ACADEMIC OUTCOMES FOLLOWING SEXUAL ASSAULT: THE FUNCTION OF POST-TRAUMATIC STRESS

TAYLOR MOLSTAD
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ACADEMIC OUTCOMES FOLLOWING SEXUAL ASSAULT: THE FUNCTION OF POST-TRAUMATIC STRESS

TAYLOR MOLSTAD

Date of Defense: Thursday, February 9, 2023

Dr. Toupey Luft	Assistant Professor	Ph.D.
Thesis Supervisor		
Dr. Noëlla Piquette	Associate Professor	Ph.D.
Thesis Examination Committee Member		
Dr. Peter Kellett	Assistant Professor	Ph.D.
Thesis Examination Committee Member		
Dr. Scharie Tavcer	Associate Professor	Ph.D.
External Examiner		
Mount Royal University		
Calgary, Alberta		
Dr. Janice Victor	Assistant Professor	Ph.D.
Chair, Thesis Examination Committee		

DEDICATION

This thesis is dedicated with profound gratitude and deep respect to the brave individuals who participated in this research. Your willingness to share your stories with vulnerability and openness has brought immeasurable value to this work, and it is a privilege to have been entrusted with your experiences.

This dedication is extended to all those who have endured the trauma of sexual violence. May the findings of this research inspire a glimmer of hope that your voices matter, your experiences are valid, and you are not alone. May this research serve as a beacon of hope, illuminating the importance of your stories, and the power of listening and understanding.

ABSTRACT

Sexual assault is a common experience among post-secondary students, with significant and long-lasting impacts such as the development of post-traumatic stress disorder (PTSD) and difficulties in academic performance. This study aimed to investigate the relationship between sexual assault, PTSD, and academic outcomes. In addition, social support was tested as a potential moderator in this relationship among post-secondary students. Post-secondary students in Alberta, Canada ($N = 100$) who had experienced sexual assault since the age of 18 completed a survey on non-consensual sexual experiences, PTSD symptoms, social support, and academic success. The study found that sexual assault was significantly associated with higher PTSD symptom severity, which, in turn, was linked to lower academic success. The hypothesis that social support would moderate the relationship between sexual assault, PTSD, and academic outcomes was not supported. These findings underscore the importance of addressing PTSD symptoms in post-secondary students who have experienced sexual assault to support their academic success.

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LIST OF ABBREVIATIONS

ASE	Academic Self-Efficacy
CPQ	College Persistence Questionnaire
GPA	Grade Point Average
IPV	Intimate Partner Violence
LGBTQIA+	Lesbian, Gay, Bisexual, Transgender, Queer/Questioning, Intersex, Asexual, +
MOS	Medical Outcomes Study
PCL-5	Post-Traumatic Stress Disorder Checklist-5
PTSD	Post-Traumatic Stress Disorder
SES	Sexual Experiences Survey
SES-SFV	Sexual Experiences Survey – Short-Form Victimization

CHAPTER 1: Introduction & Rationale for Study

Introduction

Sexual assault is a prevalent and consequential experience for both men and women globally. One-third of women will experience sexual assault, and sexual assault is among the top five common crimes committed against women (Benoit et al., 2015). Men are at a lower risk than women, but prevalence is still concerning with one in 38 men experiencing sexual assault at some point in their lives (Smith et al., 2018). Furthermore, university-aged women (18 to 24 years old) are three times more likely to experience sexual assault and university-aged men who are enrolled in post-secondary education are twice as likely to experience sexual assault compared to university-aged men who are not post-secondary students (Sinozich & Langton, 2014). Prevalence rates of sexual assault for sexual minorities are higher, with one study finding sexual minority university students were 2.3 times more likely to experience sexual assault (Edwards et al., 2015). Moreover, up to half of transgender individuals have experienced sexual assault in their lifetime (Statistics Canada, 2020b). The prevalence of gay and bisexual men who experience sexual assault is equivalent to straight women (one in four; Ford & Soto-Marquez, 2016). Additionally, Ford and Soto-Marquez found that bisexual women are at a particularly high risk, with two out of five bisexual students experiencing sexual assault during university. Additionally, one study found that rates of sexual assault for bisexual, queer, and pansexual females were 2.5 to 5 times higher than those of heterosexual females (Mathiason, & Porta, 2021). Additionally, Mathiason and Porta found that women using newer language such as queer or pansexual had twice the rates of victimization than bisexual women. These prevalence data indicate that the occurrence of sexual assault for individuals attending university is a grave issue that needs to be both better understood and addressed.

One of the many negative outcomes that can occur after experiencing sexual assault is post-traumatic stress disorder (PTSD). PTSD is a mental disorder that occurs after someone has been exposed to a traumatic event such threat of death, sexual violence, or serious injury (Canadian Mental Health Association, n.d.). PTSD symptoms are wide ranging, and can include irritability or anger, re-experiencing the trauma through intrusive nightmares or flashbacks, avoidance and emotional numbness towards places, people, or activities, as well as difficulty with sleep or concentration (Anxiety and Depression Association of America, n.d.).

The experience of PTSD symptoms can be detrimental to an individual's functioning. In the case of university students, PTSD symptoms are likely to contribute to academic problems. Foundational research has shown that there are three main reasons why experiencing symptoms of PTSD is likely to be associated with academic problems: (1) they lead to avoidance and withdrawal from people and places, which could lead to less engagement with courses and peers; (2) intrusive thoughts are disruptive to learning and studying; and (3) sleep deficits negatively affect learning and concentration (Curcio et al., 2006). Moreover, meta-analytic results indicate that PTSD is associated with reduced verbal learning, information processing, working memory, and verbal memory (Scott et al., 2015).

Research has shown that sexual assault is associated with lower academic performance, such as lower grades and poor attendance (Molstad et al., 2021). It is important to note that much of this research has focused on only women's experiences (Baker et al., 2016; Griffin & Read, 2012; Jordan et al., 2014; Stermac et al., 2020; Wood et al., 2018) or have predominantly female samples (Banyard et al., 2020; Brewer et al., 2018; Kaufman et al., 2019; Mengo & Black, 2016; Tremblay et al., 2008), and has not considered the potential role of social support in mitigating PTSD symptomology from sexual assault. Overall, little is known about *how* (i.e., PTSD) sexual

assault contributes to the academic struggles following sexual assault, and *under what conditions* (i.e., gender, social support) this relationship might occur.

Rationale for Study

Despite studies that show an association between PTSD and academic performance, the mechanisms explaining why academic performance is lower for those who experience sexual assault compared to those who have not—including understanding why performance decreases after sexual assault—have not been explored in the literature. Studies on this topic have called for research to explain why there might be differences in academic outcomes between those who have been sexually assaulted and those who have not, based on factors such as PTSD or psychological distress (Banyard et al., 2020; Griffin & Read, 2012; Jordan et al., 2014). Furthermore, how gender and/or social support may affect the relationships between sexual assault and PTSD on one hand, and PTSD and academic outcomes on the other, need investigating. These conceptual and empirical gaps are the motivation for undertaking the current study.

Further, Canadian studies on the topic are rare; even fewer with respect to province-specific work such as Alberta. The current study was undertaken in order to understand more about people's experiences specific to the Canadian, and more specifically, Albertan context. Despite these gaps, research and statistics from Canada were incorporated as much as possible throughout this thesis.

The current study will contribute to the literature on sexual assault and academic outcomes by investigating PTSD symptom severity as a plausible mechanism which impacts the relationship between sexual assault and academic performance. Specifically, the study will examine the level of PTSD symptomology and how this influences the level of academic

success. In addition, due to a lack of clarity around how gender impacts academic performance after sexual assault, the current study will also examine the role of gender in relation to sexual assault, PTSD, and academic outcomes. Given the different prevalence of sexual assault (Edwards et al., 2015; Shipherd et al., 2011; Statistics Canada, 2020a) and PTSD (Shipherd et al., 2011; Wawrzyniak & Sabbag, 2018) among those who are gender diverse and/or LGBTQIA+, incorporating gender and sexuality into the model becomes important. Finally, social support will be investigated in this study. Increased levels of social support are linked with lower PTSD symptomology (Littleton, 2010; Wagner et al., 2016) and to increased attendance and academic success in students (Robbins et al., 2004). Research exploring undergraduate student engagement found that effective teacher-student relationships, positive student-student relationships, and developing a sense of purpose for students improved academic engagement (Xerri et al., 2018). As such, social support becomes a potentially important moderator in the relationship between sexual assault, PTSD, and academic outcomes.

Reflexivity

My interest in this topic first stemmed from a paper I wrote for an academic writing class in my undergraduate degree on how sexual assault impacts academic success. While writing that paper, I discovered that academic outcomes of sexual assault were not well-studied. This was surprising given the amount of sexual assault that happens globally in post-secondary settings. Specifically, 13% of students attending American universities (Cantor et al., 2020), one in ten women in Canadian universities (Statistics Canada, 2020a), and one in twenty university students in Australia have a non-consensual sexual experience (Heywood et al., 2022). I decided to work with a librarian and another academic to conduct a systematic review on this literature, which we recently published in the scientific literature (Molstad et al., 2021). In that review, many of the

papers noted a gap in research to explain why this relationship between sexual assault and academic success exists. This gap in the literature, combined with my lived experiences and those in my life surrounding sexual assault and academic struggles, inspired me to focus on this as a research topic for my thesis. It is my hope that this research will further guide post-secondary institutions in supporting these individuals, rather than having them suffer potential life-long consequences of an act of violence against them.

Another important note for this thesis is the language used around those who have experienced sexual assault. Language differs between "victim" and "survivor" in the literature. Those who have experienced sexual assault may define themselves differently depending on their conceptualization of their experience. This paper will thus use these terms interchangeably, but it should be known that it is not my intention to dismiss any individuals experience by using one term over the other. Additionally, "sexual assault", "sexual victimization", and "non-consensual sexual experiences" will be used interchangeably. Some individuals may identify their experience with any one of the terms used, as the broad definition and conceptualization of the experience of sexual assault is discussed in Chapter 2. Finally, most of the literature cited in this proposal comes out of the United States of America, but Canadian research was brought in as much as possible.

Focus of the Study and Hypothetical Model

To summarize, past research has shown that sexual assault can have negative consequences on academic outcomes (e.g., Baker et al., 2016; Jordan et al., 2014; Mengo & Black, 2016) and frequently results in psychological consequences including PTSD symptomology (Irish et al., 2011; Jordan et al., 2010). PTSD has also been shown in literature to negatively impact academic outcomes as well (Boyraz et al., 2013; Boyraz et al., 2016). In Scott

et al.'s (2015) meta-analysis, sexual assault was related to a higher risk for PTSD. The current study aims to explore how PTSD symptomology mediates the relationship between sexual victimization and academic outcomes. To date, no research has explored what alternative factors drive the relationship between sexual victimization and academic outcomes. However, as I have described, PTSD is a likely consequence of sexual assault (Dworkin et al., 2021; Potter et al., 2018), particularly with more severe levels of victimization (Jordan et al., 2014) and PTSD has been shown to be negatively related with cognitive functioning and academic outcomes (Bremner, 2006; Nemeroff et al., 2006; Samuelson, 2011; Scott et al., 2015). The current study does not distinguish if an individual meets criterion for diagnosis, but instead measures elevated PTSD symptomology (see Chapter 3 for measures). Therefore, this research will address the gap in the literature by expanding knowledge of the relationship between sexual victimization and academic outcomes. I hypothesize that experiencing sexual assault is negatively related to academic outcomes and this relationship is mediated by PTSD symptomology, meaning that those who experience sexual assault are more likely to have higher PTSD symptomology and that PTSD symptomology is negatively related to academic outcomes.

