual Experiences Survey scores range from 0 to 70 (this omits a score of 1 for classification as female, score indicating experiences happened more than one time, gender of perpetrator, and whether participant indicated she has been raped or not); PTSD Symptom Scale scores range from 0 to 51; Inventory of Interpersonal Problems – Non-assertive subscale scores range from 0 to 32; Religious Commitment Inventory scores range from 10 to 50; Social Provisions Scale scores range from 24 to 96.

**Table 3:** Correlations between Study Variables.

| Variable | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| PTSD | 1.0 | | | | |
| Sexual Assault | .23** | 1.0 | | | |
| Assertiveness | .06 | -.05 | 1.0 | | |
| Religiosity | -.12 | .01 | -.05 | 1.0 | |
| Social Support | -.13 | -.09 | -.09 | .20** | 1.0 |

Note: N = 220. $^{**}p < .001$

religiosity is negatively correlated to PTSD symptom severity (r = -0.12), which indicates that being more religious is not a significant indicator of exhibiting fewer PTSD symptoms, but in fact may indicate the opposite, that being more religious may lead a sexual assault survivor to experience more severe PTSD symptoms. Lastly, perceived social support is negatively correlated to PTSD symptom severity (r = -0.13), which again indicates that greater levels of perceived social support do not necessarily correlate with a reduction in PTSD symptoms (Table 3).

## Results of Testing the Research Hypotheses

**Data Analyses:** The statistical analysis addressed whether the potential moderator variables would moderate the relationship between sexual assault severity and PTSD severity above and beyond sexual assault severity's impact on PTSD severity alone. Hierarchical regression analysis was used to examine the moderating effects of assertiveness, religiosity, and social support separately on the relationship between sexual assault severity and PTSD severity.

**Hypothesis 1 – Sexual Assault and PTSD**: There will be a significant relationship between sexual assault severity and the severity of PTSD-related symptoms in that more severe types of sexual assault will be associated with more severe PTSD-related symptoms.

## Sexual Assault

As Table 4 shows, multiple regression analyses indicated that sexual assault does indeed predict PTSD at a statistically significant level ($p < .001$). Sexual assault only accounted for a small amount of the variance (5%) in predicting PTSD symptoms. Therefore, being sexually assaulted is significantly related to experiencing PTSD symptoms in that more sexual assault yields more PTSD (B = .11).

**Hypothesis 2 – Moderator Variables:** For females who experience severe levels of sexual assault, high levels of assertiveness, religiosity, or perceived social support will moderate the relation such that the strength of the relationship between the severity of sexual assault and the severity of PTSD will be decreased.

**Assertiveness:** As shown in Table 5, the first outcome model illustrates assertiveness does not help to predict PTSD over and above sexual assault. However, the second model, which includes the two way interaction term Sexual Assault x Assertiveness, does indicate statistical significance ($p < .03$). This may indicate that the effect of sexual assault severity on PTSD severity depends on whether you have high or low levels of assertiveness. Therefore, for subjects who are more assertive the influence of sexual assault on PTSD is less and vice versa. Additionally, assertiveness added a small amount of variance (6%) in predicting PTSD severity. In other words, assertiveness does not account for any extra variance in PTSD severity over and above the influence of sexual assault, but it does act as a moderator of the effects of sexual assault on PTSD severity.

**Religiosity:** Religiosity and sexual assault combined indicated almost no prediction regarding PTSD symptoms ($p < .90$). The results of the analysis indicated that religiosity predicted fewer PTSD symptoms over and above the influence of sexual assault, but did not moderate the effects of sexual assault severity on PTSD-symptom

**Table 4:** Multiple Regression Analysis of Sexual Assault as Predictor of PTSD.

| Outcome model | Predictor | Beta | B | SE | p | F | $R^2$ |
|---|---|---|---|---|---|---|---|
| S.A./PTSD | | | | | | 12.12 | .05 |
| | Sexual Assault | .23 | .11 | .03 | .00* | | |

Note: N = 220. PTSD = Posttraumatic Stress Symptom Scale; S. A. = Sexual Assault = Sexual Experiences Survey, *$p < .001$.