Research has shown that social support may act as a buffer to negative outcomes of PTSD. For example, those with higher social support were found to have reduced severity in PTSD symptoms, while those with lower social support were found to have increased PTSD levels (Littleton, 2010; Wagner et al., 2016). Additionally, research has shown that social support impacts predictors of improved academic outcomes such as attendance and self-esteem (Li et al., 2018; Robbins et al., 2004). Thus, I hypothesize that increased levels of social support will impact the relationship between sexual assault and PTSD symptomology severity, such that those with increased social support will be less likely to have higher levels of PTSD

symptomology stemming from sexual victimization. Similarly, I hypothesize that increased levels of social support will reduce the negative impact on academic outcomes for those who experience PTSD symptomology. Taken together, I propose a conditional process model of the relationship between sexual victimization, PTSD symptomology, and academic outcomes.

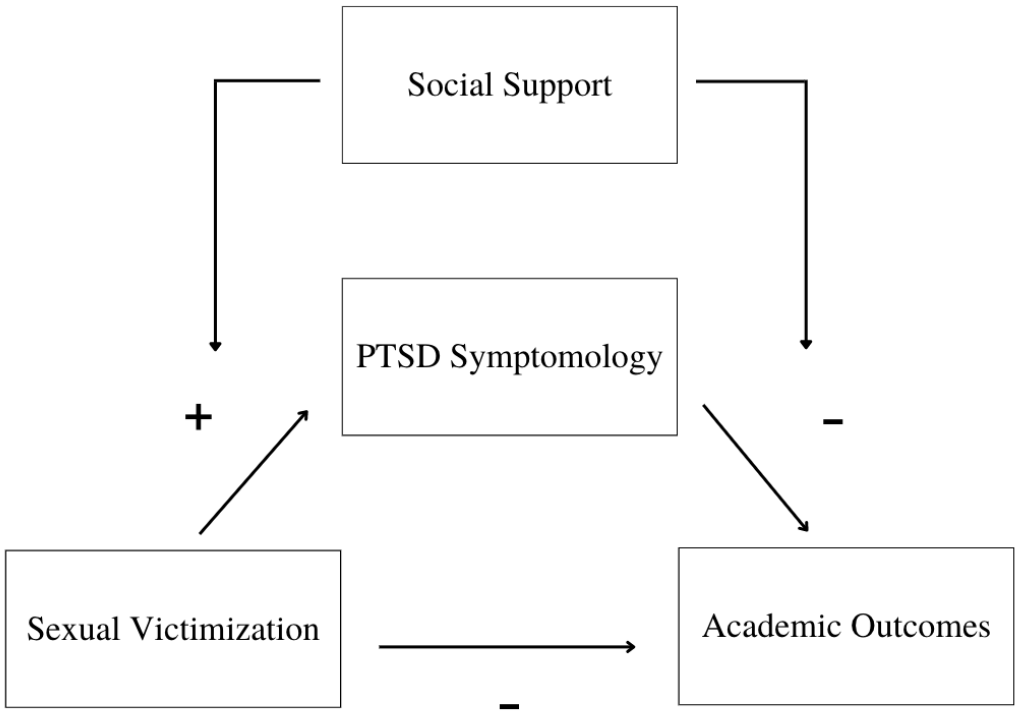

Figure 1. Conditional process model of sexual victimization, PTSD symptomology, and academic outcomes, with pathways moderated by social support.

Research Questions

Research Question 1: Does PTSD symptomology severity mediate the well-established relationship between sexual assault and academic outcomes?

Research Question 2: Are there differences in the relationships between sexual assault, PTSD symptomology, and academic outcomes by levels of social support?

Hypotheses

Hypothesis 1: Experiencing sexual assault is negatively related to academic outcomes and this relationship is mediated by PTSD symptomology, such that those who experience sexual assault are more likely to have higher PTSD symptomology and that PTSD symptomology is negatively related to academic outcomes.

Hypothesis 2a: Social support will be positively related to academic outcomes.

Hypothesis 2b: Social support will be negatively related to PTSD symptomology.

Hypothesis 3: Social support will moderate the mediated relationship expressed in Hypothesis 1 at two points: between sexual assault and PTSD symptomology, and between PTSD symptomology and academic outcomes. Specifically, higher levels of social support after experiencing sexual assault are related to less PTSD symptomology, and higher social support while experiencing PTSD symptomology is associated with less negative academic outcomes

CHAPTER 2: Literature Review

Sexual Assault

Definition

The definition of sexual assault varies which may lead to ambiguity and confusion for victims and others. The United States Department of Justice (n.d.) defines it as "any non-consensual sexual act … including when the victim lacks the capacity to consent", whereas the Avalon Sexual Assault Centre (n.d.), a Canadian feminist organization working to eliminate sexual assault, has defined sexual assault as "any act that invades an individual's sexual privacy". In the Canadian legal context, the Canadian Criminal Code defines sexual assault as "an assault committed in circumstances of a sexual nature such that the sexual integrity of the victim is violated", where there are three levels of sexual assault depending on the characteristics of the assault (e.g., threatens, endangers the life of the victim; *Criminal Code*, 1985, s. 271-273). Complicating matters further, not only are there differing definitions of sexual assault, but there are also various forms of sexual assault, which complicates conceptual definitions. The Avalon Sexual Assault Centre expands in their glossary on forms of sexual assault ranging from "simple sexual assault", to "gang rape", highlighting the many forms sexual assault can take.

Definitional ambiguity and lack of consensus about the different forms of sexual assault may result in inaccurate labelling of sexual assault experiences. Research has found that 60% of legally defined rapes are not labelled as such by the victims, instead reporting their experience as "not victimization" which is dependent on factors such as their relationship with the perpetrator or levels of self-blame (Dardis et al., 2021; Orchowski et al., 2013a). Moreover, women who did not acknowledge their assault had higher psychological distress, impaired coping, and avoided disclosing their experiences which may reduce their ability to receive support (Clements & Ogle,

2009). Additionally, Littleton et al. (2006) found that coping behaviours and disclosure rates differed depending on if the victims identified their sexual assault as such, underscoring the importance of distinguishing the diverse experiences of sexual assault. These findings mirror results of recent research underscoring the impact of minimization of sexual assault on the decision to not receive or seek support (Holland & Cortina, 2017; Holland et al., 2021; Wood & Stichman, 2018; Zinzow & Thompson, 2011). Recent research reports similar findings, with one study finding that those who acknowledged their assault had experiences that were more forceful and had clearer refusal, in addition to increased resistance (Cleere & Lynn, 2013). Victims who did not acknowledge their assaults were more likely to have had a prior romantic relationship with the perpetrator and a more recent assault. Additionally, Donde et al. (2018) found that increased age and emotional impact was associated with an increased likelihood of acknowledging rape.

In keeping with the theme of ambiguity, it is also important to acknowledge the personal experience of sexual assault, and how that may contribute to differing forms of psychological, physical, and interpersonal distress in victims. Littleton and Henderson (2008) expand on the deeply personal experience of sexual assault, stating that not all sexual assault meets the legal definition of rape and that responses may vary regardless of whether the assault meets legal definitions. In their study, around 60% of the women were “unacknowledged victims”, because rather than attributing their experiences to sexual assault, they attributed the experience to miscommunication, bad sex, or were unsure how to label their experience. Littleton and Henderson found that the experience of sexual assault is traumatizing regardless of how the participants labeled their experience, finding that 30% of unacknowledged victims still met the diagnostic criteria for symptoms of PTSD. Similar research has found that post-traumatic stress

can cause changes in the brain even when nonsymptomatic (Stark et al., 2015). This underscores the diversity of experiences around sexual assault, and the importance of having a diverse definition of sexual assault to understand the full scope of the issue, while also allowing victims indicate their understanding of their experience.

Measuring Sexual Assault

In the scientific literature, one of the most common ways that sexual assault is measured and assessed is by using the Sexual Experiences Survey (SES; Koss et al., 1987). This measure was created to measure multiple forms of sexual assault and to understand the prevalence and frequency of sexual victimization by those who completed the survey. This survey has since been revised from the original version, incorporating language relevant to diverse sexual orientations, and incorporating advances in the understanding of sexual assault (Koss et al., 2007). The authors split the SES into two different scales: The first is a shortened victimization specific scale (SES-SFV), and the second is a shortened perpetration specific scale (SES-SFP). As sexual assault frequency is considered to vary based on gender, (Cotter & Savage, 2019), men often complete the SES-SFP, while women complete the SES-SFV. The SES and SES-SFV are commonly used to measure sexual assault across many studies to explore the prevalence and frequency of sexual assault experiences. Most studies regarding sexual assault discussed in this literature review use the various measures of the SES (e.g., revised, short-form, long-form) to measure experiences of sexual assault.

Sexual Assault and its Prevalence by Gender

As discussed above, research indicates that sexual assault is a prevalent issue for both men and women throughout their lifetime, with women being at the greatest risk. However, these statistics may be higher in prevalence because of underreporting, which is a concern in this area

of research because only 5% of sexual assaults are reported (Department of Justice, 2019). Only 20% of female students who have been assaulted reported their sexual assault, compared to 32% in non-student populations (Sinozich & Langton, 2014). This points to the reality that the true scope of sexual assault and the outcomes of this victimization are unknown in post-secondary institutions (Cotter & Savage, 2019; Sinozich & Langton, 2014).

A systematic review (Dworkin et al., 2017) including over 230,000 participants found across 153 studies that overall prevalence of sexual assault was 24% (range: 1.59% - 92.57%). Dworkin et al. reported that most of the sample were university students (169 studies) who were predominantly female (81%). This supports previous research that has found sexual assault is a gender-based experience and that it is more prevalent among college-aged students. College women are twice as likely to be sexually assaulted while in school than the general population of women (Sinozich & Langton, 2014). University students also are at greatest risk of sexual victimization during the first and second semester at school, what Kimble et al. (2008) call a "red zone (p. 331)". This red zone results in women being at a higher risk of being sexually assaulted by men, who they meet on campus. In a review of 15 years of campus sexual assault data, it was found that women, racialized persons, and sexual minorities, and women in sororities had an increased risk of experiencing campus sexual assault (Fedina et al., 2016).