**Table 5:** Multiple Regression Analysis of Assertiveness and Sexual Assault Interaction Effects on PTSD.

| Outcome | Predictor | Beta | B | SE | p | F | $R^2$ |
|---|---|---|---|---|---|---|---|
| S.A./Assert 1 | | | | | | 6.57 | .06 |
| | Sexual Assault | .23 | .11 | .03 | .00** | | |
| | Assertiveness | .07 | .11 | .11 | .31 | | |
| S.A./Assert 2 | | | | | | 6.13 | .08 |
| | Sexual Assault | -.09 | -.04 | .08 | .57 | | |
| | Assertiveness | -.04 | -.06 | .13 | .64 | | |
| | S.A. X Assert | .37 | .01 | .01 | .03* | | |

Note: N = 220. Dependent variable in all cases = PTSD; PTSD = Posttraumatic Stress symptoms Scale; S.A. = Sexual Assault = Sexual Experience Survey; Assert. = Assertiveness = Inventory of Interpersonal Problems – non-assertive subscale, **p < .001, *p < .05.

**Table 6:** Multiple Regression Analysis of Religiosity and Sexual Assault Interaction Effects on PTSD.

| Outcome model | Predictor | Beta | B | SE | p | F | $R_2$ |
|---|---|---|---|---|---|---|---|
| S.A./Rel 1 | | | | | | 7.98 | .07 |
| | Sexual Assault | .23 | .11 | .03 | .00* | | |
| | Religiosity | -.13 | -.11 | .06 | .06 | | |
| S.A./Rel 2 | | | | | | 5.3 | .07 |
| | Sexual Assault | .25 | .12 | .07 | .11 | | |
| | Religiosity | -.12 | -.11 | .07 | .14 | | |
| | S.A. X Rel. | -.02 | .00 | .00 | .90 | | |

Note: N = 220. Dependent variable in all cases = PTSD; PTSD = Posttraumatic Stress Symptom Scale; S. A. = Sexual Assault = Sexual Experience Survey; Rel. = Religiosity = Religious Commitment Inventory, *$p < .001$.

severity. Specifically, religiosity accounted for a 7% variance in predicting PTSD severity. Table 6 illustrates how adding the interaction of sexual assault and religiosity on their relationship to PTSD does not result in a statistically significant interaction above and beyond the main effects. Thus, religiosity is not a moderator.

**Perceived Social Support:** Perceived social support also predicted fewer PTSD symptoms over and above the influence of sexual assault, but did not moderate the effects of sexual assault severity on PTSD-symptom severity ($p < .89$). Social support accounted for a 7% variance in predicting PTSD severity. Table 7 illustrates how adding the interaction of sexual assault and social support on their relationship to PTSD does not result in a statistically significant interaction above and beyond their separate interactions. Thus, social support is not a moderator.

## Summary

In summary, the data analysis determined that sexual assault does indeed predict the presence of PTSD symptoms. The data did not support the second hypothesis that religiosity and perceived social support would moderate PTSD at a statistically significant level, though both predict fewer PTSD symptoms. The analysis determined that assertiveness is a moderator on the effects of sexual assault on PTSD severity; high non-assertive subscale scores resulted in more PTSD symptoms for sexual assault survivors, and low non-assertive scores (indicating higher levels of assertiveness) result in fewer PTSD symptoms. While R2 values of .06 and .07 indicate a fairly small effect size, interaction terms in social sciences typically account for approximately 1%–3% of the variance [48].

## Discussion

Four hundred and three (n = 403) female college students were recruited from undergraduate psychology and education college courses in the Southwest. Two hundred and twenty (n = 220) of these participants indicated they experienced some sexual assault. Only the data indicating sexual assault experiences were included in the results of the current study. The participants were asked to complete a demographic questionnaire, the PTSD Symptoms Scale, the Sexual Experiences Survey, the Religious Commitment Inventory, the non-assertive subscale of the Inventory of Interpersonal Problems, and the Social Provisions Scale.

The current study utilized correlation and multiple regression to investigate the relationship between the moderators' (assertiveness, religiosity, and perceived social support) impact on PTSD-symptom severity for female sexual assault survivors. The study sought to provide information about whether high levels of the protective factors/moderators results in less severe PTSD symptoms for female sexual assault survivors so that enhancing these specific areas of moderation would be included in treatment plans for sexual assault survivors seeking therapy.

### Exploration of Findings

**Hypothesis 1:** The first hypothesis of the current study was that sexual assault would be directly related to PTSD in that greater levels of sexual assault would result in more severe PTSD symptoms (Figure 1). The results of the data analysis found that sexual assault severity was directly correlated to PTSD symptom severity in that participants who experienced more severe sexual assault experienced more PTSD symptoms ($p < .001$). Even though the small effect size results in statistical significance, the results may not be clinically significant. Similarly, participants who experienced less severe sexual assault or indicated fewer experiences of sexual trauma reported fewer PTSD symptoms. These outcomes are similar to findings in previous studies on the relationship between sexual assault and PTSD[1,10,15,43, 51,52,53,54,55].

**Hypothesis 2:** The second hypothesis was that the variables assertiveness, religiosity, and perceived social support, would

**Table 7:** Multiple Regression Analysis of Perceived Social Support and Sexual Assault Interaction Effects on PTSD.

| Outcome model | Predictor | Beta | B | SE | p | F | $R^2$ |
|---|---|---|---|---|---|---|---|
| S.A./PSS 1 | | | | | | 7.55 | .07 |
| | Sexual Assault | .23 | .11 | .03 | .00* | | |
| | Social Support | -.11 | -.11 | .06 | .09 | | |
| S.A./PSS 2 | | | | | | 5.02 | .07 |
| | Sexual Assault | .17 | .08 | .20 | .68 | | |
| | Social Support | -.12 | -.11 | .08 | .14 | | |
| | S.A. X PSS | .05 | .00 | .00 | .89 | | |

Note: N = 220. Dependent variable in all cases = PTSD; PTSD = Posttraumatic Stress Symptom Scale; S. A. = Sexual Assault = Sexual Experience Survey; PSS = Perceived Social Support = Social Provision Scale, *p < .001.

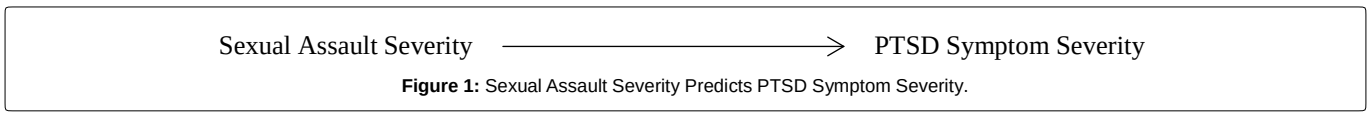


**Figure 1:** Sexual Assault Severity Predicts PTSD Symptom Severity.

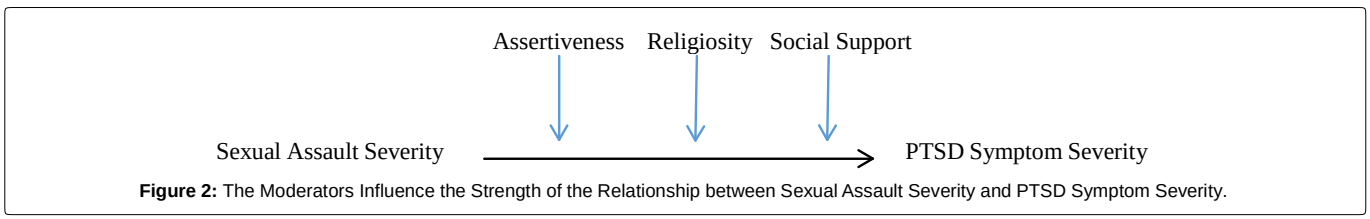


**Figure 2:** The Moderators Influence the Strength of the Relationship between Sexual Assault Severity and PTSD Symptom Severity.