Despite being underreported, 8% of men report having an experience of sexual assault since age 15 in Canada (Statistics Canada, 2023). In addition to being underreported, most of the research on sexual violence against men focuses on specific kinds of sexual violence such as childhood sexual abuse, institutional sexual assault, and sexual assault in areas of armed conflict (Petersson & Plantin, 2019). Petersson and Plantin highlight critical feminist analysis work which suggests that "being a male victim of sexual assault stands in contrast to hegemonic or

conventional norms of masculinity" (p. 373). Male survivors were found to have self-blaming attitudes, conflicted feelings about the assault, struggles with flashbacks and emotional memories, and avoiding details and feelings while disclosing their experience (Petersson & Plantin, 2019). Although current statistics indicate that men are at a lower risk of experiencing sexual assault, university male students are more likely to experience sexual assault than non-student males from the same age range (National Sexual Violence Resource Centre, 2015; Sinozich & Langton, 2014).

Finally, sexual assault is often committed by perpetrators that the victim knows, with over half of assaults committed by someone already known to them (Department of Justice, 2019). Specifically, intimate partners account for 50% of sexual assault against women, and acquaintances were perpetrators in 41% of rape cases (Black et al., 2011). Additionally, it is estimated that only 15% of reported sexual assaults are perpetrated by a stranger. Perpetrators of sexual assault against men mirror the previous statistics, with 52.4% of male sexual assault perpetrated by an acquaintance, and 15.2% by a stranger (Black et al., 2011). Of police-reported sexual assaults in Canada from 2009-2014, 87% of victims knew the perpetrator, while only 13% of victims were assaulted by a stranger (Rotenberg, 2017).

Sexual Assault and its Prevalence by Ancestry/Ethnicity/Race

Prevalence rates are similar between White and African American women with one in five women experiencing rape (Black et al., 2011). Hispanic women have slightly lower prevalence rates, with approximately one in seven women experiencing rape. In Canada, 11% of visible minorities reported having an experience of sexual assault since the age of 15 (Statistics Canada, 2023). Similar rates are found within immigrant populations in Canada, with 12% reporting sexual assault as well. For those who are Indigenous in Canada, rates differ between

groups. For example, 30% of those who identified as Métis reported sexual assault since 15, whereas 17% of those who are of Inuk identity reported sexual assault since 15 (Statistics Canada, 2023). Indigenous women are more than three times as likely to experience sexual assault than non-Indigenous women (Du Mont et al., 2017). Moreover, Indigenous women in America often experience more violent assaults, with one study finding that thy were more likely to be hit, injured, or be assaulted by someone with a weapon than African American and White women (Bachman et al., 2010). This is similar in Canada where Indigenous women are more likely to experience more serious forms of violence than non-Indigenous women (Du Mont et al., 2017). Recent research found that Indigenous post-secondary students in Canada were not more likely to report experiencing sexual violence than their non-Indigenous peers (Dion et al., 2022).

Prevalence rates of sexual assault during post-secondary by ancestry/race is an understudied area of research, but the existing research has shown mixed results. In one campus survey of over 23,000 undergraduates across nine schools, there was no statistical difference found between rates of sexual assault for white and non-white students, and in two schools white students experienced higher prevalence rates (Krebs et al., 2016). Similarly, a meta-analysis found that there were no differences between racial groups regarding psychopathology following sexual assault (Dworkin et al., 2017). However, the sample was predominantly White/Caucasian, which mirrors that of other literature on post-secondary sexual assault (e.g., Molstad et al., 2021). Finally, one study exploring racial/ethnic differences of childhood and adult sexual assault, in addition to forcible rape at any age found that there were no racial differences for adult sexual assault prevalence, but differences were seen in childhood sexual assault and forcible rape (Balsam et al., 2015) prevalence. However, other research has found that students of ethnic or racial minorities on college campuses are at a higher risk for sexual abuse, more

likely to be raped, and are more likely to report sexual victimization (Fedina et al., 2016; Howard et al., 2019; Porter & Williams, 2011). Finally, research has shown racial/ethnic differences in the realm of how sexual assault occurs and the type of sexual assault. For example, Thompson et al. (2012) found that African American women had the highest prevalence of forced intercourse.

Research exploring the sexual assault experiences of Black women attending historically Black colleges or universities (HBCU) explored reporting, support seeking, and PTSD in this population (Lindquist et al., 2013). Similar results to non-HBCU's were found. The results found that the type of assault (e.g., physical force or incapacitated) had an impact on if supports were sought after the assault and found that black women who had been sexually assaulted reported more symptoms of depression and were more likely to screen positive for PTSD. As noted in the introduction of this thesis, transgender individuals experience sexual violence at high rates (Statistics Canada, 2020b), and black transgender individuals have higher odds than white transgender individuals to experience sexual assault (Coulter et al., 2017). These studies indicate that prevalence of sexual assault during post-secondary for racial/ethnic minorities are understudied and under-reported.

Academic Outcomes Associated with Sexual Assault

Academic outcomes such as grade point average (GPA) and degree attainment have long-lasting effects on individual lives, such as impacting salary and employment opportunities. In Canada, men and women with a bachelor's degree earned on average $25,000 more than those with a high school diploma (Statistics Canada, 2017). Additionally, the employment rate in 2019 was highest for those with a bachelor's degree or higher, and lowest for those who did not complete high school (National Center for Education Statistics, 2020). Completing post-secondary education is important to both monetary and non-monetary life outcomes such as

health, occupation, and civic engagement (Doyle & Skinner, 2017). For example, attaining a university education is associated with increased health behaviours that finances, social, or psychological aspects of wellness cannot account for, and educated parents have lower child mortality rates (Lawrence, 2017). Additionally, research has found that college graduates have better mental and global health than high school graduates, even after controlling for similar backgrounds and early life health (Zajacova & Lawrence, 2021), Thus, the impact of success in post-secondary education can be seen for the individual themselves, in addition to their family, and society as well.

The experience of sexual assault can have profound negative impacts on academic performance for university students because victims of sexual assault experience maladaptive coping, increased self-blame, and decreased social support (e.g., withdrawing from peers; Campbell et al., 2009). Although the research to date is small, a systematic review found consistent results showing that sexual assault is associated with academic problems such as delaying attainment of degree, dropping out of school, decreased GPA, and struggles to complete and attend courses (Molstad et al., 2021). This systematic review consisted of 12 papers that were relevant to academic outcomes of individuals who had been sexually assaulted during university. The most rigorous and relevant research from Molstad et al. systematic review will be reviewed below to highlight key findings on this topic.

Jordan et al. (2014) explored how sexual victimization impacted GPA at three different time points: the summer before freshman year (T1), the end of first semester freshman year (T2), and the end of second semester freshman year (T3). Using the SES and GPA, and a pre-post test design, Jordan et al. found that women who were raped had lower GPA than those who experienced other kinds of sexual victimization. Moreover, they found that students who

disclosed rape *or* sexual assault in their first survey demonstrated a lower GPA at across all time points. Finally, experiencing rape, at any time point, was associated with a lower GPA. Jordan et al. found that the severity of the victimization was related to the severity of academic outcomes. Women who experienced sexual victimization that occurred before the first freshman semester were three times more likely to have a GPA under 2.5 after the first semester compared to those who had not experienced sexual victimization. Jordan et al. (2014) showed that an increased negative effect on academic outcomes were associated with severe forms of sexual assault.

Mengo and Black (2016) used archival data and a pre-post test design to explore if there were impacts on GPA (scale out of 4) before and after sexual assault. They found that students' mean GPA dropped after sexual victimization, with a mean GPA before sexual assault of 2.72, and a mean GPA after assault of 2.60. Additionally, the students who were sexually victimized had a greater decline in academic performance than those who encountered physical/verbal victimization. However, this study only included case studies of participants who had participated in a sexual assault program. As most sexual assaults do not get reported, this may not be generalizable to all students who have experienced sexual assault.

A longitudinal study by Baker et al. (2016) explored how the number of sexual assault experiences impacted GPA and college attrition. The authors controlled for known predictors of academic performance such as high school ranking, ACT scores, and conscientiousness. Sexual assault was found to be negatively related to GPA and was also found to increase the risk of victims leaving or dropping out of college. They also found that the change in GPA was reported to be up to 0.27, which is substantial enough to damage students' future career and academic achievements. They found this change in GPA was significant over and above the predictors of

academic performance; demonstrating how sexual assault has a negative impact on academic outcomes.

Wood et al. (2020) studied how various forms of intimate partner violence (IPV) impacted academic outcomes. To measure sexual victimization, they used the SES-SFV where the experience had been with a current or former partner. The authors measured academic consequences by measuring academic disengagement (e.g., missing a class) and academic impact (e.g., taking time off school). The cross-sectional study design found that sexual victimization in IPV had a small correlation with academic impact (r = .12) and academic disengagement (r = .12). However, the authors note that the framing of sexual IPV was different as the participants had to identify that the sexual assault was from a current or former partner, which may understate the impact of sexual assault on the academic outcomes selected in the study.

Kaufman et al. (2019) also used a cross-sectional design, measuring sexual assault as an affirmative answer to one item asking if the participant had ever been sexually assaulted in university. Academic consequences were measured by three items: if their grades dropped, if they were unable to complete assignments, and if they had to drop a class. Kaufman et al. found that those who had experienced sexual assault were two times more likely to have negative academic consequences as a result (OR = 2.33).

The general finding that sexual assault impacts academic outcomes has been shown in qualitative studies as well. Tremblay et al. (2008) discussed negative social interactions with participants, with one of the possibilities being negative sexual social interactions. They also had participants describe the impact of the negative social interactions. Tremblay et al. (2008) reported that sexual assault was the second most impactful stressor that influenced academic work. Additionally, work by Bonomi et al. (2018) completed semi structured interviews with

women who had physical or mental disabilities, who had also experienced sexual violence. The participants discussed how the sexual assault impacted their academic outcomes, with 55% of the participants reporting at least one sexual assault experience that impacted their academic outcomes. Over half of the assaults that caused academic issues involved rapes that included loss of consciousness or physical force with verbal intimidation.

The previous studies all illustrate significant negative impacts that sexual assault may have on students' academic achievements. Among the academic impacts were GPA, academic struggles (e.g., dropping a class, attendance), and graduation rates. Based on current theory and existing empirical literature, I hypothesize that the experience of sexual assault is negatively associated with academic performance as per the previous literature (Hypothesis 1). Additionally, Molstad et al. (2021) indicated that studies did not identify possible candidates for what may mediate the previously established relationship between sexual assault and poorer academic outcomes.