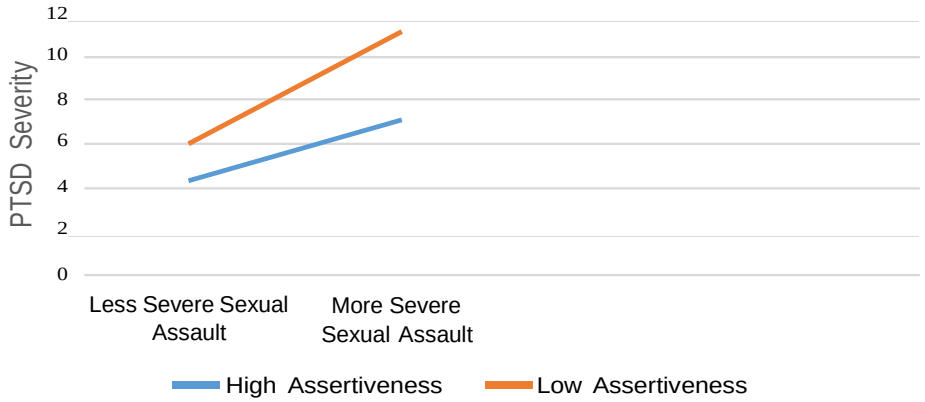


**Figure 3:** PTSD Severity in relation to Sexual Assault Severity and Assertiveness Level.

moderate the relationship between sexual assault and PTSD in that higher levels of the variables would result in fewer PTSD symptoms (Figure 2).

The results of the data analysis found that the only statistically significant moderator was assertiveness. While correlation does not equal causation, the impact of sexual assault severity on PTSD severity possibly depends on how assertive you are, though assertiveness does not reduce PTSD severity by itself. Additionally, the results indicated that higher levels of assertiveness helped to reduce PTSD symptom severity overall and may buffer more severe PTSD symptoms. Similarly, women who have low levels of assertiveness may be *more* likely to be effected by the severity of sexual assault (Figure 3). Previous research indicated that when sexual assault survivors increase their level of assertiveness through such activities as self-defense training, the result may be lower levels of anxiety and depression and greater levels of positive instrumentality (e.g. being independent) [56,57]. Thus, having high levels of assertiveness may lead sexual assault survivors to be assertive in seeking treatment and being proactive in their recovery.

Regarding religiosity, higher levels of religiosity resulted in less severe PTSD symptoms, but not at the statistically significant level. Thus, religiosity did not moderate the relationship between sexual assault and PTSD either alone or in its relation to sexual assault. The literature on religiosity [5,47,58] has focused on how religious faith may serve as a coping response for women with PTSD following sexual assault.

Regarding social support, though higher levels of social support were correlated with less severe PTSD symptoms, it was not a moderator on the relation between sexual assault and PTSD. Having ample social support (e.g. friends, family) following sexual assault might be helpful for survivors, but this support may not be enough to reduce the severity of their PTSD symptoms to a significant degree [59,36].