Sexual Assault and Post-Traumatic Stress Disorder

Experiencing a sexual assault can exert crippling effects on the victim. PTSD is one of the two most common mental health disorders diagnosed after sexual assault (Dworkin, 2021). PTSD has a diverse set of symptoms which can be damaging to the individual experiencing it. Psychological symptoms include intrusive memories which can be relived and may result in nightmares, avoidance of places and/or people which may remind them of the event, changes in emotions such as increased fear, irritability, or anger, as well as difficulty with sleep or concentration (Mayo Clinic, 2021). To be diagnosed, these symptoms should be present for at least one month (National Institute of Mental Health, 2022). However, recent research found that 74% of individuals who have been sexually assaulted met diagnostic criteria for PTSD in the

month following sexual assault, and that 41% met diagnostic criteria 12 months following the assault (Dworkin et al., 2021).

Dworkin et al. concluded that the first three months following sexual assault are critical for recovering from PTSD after sexual assault. Previous research has found that sexual assault has a greater impact on mental health than other forms of traumatic events (Kelley et al., 2009). Specifically, Kelley et al. found that sexual assault survivors had an increased likelihood of meeting PTSD criteria and having higher levels of PTSD symptomology compared to other traumatic events. Similarly, Forbes et al. (2013) found that survivors of interpersonal trauma experience severe intrusive memories and suppression of emotional responsivity compared to non-interpersonal trauma. The effects of sexual assault may also include other mental health problems, with 72.8% of students reporting mental health complications after sexual assault, which had not been identified previously, including insomnia, depression, anxiety, and PTSD (Potter et al., 2018). Eadie et al. (2008) highlighted prior research by stating that sexual assault can contribute to higher rates of chronic disease, increased use of medical services, and greater functional limitations. Finally, Bownes et al. (1991) found greater levels of depression, anxiety, and guilt in individuals with PTSD. These findings aligned with the well-established understanding that Major Depressive Disorder (MDD) and General Anxiety Disorder (GAD) are two of the most commonly co-occurring disorders seen in individuals who have PTSD (Kessler et al., 2005). Similarly, research has found that generally mood disorders, anxiety disorders, and substance use disorders commonly co-occur with PTSD, and that having comorbid disorders with PTSD increases suicidality (Brady et al., 2000; Galatzer-Levy et al., 2013). Although commonly comorbid, factor analyses have found that PTSD, GAD, and MDD are all distinguishable disorders (Grant et al., 2008).

Role of Gender in the Sexual Assault–PTSD Relationship

While there are currently no known gender effects of sexual assault on academic outcomes, there are gender differences within those who meet criteria for PTSD generally. Tolin and Foa's (2008) meta-analysis found that women were twice as likely to meet the criteria for PTSD than men, even though men experience more traumatic events than women on average. The authors suggest that this may be a result of women experiencing sexual assault at a higher rate than men, which underscores the gender differences within PTSD prevalence and symptomology severity. One study found that women experience higher levels of initial PTSD symptoms, which were associated with symptoms up to six months later (Irish et al., 2011). Additional research demonstrates comparable results. After experiencing sexual assault, 94% of women experienced PTSD immediately after the event (Rothbaum et al., 1992). Furthermore, Jordan et al. (2010) found that up to 65% of women who have experienced sexual assault will reach diagnostic criteria for PTSD at some point following the assault. Jordan et al. also found it is common for women to experience these PTSD symptoms for up to 2 years after the assault takes place. Meta analyses found that 74% of those who had experienced sexual assault met PTSD diagnostic criteria one month after the assault, with 41% meeting diagnostic criteria 12 months after the assault (Dworkin et al., 2021). Finally, Wagner et al. (2016) noted that there was some evidence that social support impacts PTSD symptom severity differently for different sexes.

Similar but understudied struggles are seen in transgender and sexual minority populations as well. Transgender and sexual minorities experience sexual assault and other traumatic events at higher rates than cisgender and heterosexual individuals (Edwards et al., 2015; Shipherd et al., 2011; Statistics Canada, 2020b). Sexual assault is particularly prevalent

among bisexual women and transgender populations (Rothman et al., 2011; Walters et al., 2013). Moreover, rates of PTSD are prevalent in LGBTQIA+ populations, with LGB individuals being more than two times as likely than heterosexual individuals to experience PTSD and transgender individuals experiencing high rates of PTSD as well (Shipherd et al., 2011; Wawrzyniak & Sabbag, 2018). For example, Shipherd et al. found that 17% of transgender participants reported clinically significant symptoms following a traumatic event. Current literature searches have returned no papers specifically reporting the experiences of non-binary individuals, although some non-binary individuals identify as transgender and may be included in the research above.

Role of Ancestry/Race/Ethnicity in the Sexual Assault–PTSD Relationship

Research has found that there are racial differences in the prevalence rates of PTSD. For example, Asian Americans have been found to have lower prevalence rates of PTSD compared to African Americans even after controlling for socioeconomic status, social support, and type and number of traumatic events (Alegría et al., 2013). Similarly, Asian Americans were found to have lower PTSD scores than Whites, which has been found in other research as well (e.g., Asnaani & Hall-Clark, 2017). McLaughlin et al. (2018) found that there were no racial/ethnic differences between rape/sexual assault and PTSD. For disclosure experiences of sexual assault, Black and White women who received high negative reactions to disclosure experienced higher levels of PTSD, whereas Black women who had "low to moderate" negative reactions to disclosure were more likely to experience an increase in PTSD symptoms than White women (Hakimi et al., 2018). Some research suggests that there is a sexual orientation and racial influence on PTSD symptom levels. While Black and non-black women who are heterosexual were found to have similar PTSD symptom levels, bisexual black women had higher symptoms of PTSD than non-Black bisexual women (Sigurvinsdottir & Ullman, 2016). In this study,

participants completed surveys about their symptoms over three waves. Interestingly, Black women were found to have a sharper decrease in the level of symptoms within wave one and two, but smaller decreases in the following waves. Non-black women instead had a steady decrease in symptom levels between waves (Sigurvinsdottir & Ullman, 2016). In the Canadian context, Indigenous research and prevalence rates of PTSD following sexual assault are scarce (Bellany & Hardy, 2015). As a result of this, it is difficult to understand the scope of PTSD in regard to sexual assault in Indigenous communities in Canada.

Social Support as a Moderator of the Sexual Assault–PTSD Relationship

Research has suggested that social support may influence PTSD rates in those who have experienced sexual assault. Some research has found that PTSD symptoms are lower in those with higher social support, and that social support is related to PTSD severity after sexual assault (Littleton, 2010; Wagner et al., 2016). Research by Dworkin et al. (2017) found that social support was higher on days on which PTSD symptoms were lower, and the opposite was found as well (i.e., on days where PTSD symptoms were higher, social support was lower). Dworkin et al. also found that when PTSD symptoms were high, the following day social support was high which may indicate that PTSD symptomology may increase seeking out of social support or that individuals support distressed survivors.

In contrast, a study by Domino et al. (2020) did not find a relationship between social support and PTSD symptomology. However, they measured social support specifically as trauma-related social support, whereas studies that have found a social support–PTSD effect examined broader social support, including informal social support (e.g., telling friends, family). Another caveat to the findings of social support and its impact on PTSD following sexual assault is the difference between negative disclosure reactions and perceived social support (Littleton,

2008). This indicates that while negative responses to disclosure may result in negative outcomes such as maladaptive coping and self-blame (Littleton & Breitkopf, 2006), social support can play a different role in the recovery process.

Help, or social support, can be provided by formal or informal pathways. Informal pathways, as described above, includes friends, family, or those who have "emotional closeness, companionship, and reciprocity" (Lauzier-Jobin & Houle, 2022), whereas formal supports include service providers (e.g., counselling, medical care, etc.). One study found that 43.7% of victims of sexual assault disclosed to counsellors (Ahrens et al., 2009). In addition to this level of disclosure, formal support from counsellors was found to provide the most tangible aid in which the participants found healing. Additionally, Ahrens et al. found that every social interaction with a counsellor was viewed positively, like social interactions with friends. Thus, differing forms of social support available or used by survivors of sexual victimization may impact the recovery process.

PTSD and Cognitive/Academic Functioning

A meta-analysis by Scott et al. (2015) explored 60 studies pertaining to attention and working memory, executive functions, verbal and visual learning and memory, language, speed of information processing and visuospatial abilities in individuals with PTSD. Their analyses found that the largest effects of neurocognitive deficits in individuals with PTSD were within the facets of verbal learning (d = -.62), speed of information processing (d = -.59), attention and working memory (d = -.50), and verbal memory (d = -.46). Post-hoc analyses to see if there was a relationship between PTSD severity and cognitive functioning found that the severity of PTSD symptoms was negatively related to verbal learning effect size, showing that severity of PTSD resulted in a larger effect size. Moreover, the meta-analyses found that immediate and delayed

memory was worse in those with PTSD symptoms. As shown in the results of Scott et al.'s (2015) meta-analysis, PTSD has negative associations with cognitive functions that are important for learning and school performance. The next section expands on Scott et al.'s meta-analyses by examining how PTSD impacts cognitive functioning and thus academic outcomes are discussed next.

Biopsychosocial Correlates of PTSD: Cognitive Functioning and Academic Outcomes

Biological.

While the current study did not examine biological and structural changes in the brain associated with PTSD, research suggests that PTSD alters the functioning of certain brain areas involved in the stress response. The hippocampus, amygdala, and prefrontal cortex have all been implicated in PTSD symptomology (Bremner, 2006; Ressler et al., 2022). These neurological changes may affect an individual's ability to recall facts and to focus attention, both of which are important aspects of learning (Karpicke & Roediger, 2008). Further, decreased hippocampus and anterior cingulate cortex volume is the most common neuroanatomic finding in individuals with PTSD (Pitman et al., 2012). The hippocampus is critical for declarative memory, which includes memory for facts and events, and studies have shown deficits in declarative memory in those with PTSD (Asem & Fortin, 2017; Bremner, 2006). Additionally, chronic distress associated with PTSD can impact the medial prefrontal cortex, a location associated with reward-guided learning and memory (Euston et al., 2012; Koenigs & Grafman, 2009; Rushworth et al., 2011). Traumatic events can increase amygdala functioning, which may hinder working memory and impact the consolidation and retrieval of memories, as well as attentional biases to threat stimuli (Roozendaal et al., 2009). The studies above show these neurobiological changes can have an impact on memory, attention, and learning and are important to consider.

In addition to the impact of PTSD on specific brain regions, other research has found additional biological impacts of PTSD. For example, dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis, which is involved in the stress response and has been found to be disrupted in individuals with PTSD (Yehuda & LeDoux, 2007). Additionally, changes in the autonomic nervous system, which regulates physiological responses such as heart rate, blood pressure, and respiration, and has been found to be overactive in individuals with PTSD (Pitman et al., 2012). Finally, another area to consider is the potential role of epigenetics in PTSD. Epigenetic changes are modifications to gene expression that can occur because of environmental factors, including traumatic experiences. Studies have suggested that these changes may play a role in the development of PTSD and related symptoms (Mehta et al., 2013). For example, one study found that individuals with a history of childhood abuse had higher levels of DNA methylation, a type of epigenetic modification, in a gene associated with stress regulation (Kertes et al., 2016). This suggests that trauma exposure may lead to lasting changes in gene expression that could contribute to the development of PTSD.

Psychological.

One aspect of how PTSD may impact academic performance is in relation to effort-regulation. Boyraz et al. (2016) defined effort regulation as an individual's ability to persist at academic tasks regardless of challenges or distractions. Boyraz et al. discussed previous research that suggested that individuals with PTSD spend more of their effort trying to disengage from traumatic memories or negative emotions related to the traumatic event. Additionally, negative self-beliefs related to the traumatic event may influence regulation issues as the individual may feel no self-efficacy or confidence. In their study on self-regulation and GPA, they found that individuals with PTSD symptoms had lower self-regulation. Lower self-regulation and lower

first year GPA also negatively impacted second year enrollment. Related results were found in the Boyraz et al. (2013) study on African American students, showing that similar effects may be seen across racialized groups. Additionally, Boyraz et al. found women with greater PTSD symptomology had higher rates of dropout, but there was no effect of gender on first year GPA.

Social.

Negative social functioning is part of the diagnostic criteria for PTSD, such as avoidance of people or places associated with the traumatic event, negative beliefs about themselves and others, and feelings of detachment from others (American Psychiatric Association [APA], 2013). Previous literature has highlighted social cognitive deficits in individuals with PTSD, where these individuals struggled to recognize emotion, labelling emotional states, and processing social information. This, in association with avoidance behaviours in PTSD may lead to withdrawal from peers. Since sexual assault is prominent on college campuses (Cantor et al., 2020) and PTSD symptomology often includes avoiding places that may create distress, students may struggle with attendance as they avoid places in general and locations or situations where they may run into their perpetrator, since most victims know their perpetrator socially.

Social Support as Moderator of PTSD–Academic Outcomes

There is some evidence that social support may impact the relationship between PTSD symptomology and negative academic outcomes. Specifically, students with higher social support have been found to have better attendance, and social support and involvement predicts academic performance (Robbins et al., 2004). Conversely, individuals with PTSD often engage in avoidance and struggle with intrusive thoughts (Anxiety and Depression Association of America, n.d.). Moreover, increased social support has been found to be correlated to higher self-esteem, which is often protective against emotional exhaustion in university (Li et al., 2018). Li

et al. also found that self-esteem is positively related to academic achievement. Studies have found that self-esteem can impact the severity of PTSD, and the reverse, that those with PTSD often fluctuate more in their self-esteem which can result in less positive affect and decreased overall wellbeing (Kashdan et al., 2006; Weinberg, 2013). Thus, social support may act as a buffer against reduced self-esteem, increased avoidance, and intrusive thoughts that occur in individuals with PTSD.

Additionally, research suggests that social support is related to many of the symptoms of PTSD that impact academic outcomes, such as rumination and sleep difficulties as discussed below. Research by Lee (2019) found that individuals with PTSD reported less severe rumination when they had higher perceived social support. One common symptom of PTSD that can impact academic achievement is recurring and intrusive thoughts about the traumatic event (APA, 2013). Rumination and intrusive memories may create problems in school for those with PTSD, as they are unable to control when rumination occurs, which may impact their ability to study or write exams. Moulds et al. (2020) found rumination has accounted for emotional regulation difficulties in those with PTSD, specifically, regarding impulse control and issues maintaining goal-oriented behaviour. Rumination has also been found to be positively related to procrastination (Constantin et al., 2018).

A meta-analysis of the association between social support and sleep outcomes found that perceived social support improved self-reported sleep outcomes ($Zr = -.152$; Kent de Grey et al., 2018). Social support has also been found to increase sleep quality while experiencing academic stress in adolescents (van Schalkwijk et al. 2015). Those with PTSD have higher rates of insomnia symptoms, nightmares, violent sleep behaviours (e.g., punching, kicking), sleep paralysis, sleep talking, and hallucinations than those who do not meet diagnostic criteria for

PTSD (Ohayon & Shapiro, 2000). Foundational research by Curcio et al. (2006) found that sleep is an important process for cognitive functioning and lack of sleep can have detrimental effects on learning and memory. Regarding academic functioning, Curcio et al. (2006) found in their review that students with better sleep patterns had higher GPAs, and sleep quality is related to general school functioning. Specifically, university students who had good sleep schedules had higher GPAs in addition to being able to recall material from previous classes. This concept has also been shown in other research, where the hours slept impacted student's GPA and rates of dropping, withdrawing from, and not completing classes (Gilbert & Weaver, 2010). Another study found that regardless of academic variables and lifestyles of students, sleep quality and frequency of sleep were large predictors of academic performance (Gomes et al., 2011).

CHAPTER 3: Methods

The current study was a cross-sectional quantitative study that explored how PTSD symptoms impacted the relationship between non-consensual sexual experiences and academic outcomes in a sample of post-secondary students. This study was completed via online survey which enabled data collection with greater privacy and confidentiality for the participants, especially given the sensitivity of the topic, and the need for flexibility around the uncertainty surrounding pandemic restrictions. This practice is also aligned with suggestions from Rosoff (2018) regarding ethical considerations of sexual assault research with a university sample.

Participants

This research used non-probability sampling to recruit potential post-secondary student survey participants through targeted community recruitment and social media as potential participants in a survey. The specific type of non-probability sampling used in this survey is volunteer sampling where participants are volunteering their time and effort to take part in the survey (Bornstein et al., 2013). This type of sampling is often used in psychological studies because it is infeasible to randomly sample from the population (Bornstein et al., 2013; Legge, 2003). A limitation of this method is that generalizability of the model from these data to other samples is weakened as it is not representative of the population. Because of limited resources and ethical practice, I was unable to randomly sample from the entire population of individuals who have been sexually assaulted during university in Canada.

The survey was distributed online through a Qualtrics link, which was also provided as a QR code. The survey invitation was extended to community resources and agencies that provide services for survivors of sexual assault, so that they might share information about the survey. Examples of community recruitment locations included sexual violence agencies and other

community resources specific to sexual violence. This included the University of Lethbridge Sexual Violence Support, University of Lethbridge Sexual Violence Education Centre, Association of Alberta Sexual Assault Services. These community resources were provided with a poster that had study information and a QR code that linked to the Qualtrics page, which they either shared within their networks or posted for their clients to see. Additionally, targeted community recruitment was also directed to student run clubs and organizations at the University of Lethbridge to share within their groups. Participants were also recruited through social media sites, including Instagram, Facebook, and Reddit. The survey was posted with permission to reddit pages including r/Alberta, r/Calgary, r/UAlberta, and r/MRU. I also posted multiple times the Qualtrics link on my personal Instagram bio and Instagram stories multiple times. Lastly, the survey was distributed through word of mouth by others sharing the survey link and/or poster via social media posts/stories, including their Instagram and Facebook pages.

Inclusion criteria included: 1) participants who had experienced any form of sexual victimization; 2) participants were required to have had a non-consensual sexual experience since the completion of high school; 3) all participants were over the age of 18 due to ethical considerations surrounding consent, in addition to legality reporting; and 4) participants were required to be currently enrolled in university of have graduated and/or dropped no longer than one year ago. Thus, participation was open to undergraduate students in any year of their degree, and undergraduate students who have recently left university either by graduation or drop out. This survey was open to all participants of all genders, ancestry, and sexual/affectional orientations.

Measures

A quantitative anonymous online survey was created with well-established and validated measures. As described above, the survey was distributed online, where participants completed the self-reported scales of sexual victimization, PTSD symptomology, gender, social support, and academic outcomes. Two attention checks were used throughout the survey.

Inclusion Criteria Screen

The beginning of the survey included two questions to ensure that the participants fit the inclusion criteria for participation in the survey. The two questions asked the participants if they were a current student or had left/graduated/dropped out in the last year. Additionally, participants were asked what year of their program they were in, which helped to identify who was a current student or had left school. Age, and non-consensual sexual experiences were not screened for at the beginning of the survey, however, the research poster and informed consent emphasized the topic of the survey and the age requirement. Given the broad and personal experience of sexual assault where many victims minimize their experience of sexual assault (e.g., Holland & Cortina, 2017; Holland et al., 2021; Wood & Stichman, 2018; Zinzow & Thompson, 2011), I opted not to have a screening question for non-consensual sexual events. This allowed participants to have an opportunity to share their experiences, and potentially be validated that their experience would be included in a survey on sexual assault. Research has found that negative responses to sexual assault disclosure can impact future help-seeking behaviour, coping, and PTSD levels (Littleton, 2010; Orchowski et al., 2013b; Ullman & Peter-Hagene, 2014). Rosoff (2018) described ethical ways to engage in sexual assault research with college students, suggesting survivors may feel empowered or glad that there is research going on in their community regarding their experience of sexual assault. Additionally, research has

found that victims of sexual assault report positive reactions and seek additional services following participation in this topic of research (Kirkner et al., 2019).

Participants who did fit the inclusion criteria were prompted to continue to the rest of the survey.

Sexual Assault Scale

This survey used a modified version of the Sexual Experiences Survey Short-Form Victimization Revised (SES-SFV; Koss et al., 2007). This measure was revised and "can be used by anyone seeking to measure sexual assault perpetration or victimization" (Lonsway et al., 2008, p. 2). Participants completed the SES-SFV which the researcher modified to have the items be inclusive of the gender and sexuality spectrum. Each of the eight items in the measure has five modes through which the participant identified how the victimization occurred (threats, pressure, anger/guilting, using force, threatening, taking advantage when intoxicated). The measure focuses on three types of non-consensual activity done to the victim: non-penetrative behaviours (touching, removing clothes), oral sex, and vaginal/anal penetration. This includes these non-consensual activities being done to the victim and the victim being forced to do these activities to another individual. These non-consensual activities are further differentiated into attempted and completed non-consensual activities. Participants responded to each of these items by marking how many times they had had the experience (0, 1, 2, 3+). The final question asked if the participant had ever been raped. In addition to this scale, participants were invited to share what year of their education these experiences happened if they were able to remember. Participants were able to select multiple years to accurately reflect their experience.

This measure has been validated with lesbian, bisexual, and heterosexual women and with women in post-secondary institutions (Canan et al., 2020; Johnson et al., 2017). As males experience and report sexual assault at lower rates than women, this measure is less reliable but

modestly valid with a male population (Anderson et al., 2018). Moreover, there is another scale—the SES-SFP (Koss et al., 2007)—that measures sexual victimization perpetuation which has been used frequently with men. However, the SES-SFV is still one of the most used scales to measure sexual victimization and will be used given that no alternatives are available for men.

Post-Traumatic Stress Disorder Scale

To ensure that post-traumatic symptoms are related to an experience of sexual victimization, participants filled out the PTSD Checklist-5 (PCL-5; Weathers et al., 2013). This is an updated version of the commonly used trauma measure, PCL-S, which is used to identify PTSD symptomology (Weathers et al., 1991). The PCL-S was updated to incorporate updates to the changes to PTSD diagnostic criteria in the Diagnostic and Statistical Manual of Mental Disorders (DSM) (5th ed.; DSM–5; APA, 2013). This measure is in the public domain and is not copyrighted. This measure is used to screen individuals for PTSD using a 20-item self-report measure measuring trauma symptomology in the past month regarding a specific event. The items are completed on a 5-point Likert-type scale ranging from 0 to 4, with 0 being "not at all" and 4 being "extremely".