## Limitations

There are several limitations to the current study. One limitation is that participants may have not read the instructions carefully. One limitation is that participants may have not read the instructions carefully and thus may have answered in the incorrect manner. Participants may have not read each question carefully and therefore not truly understood the question being asked. This would result in inaccurate answers that wouldn't truly reflect the participants' experiences. One example could be that participants may have thought they had not been raped when their answers on the SES indicated they have experienced rape. Participants may have answered in a manner that would lead to their data looking socially desirable rather than reflecting their true experiences. Also, the Sexual Experiences Survey only asks participants to indicate sexual experiences from age 14 on, so sexual assault experiences prior to age 14 are not included in the results. Without that data we may not be obtaining information about the full extent to which the participants' have experienced sexual assault. The researcher's handling of the data could result in skewed data and results. For example, the researcher may not have entered the data correctly. Errors could have been made during the process of scoring the participants' answers to the questionnaires. Also, the constructs utilized in this study were assumed to be protective factors [38,39,42,46,47] and this may not always be the case. For example, being assertive may lead a sexual assault survivor to become overly assertive, perhaps even aggressive, in her interactions with men [3]. Also, while religion can help sexual assault survivors find meaning in trauma, religion may also include negative messages, such as blame (you were dressed too provocatively) or stigma (you're tainted) [60]. Thus, religion may not always be a positive influence. Likewise, people think of having a lot of social support as being positive, but the kind of support offered may not always be helpful. Someone may be close with family members and have friends he/she can count on, but these sources of support are biased by nature [61].

## Suggestions for Future Research

The present study focused on women, but men also experience sexual assault. Rates of male sexual assault survivors have increased from around 14% approximately 10 years ago [62] to 25% [63], therefore, assessing moderating factors that may reduce the severity of PTSD symptoms men experience would be valuable. While the age range of the current study was from 18 to 54 years of age, the mean age of participants was 20. Future research could include participants who are in their 30's, or 40's, or even 70's to determine which moderator variables significantly reduce PTSD symptom severity at the differing ages. Reviewing the current literature to determine possibly more significantly correlated moderators would be useful in future research. A qualitative study could be effective in obtaining specific information about whether the moderators are protective factors for the participants and could speak to the areas of each factor

that are not protective (religion–blaming; social support – more blaming; assertiveness-becoming aggressive with men). Determining how recently the participant experienced an incident of sexual assault could also be included in future studies.

Additionally, alternate scales may be more appropriate for measuring the constructs, such as the Adaptive and Aggressive Assertiveness Scales (AAA-S) [63] for measuring assertiveness, or the Basic Psychological Needs Questionnaire –Religiosity/Spirituality [60] to measure religiosity, or the Interpersonal Support Validation List –12 (ISEL-12) [64] to measure perceived social support. There may be a measure that would more accurately assess PTSD-symptom severity, such as the PTSD Checklist (PCL) [65]. However, a search of the literature did not result in a more widely used measure to assess sexual assault than the Sexual Experiences Survey, which was utilized in the current study.

Future studies could assess treatment programs devised to bolster levels of assertiveness, religiosity or spirituality, and social support in women to reduce the severity of PTSD-related symptoms [5]. Specifically, such programs could teach girls and women assertiveness skills by explaining that it is okay to say no to someone who wants sexual contact with you if you do not want it. In this sense, it is okay to be assertive, especially in the face of sexual assault.

Multiculturalism is of importance in this research [66]. All of the participants were female and the majority were non-White, both of which encompass multiculturalism. The results of the current study indicate that being more assertive may be specifically helpful for Latinas post sexual assault; this has been validated by previous research which assessed PTSD severity in relation to a stronger Latina identity [67,68].

## Summary

The current study examined whether assertiveness, religiosity, and perceived social support acted as moderators on the relationship between sexual assault and PTSD symptom severity. These moderators had not been assessed in the same study prior to the current study. Female college students (N=220) completed questionnaires regarding their sexual experiences, PTSD symptoms, assertiveness, religiosity, and perceived social support. It was found that sexual assault severity did significantly predict PTSD symptom severity. The results also found that assertiveness was the only variable that moderated the relationship between sexual assault severity and PTSD severity. Conversely, the results showed that religiosity and perceived social support are not significant moderators though they did reduce PTSD severity to some extent.

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