For this measure there is a score range of 0 to 80, with a score of 31-33 being the cut-off point for elevated PTSD symptomology based on current psychometrics. Participants selected their responses based on if they have experienced PTSD symptoms after the sexual assault, such as "having difficulty concentrating" and "feeling distant and cut-off from other people". This measure has strong internal consistency ($\alpha = .94$), test-retest reliability ($r = .82$), and convergent ($r_s = .74$ to $.85$) and discriminant ($r_s = .31$ to $.60$) validity in college students who experienced trauma (Blevins et al., 2015).

Academic Outcomes

GPA was self-reported by participants ranging from 1 – 4 at two points in the survey: current GPA and GPA prior to the non-consensual sexual experience. Meta-analytic research shows that self-reported GPA and objective GPA are highly correlated (.90), but there is indication of some inflation for students on the lower end of the distribution (Kuncel et al., 2005).

To measure other aspects of academic outcomes, a modified version of Bandura's Multidimensional Scales of Perceived Self-Efficacy (MSPSE; Bandura, 1990) subscale of Self-Regulated Learning scale was used. The 8-item MSPSE Self-Regulated Learning scale is measured on a 5-point Likert-type scale, where participants rate their confidence on a scale of 1 ("not well at all") to 5 ("extremely well"). Participants were asked to complete this scale at two points in the survey: current student experience and student experience prior to the non-consensual sexual experience. The MSPSE Self-Regulated Learning scale is highly reliable in both high school ($\alpha = .87$; Miller et al., 1999) and college ($\alpha = .86$; Choi et al., 2001) students, has strong construct and concurrent validity (Choi et al., 2001; Miller et al., 1991; Usher & Pajares, 2008).

Three items from Kaufman et al.'s (2019) measurement of academic consequences of victimization were also used. These items included the participants indicating if the frequency they have dropped class, unable to do work and assignments, and had their grades drop since the sexual assault. Kaufman et al.'s 3-item academic consequences were scored using a 5-point Likert-type scale from 1 ("much more") to 5 ("much less").

Social Support Scale

Social support was measured using a modified version of the Medical Outcomes Study (MOS) Social Support Survey (Sherbourne & Stewart, 1991). This scale measures different forms of social support, including four subscales that measure emotional/informational support, tangible support, affectionate support, and positive social interactions, with one additional item outside of the four main subscales. The MOS Social Support Survey is public domain and available without charge. This survey provides scores for each subscale in addition to an overall social support index. The 14-item scale is completed on a 5-point Likert-type scale, with 1 being "none of the time" and 5 as "all of the time". The survey can be scored for the overall social support index or for individual scores for subscales. Scores are transformed to have a range of 1-100 using a formula by the authors, with higher scores indicating higher levels of support. The MOS Social Support Survey has high internal consistency ($\alpha = .97$) and convergent validity ($r = .72$ to $.90$; Sherbourne & Stewart, 1991).

In addition to the Medical Outcomes Study (MOS) Social Support Survey (Sherbourne & Stewart, 1991), participants were asked to indicate what kinds of supports they had received regarding both sexual assault and PTSD. This included options such as counselling, peer support, medical care, family, friends, spiritual/religious community. Participants were invited to select as many options as they felt fit their experience.

Demographic Information

Demographics were collected at the end of the survey. This included four questions about the participants age, gender, ancestry, and sexual/affectional orientation questions. Participants entered their age in years. Participants selected their appropriate gender identity for themselves choosing between male, female, non-binary, transgender, third gender (e.g., Two-Spirit) or enter

their relevant identity in an open option for “I do not identify as any of the above. I identify as:”. Options were also provided to choose “unsure” or “prefer not to disclose”. Participants selected their ancestry from multiple options including Indigenous, African, Middle East, Caribbean, East Asian, European, Latin/Central/South American, Pacific Islands, Southeast Asian (India, Pakistan, Nepal, etc.), other, and unsure. Participants were told to choose as many ancestry options as they saw fit to accurately represent themselves. Finally, participants selected sexual or affectional orientations between options of straight (heterosexual), gay, lesbian, bisexual, asexual, pansexual, Two-Spirit, or an open option for “Not listed: Please specify”, in addition to “prefer not to disclose”.

Procedure

Following the approval for ethical acceptability by the University of Lethbridge Human Participant Research Committee in partnership with the University of Alberta’s Ethics Board, the Qualtrics survey link was distributed, as described above, via social media and targeted community recruitment contacts. G*Power (Faul et al., 2007; Faul et al., 2009) calculations sample size indicated that for multiple linear regression with a medium effect size of $f^2 = 0.15$, $\alpha = 0.05$ and $\beta = 0.05$ recruitment required approximately 107 participants. Once participants were recruited, they were directed to the survey. Participants were prompted to read the informed consent and select either “yes” or “no” to consenting to the study. Participants who did not consent were redirected to the debriefing page, which had more information on the study and support resources they can use.

Once participants consented, they were asked to complete the 79-item survey. The survey that took approximately 10-15 minutes to complete. After participants completed the survey, they were redirected to a page with the debriefing form and additional resources. Once the

recruitment deadline was reached for the current survey (September 15, 2022), the survey became inactive, not allowing any further responses to be recorded.

CHAPTER 4: Results

Data Analysis Plan

After completing recruitment and closing the survey, the collected data were analyzed to test the proposed hypotheses. To ensure the reliability and normality of the data, skewness and kurtosis tests were performed for all variables, along with calculating Cronbach's alphas. The initial analysis plan included generating descriptive statistics, conducting correlational analyses (Hypotheses 2a and 2b), and using the PROCESS macro (Hayes, 2017) to investigate the mediating and moderating hypotheses (Hypothesis 1 and Hypothesis 3).

Descriptive statistics were first used to determine the distribution of variables, including count variables, means, and standard deviations. Correlational analyses were then conducted to examine the strength of the relationships between all variables, including those related to Hypotheses 2a and 2b. Additionally, paired sample t-tests were utilized to detect any differences between pre- and post-assault academic outcomes.

To test Hypotheses 1 and 3, the data was analyzed using the PROCESS macro in SPSS 27. While the sample exhibited limited diversity, gender and sexual/affectional orientation were still explored for potential differences by running a multivariate analysis of variance (MANOVA). Post-hoc multiple regression analyses were subsequently run to further elucidate any relationships between variables. For a more detailed account of the data analysis plan, please see below.

Sample and Data Preparation

There were 227 recorded responses for the survey. This included responses from the researcher pilot testing the survey prior to its publishing. Of the 227, 18 responses completed

before the date of publishing (e.g., friends pilot-testing the integrity of the survey) were deleted from the data set prior to exporting to SPSS.

There were 209 recorded responses exported into SPSS. Eight responses flagged as spam by Qualtrics were deleted from the dataset. Responses that did not meet the inclusion criteria of being a current/recent student, having a non-consensual sexual experience, or both, were excluded. This included 28 responses from participants who did not meet the student inclusion criteria, and 73 responses from participants who did not meet non-consensual sexual experience inclusion criteria. This latter group also included individuals who did not complete the sexual assault scale before dropping out of the survey.

Following data preparation, 100 responses remained for data analysis. A procedure to identify missing data was initiated, but it should be noted that this sample size was slightly below the recommended size of 107 participants according to G*Power (Faul et al., 2007; Faul et al., 2009) calculations. To handle missing data, items that were seen but not answered in the survey were coded as -99 to indicate missing data.

Normality

The study had a sample size of 100. According to the central limit theorem, as sample sizes get larger ($N > 30$), the sampling distribution tends towards a normal distribution (Field, 2017, p. 49). However, Field also notes that in large samples, significance tests can produce statistically significant results for small and unimportant effects (p. 187). Therefore, skewness z-scores were not calculated in this study in line with Field's recommendation for larger samples.

Instead, the distribution of the sample was visually assessed, and skewness statistics were examined to confirm normality. Means, standard deviations, and skewness scores for the measures are reported in Table 1. Skew values for all measures were close to zero, indicating a

normal distribution (Field, 2017). The only variable that exhibited a positive skew was the SES measure, which is expected for a count variable. However, transforming this variable is not advisable as it would alter the hypothesis being tested, and the transformed variable would measure a different construct than the original variable, potentially affecting the interpretation of the results (Field, 2017; Grayson, 2004). As such, the SES variable was left untransformed.

Table 1

Means, Standard Deviations, and Skewness PTSD, Academic Self-Efficacy, Social Support, Non-Consensual Sexual Experiences

	M	*SD*	Skewness
PTSD	35.72	18.90	.33
Academic Self-Efficacy	2.66	0.99	.22
Social Support	3.15	1.01	.21
NCSE	21.42	19.85	1.88

NCSE = Non-Consensual Sexual Experiences

Pearson's Correlation Coefficient

Pearson's zero-order correlations were conducted to examine the relationships between the continuous variables in the study, including non-consensual sexual experiences, PTSD symptomology, academic self-efficacy, social support, and GPA. Pearson's correlation coefficients (*r*) were used to assess both the direction and strength of the relationship between two variables (Field, 2017). These coefficients can range from -1 to +1 and indicate the strength and direction of a linear relationship between two variables. A correlation coefficient of -1 indicates a perfect negative relationship, whereas one variable decreases, the other increases. A

coefficient of +1 indicates a perfect positive relationship, whereas one variable increases, so does the other. A coefficient of 0 suggests no relationship between the variables.

T-Test

Paired-sample t-tests compare the means of two variables for a single group and assess if the mean difference between the variables is zero (IBM, 2022). Paired-sample t-tests were run to compare the means from the pre- and post-assault measures that were collected. Specifically, t-tests were run for pre- and post-assault GPA, and pre- and post-assault academic self-efficacy. Paired t-tests provide p-values which determine statistical significance by testing the null hypothesis that the mean difference between the pre- and post-assault measures is zero. A p-value less than .05 indicates that there is a statistically significant difference between the means, suggesting that the null hypothesis can be rejected. In other words, the pre- and post-assault measures are significantly different from each other. A *p*-value greater than .05 indicates that there is not enough evidence to reject the null hypothesis and suggests that the pre- and post-assault measures are not significantly different from each other.

Multiple Regressions

To further investigate the significant results found in the correlational analysis for non-consensual sexual experiences, PTSD symptomology, and academic outcomes (academic self-efficacy and GPA), exploratory multiple regression analyses were conducted. These analyses involve estimating the regression coefficients, which show the strength and direction of the relationships between the variables in the regression equation. The coefficients indicate the extent to which changes in the independent variables are associated with changes in the dependent variable and can help identify which independent variables are most strongly associated with the outcome of interest. By conducting exploratory multiple regression analyses,

the aim is to gain a more comprehensive understanding of the complex relationships between the different factors and the outcome variable under investigation.

PROCESS

The study hypotheses were tested using a moderation and mediation model (see Figure 1), which was analyzed using PROCESS, a tool that allows for simultaneous exploration of both mediation and moderation (Field, 2017). The Simple Mediation Model (Model 4, Hayes, 2017, p. 77) was used to examine the potential mediating effect of PTSD symptomology on the relationship between sexual assault experiences and academic outcomes. Additionally, the study investigated the moderating impact of social support on this model using two-stage moderation (Edwards & Lambert, 2007), specifically Model 58 in PROCESS (Hayes, 2017, p. 597). This involved testing whether social support moderated the relationship between sexual assault experiences and PTSD symptomology (first-stage moderation) and whether social support moderated the relationship between PTSD symptomology and academic outcomes (second-stage moderation).

MANOVA

Although it was not expected to find differences between demographic groups due to the lack of diversity in the sample, a MANOVA was conducted to explore potential effects of gender and sexual orientation. MANOVA, which stands for multivariate analysis of variance, is a statistical technique that allows for the analysis of multiple dependent variables simultaneously. This was chosen because it can detect significant differences between groups based on a combination of several variables, rather than analyzing one variable at a time as in univariate analyses. The primary result of MANOVA is a multivariate F-test statistic that indicates whether there are significant differences between groups based on the combination of several dependent

variables. Additionally, MANOVA can provide univariate F-tests for each individual dependent variable. This approach was useful in evaluating the impact of gender and sexual orientation on the variables of interest and can provide a more comprehensive understanding of the relationships among these variables.

Descriptive Statistics

Demographics.

The demographic information provided by participants included age, gender, sexual/affectional orientation, and ancestry. These demographic questions were chosen as they have been found to be related to frequency of victimization and educational outcomes and have been identified as gaps in current literature (Coulter et al., 2017; Mellins et al., 2017; Rothman et al., 2011). These data were calculated using descriptive statistics. The age range of the sample was 18-41 years old ($M = 23.65$, $SD = 4.63$). Gender, sexual orientation, and ancestry descriptive statistics are reported in Table 2.

Table 2

Demographic Characteristics of Participants

Variable	*n*	%
Gender		
Male	3	3.8
Female	67	84.8
Non-Binary	4	5.1
Transgender	1	1.3
Unsure	2	2.5
Sexual/Affectional Orientation		
Straight (Heterosexual)	34	43.0
Gay	0	0.0

Lesbian	2	2.5
Bisexual	31	39.2
Asexual	6	7.6
Pansexual	5	6.3
Ancestry		
European	55	69.6
Indigenous	2	2.5
African	1	1.3
East Asian	1	1.3
Latin/Central/South American	2	2.5
Southeast Asian	4	5.1
Mixed Ancestry	11	13.9
Other	3	3.8

Experiences of Non-Consensual Events.

Participants completed a modified version of the Sexual Experiences Survey Short-Form Victimization Revised (SES-SFV; Koss et al., 2007). There are four subscales for non-consensual sexual events that were completed, and three subscales for attempted non-consensual sexual experiences. For the completed subscales participants experienced at least one event of the following: 92 experienced non-consensual touching or removing of clothes (n = 100, 92.0%), 60 experienced non-consensual oral sex (62.5%, n = 96), 83 experienced non-consensual penetrative sex (83.0%, n = 100), and 20 experienced non-consensual penetration performed on someone else (20.4%, n = 98). For the attempted subscales, participants experienced at least one attempted incident of the following: 62 experienced attempted non-consensual oral sex (64.6%, n = 96), 61 experienced attempted non-consensual penetrative sex (63.5%, n = 96), and 21 experienced attempted non-consensual penetration performed on someone else (22.3%, n = 94). Finally, participants indicated if they had an experience of rape. Of the 100 responses, 12

responded “Definitely not”, nine responded “Probably not”, 16 responded “Might or might not have been”, 23 responded “Probably yes”, and 40 responded “Definitely yes”.

Participants also indicated how many events of each experience they had across the attempted and completed subscales. The range for each subscale was 0-15 events. For completed non-consensual touching and/or removal of clothes, there was a mean of 5.09 events, and a median of 5.00. Completed non-consensual oral sex had a mean of 3.13 events, and a median of 1.50. Completed non-consensual penetrative sex had a mean of 4.29 events, and a median of 3.00. Finally, completed non-consensual penetration performed on someone else had a mean of 1.15 events, and a median of 0.00. Attempted non-consensual oral sex had a mean of 3.54, and a median of 2.00. Attempted non-consensual penetrative sex had a mean of 3.35, and a median of 2.00. Finally, attempted non-consensual penetration performed on someone else had a mean of 1.37, and a median of 0.00. These data can be found in Table 3. The SES scale was found to be highly reliable ($\alpha = .95$).

Table 3

Types of Non-Consensual Sexual Events Experienced

Non-Consensual Sexual Event	*n*	%
Completed		
Touching/Removing Clothes	92	92.0
Oral Sex	60	62.5
Penetrative Sex	83	83
Penetrated Someone Else	20	20.4
Attempted		
Oral Sex	62	64.6
Penetrative Sex	61	63.5
Penetrated Someone Else	21	22.3
Rape		

Definitely Not	12	12
Probably Not	9	9
Might or Might Not Have Been	16	16
Probably Yes	23	23
Definitely Yes	40	40

PTSD Symptomology.

Of the total participants who completed the PCL-5 scale (n = 96), 44% did not reach the cut-off score of 33 which indicates severe PTSD symptomology, and 52% reached or exceeded the cut-off score of 33. The mean across the sample for overall PTSD scores was 35.72 (SD = 18.90), with a possible range of scores of 1-80. The PTSD measure was found to be highly reliable (α = .95).

Academic Outcomes.

Participants' academic outcomes following sexual assault were measured using three different scales. Following their non-consensual sexual experience, 18.6% reported dropping fewer classes, while 50% did not indicate a change. 31.4% of participants reported dropping more classes after the assault. Struggles doing assignments and studying following the assault increased for 52.3% of participants, while 26.7% did not report any change, and 20.9% indicated they had less problems following the assault. Finally, 16% of participants had improved grades following the assault, while 44.2% reported no change, and 39.5% reported grades dropping. These data can be found in Table 4.

The modified scale of academic self-efficacy (Bandura, 1990) was measured for both pre- and post-assault. The academic self-efficacy measure was found to be highly reliable for both pre- (α = .93) and post- (α = .91) academic self-efficacy. A paired sample t-test was run to explore differences between pre- and post-assault academic outcomes. There was a significant

difference between pre-assault academic self-efficacy (M = 3.55, *SD* = 0.91) and post-assault academic self-efficacy (M = 2.64, *SD* = 0.98), *t* = 6.619, *df* = 75, *p* <.001. Additionally, participants reported their pre- and post-assault GPAs. There was no significant difference between pre-assault (M= 3.26, *SD* = 0.79, *n* = 69) and post-assault GPA (M = 3.20, *SD* = 0.90, *n* = 69), *t* = .426, *df* = 68, *p* = .671. These data can be found in Table 5.

Table 4

Academic Outcomes Among Participants by Problem Frequency

Academic Outcome	Fewer Problems	No Change	More Problems
Dropping Classes	18.6%	50.0%	31.4%
Struggles Studying	20.9%	26.7%	52.3%
Grades Dropping	16.0%	44.2%	39.5%

Table 5

Academic Self-Efficacy and GPA Outcomes Among Participants

Academic Outcome	*n*	*M*	*SD*
Academic Self-Efficacy			
Pre-Assault	69	3.55	0.91
Post-Assault	69	2.66	0.99
GPA			
Pre-Assault	70	3.26	0.79
Post-Assault	87	3.20	0.84

Social Support.

The social support measure was found to be highly reliable (α = .95). The mean for social support in the sample was 3.15 (*SD* = 1.01). Participants mostly sought social support from friends to help them with non-consensual sexual experiences, with 67.1% of participants selecting that support option. A proportion of participants did not receive any support from the types listed, with 23.5% selecting no support received. For PTSD specific supports, similar responses were found. 21.4% received support from friends, and 61.9% received no support. For PTSD specific supports, 10.7% of participants also reported attending counselling or therapy for support. These data can be found in Table 6.

Table 6

Types of Social Support Used by Participants

Social Support	Sexual Assault		PTSD	
	n	%	*n*	%
Counselling/Therapy	3	3.5	9	10.7
Medical/Hospital	1	1.2	1	1.2
Spiritual/Religious	0	0	1	1.2
Family	2	2.4	1	1.2
Friends	57	67.1	18	21.4
Other	2	2.4	2	2.4
No Support	20	23.5	52	61.9

Correlational Analyses

Pearson correlations were run to explore relationships between experiences of sexual assault, PTSD symptom severity, and academic outcomes. Results for the correlational analyses can be found in Table 7.

Pearson's Correlation Coefficient

Non-Consensual Sexual Experiences and PTSD Symptomology.

Experiencing more non-consensual sexual experiences overall was found to have a positive correlation with overall PTSD symptomology scores, $r = .55$, $p < .001$. Additionally, experiencing more *completed* non-consensual sexual experiences was found to have a positive correlation with overall PTSD symptomology scores, $r = .53$, $p < .001$. Experiencing *attempted* non-consensual experiences found similar results, $r = .52$, $p < .001$. These results suggest that there is little difference in PTSD symptomology regardless of whether the assault was completed or not.

Experiencing more non-consensual experiences was found to have a positive correlation with exceeding the cut-off score, $r = .43$, $p < .001$. Similarly, completed non-consensual experiences were positively correlated with exceeding the PTSD cut-off score, $r = .43$, $p < .001$, in addition to attempted non-consensual experiences, $r = .42$, $p < .001$.

Non-Consensual Sexual Experiences and Academic Outcomes.

The total number of non-consensual sexual experiences is negatively correlated to academic self-efficacy, $r = -.29$, $p < .001$. No correlations were found between total non-consensual sexual experiences and dropping a class ($r = .18$, $p = .107$) or grades dropping after the assault ($r = .20$, $p = .060$). However, total non-consensual sexual experiences were positively correlated to increased difficulties to complete work and assignments, $r = .31$, $p < .001$. Total non-consensual sexual experiences were not correlated to GPA following the assault, $r = -.03$, $p = .765$.

PTSD Symptomology and Academic Outcomes.

GPA following the assault was negatively correlated to overall PTSD symptom severity, $r = -.42$, $p < .001$. Additionally, post-assault GPA was negatively correlated to meeting or exceeding the cut-off score indicating severe PTSD symptomology, $r = -.36$, $p < .001$. Total PTSD symptomology was found to be negatively correlated with perceived academic self-efficacy, $r = -.49$, $p < .001$. The same correlation was found between the PTSD cut-off score and perceived academic self-efficacy, $r = -.49$, $p < .001$. PTSD total scores were positively correlated to dropping classes ($r = .49$, $p < .001$), difficulty working or completing assignments ($r = .50$, $p < .001$), and grades dropping ($r = -.49$, $p < .001$).

Social Support.

Social support was found to be positively correlated with GPA post-assault, $r = .23$, $p = .039$. Social support was not significantly correlated with PTSD symptomology, $r = -.19$, $p = .085$, nor the PTSD cut-off score, $r = -.04$, $p = .735$. Additionally, social support was not significantly correlated with academic self-efficacy, $r = -.09$, $p = .411$. This does not align with proposed Hypotheses 2a and 2b.

Table 7

Pearson's Correlation Matrix

Variable	1	2	3	4	5	6	7	8	9
1. Total Non-Consensual Events	1	-							
2. PTSD Total Score	.55**	1	-						
3. PTSD Cut-off	.43**	.81**	1	-					
4. Self-Efficacy Post-Assault	-.29**	-.49**	-.49**	1	-				

5.	Dropped Class	.18	.49**	.40**	-.35**	1	-			
6.	Studying Difficulties	.31**	.50**	.51**	-.47**	.49**	1	-		
7.	Grades Dropped	.20	.39**	.40**	-.59**	.51**	.67**	1	-	
8.	GPA Post-Assault	-.03	-.42**	-.36**	.55**	-.31**	-.28**	-.42**	1	-
9.	Total Social Support	.07	-.19	-.04	.09	-.24*	-.11	-.10	.23*	-

* $p < .05$, two-tailed. ** $p < .01$, two-tailed.

PROCESS Analyses

Mediation of PTSD Symptomology

Hypothesis 1 proposed that experiencing sexual assault is negatively related to academic outcomes and that this relationship is mediated by PTSD symptomology, such that those who experience sexual assault are more likely to have higher PTSD symptomology and that PTSD symptomology is negatively related to academic outcomes. Results indicated support for this hypothesis. Non-consensual sexual experiences were positively related to PTSD symptomology, and this relationship was significant. The regression coefficients for path a, the influence of non-consensual sexual experiences on PTSD symptomology, was $\beta = 0.511$, $p < .001$. This means that for every increase in non-consensual events, there is a .511 increase in the level of PTSD symptomology. PTSD symptomology was significantly negatively related to academic self-efficacy. The regression coefficients for path b, the influence of PTSD symptomology on academic self-efficacy was, $\beta = -0.024$, $p < .001$. Like the findings for academic self-efficacy, non-consensual sexual experiences were positively related to PTSD symptomology, and PTSD symptomology was significantly negatively related to GPA post-assault. The regression

coefficients for path c, the influence of PTSD symptomology on GPA post-assault, was β = -0.025, $p < .001$. See Figure 2 for the results.

The *ab* path (indirect effect) of non-consensual sexual experiences on academic self-efficacy through the mediating variable PTSD symptomology was $c = -0.012$ (CI = -.019, -.053). This indicates that the relationship between non-consensual sexual experiences and academic self-efficacy is mediated by PTSD symptomology. Additionally, the *ab* path (indirect effect) of non-consensual sexual experiences on GPA post-assault through the mediating variable PTSD symptomology was $c = -0.024$ (CI = -.019, -.005). This indicates that the relationship between non-consensual sexual experiences and GPA after assault is mediated by PTSD symptomology. See Figure 3 for the results.

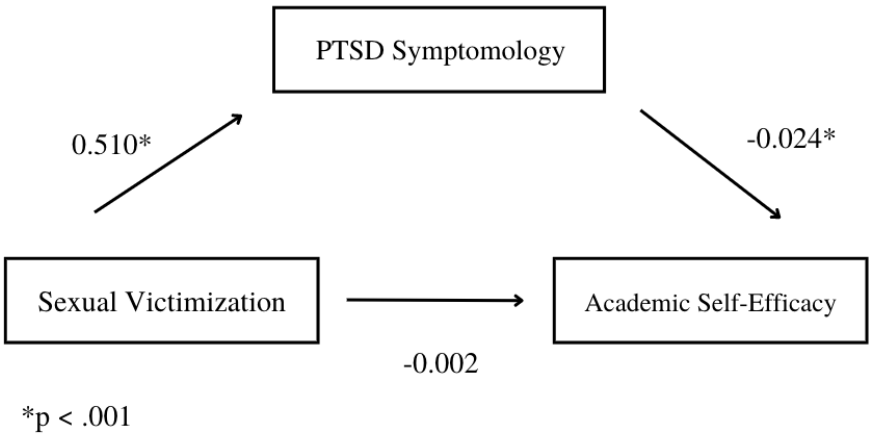

Figure 2. Mediation model for Hypothesis 1: PTSD symptomology mediating the relationship between sexual victimization and academic self-efficacy.

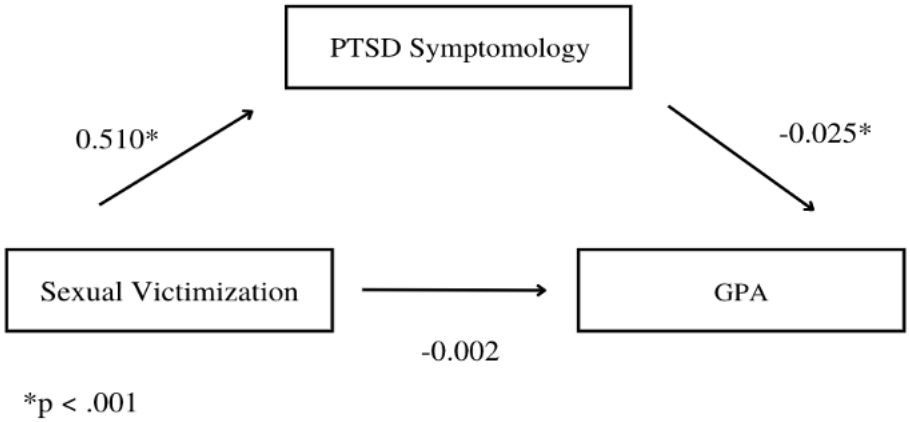

Figure 3. Mediation model for Hypothesis 1: PTSD symptomology mediating the relationship between sexual victimization and GPA.

Table 8

OLS Regression and Model Coefficients of Path a, b, and c for Academic Self-Efficacy (N = 87)

		Consequent						
		M (PTSD)				Y (ASE)		
Antecedent		Coefficient	*SE*	*p*		Coefficient	*SE*	*p*
X (NCSE)	*a*	0.510	0.086	< .001	*c'*	-0.002	0.006	.749
M (PTSD)		-	-	-	*b*	-0.024	0.006	< .001
Constant	i_M	24.896	2.598	< .001	i_Y	3.563	0.201	< .001
			$R^2 = 0.296$				$R^2 = 0.237$	
			$F(1, 85) = 35.707$, $p = < .001$			$F(2, 84) = 13.031$, $p = < .001$		

ASE = Academic Self-Efficacy, NCSE = Non-Consensual Sexual Experience, PTSD = Post Traumatic Stress Disorder, SE = Standard Error

Conditional Moderation of Social Support

Hypothesis 3 proposed that social support would moderate the above mediated relationship at two points: between sexual assault and PTSD symptomology, and between PTSD

symptomology and academic outcomes. Specifically, that higher levels of social support after experiencing sexual assault are related to less severe PTSD symptomology, and higher social support while experiencing PTSD symptomology is associated with less negative academic outcomes. This was explored using Model 58 in the PROCESS macro (Hayes, 2017) in SPSS to test the two-stage moderated mediation model. The results do not support this hypothesis, which was anticipated as there were no statistically significant correlations between these variables in previous analyses. While Hypothesis 3 was not supported by the results, this does not mean that social support is not important in the context of sexual assault and academic outcomes. The findings suggest that the relationship between social support, PTSD symptomology, and academic outcomes may be more complex than initially hypothesized.

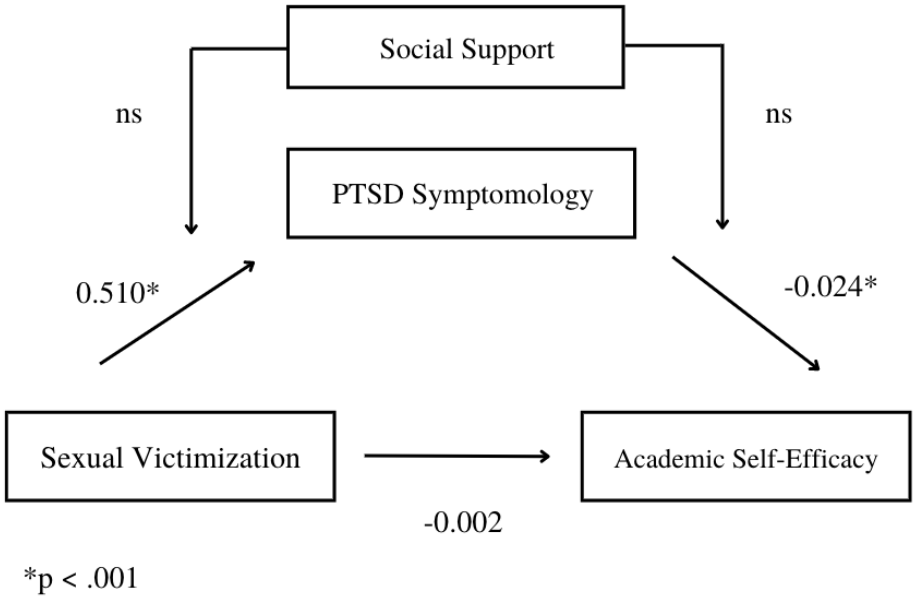

Figure 4. Results of the conditional process model of sexual victimization, PTSD symptomology, and academic self-efficacy, with pathways moderated by social support.

Table 9

Regression Results for Conditional Moderation of Social Support on PTSD Symptomology (N=84)

	Outcome: PTSD						Outcome: Academic Self-Efficacy					
					95% CI						95% CI	
Predictor	*b*	*SE*	*t*	*p*	*LL*	*UL*	*b*	*SE*	*t*	*p*	*LL*	*UL*
Sexual Assault	*.52*	.09	6.10	.000	*.35*	.70	-.00	.01	-.08	.939	-.01	.01
Social Support	-4.62	1.80	-2.57	.012	*-8.19*	-1.04	.02	.10	.23	.815	-.18	.22
Sexual Assault x Social Support	.04	.06	.60	*.552*	*-.09*	.16						
PTSD							-.03	.01	-4.07	.000	-.04	-.01
PTSD x Social Support							-.01	.00	-1.59	.116	-.02	.00

Table 10

Regression Results for Conditional Moderation of Social Support on GPA (N=82)

	Outcome: PTSD						Outcome: GPA					
					95% CI						95% CI	
Predictor	*b*	*SE*	*t*	*p*	*LL*	*UL*	*b*	*SE*	*t*	*p*	*LL*	*UL*
Sexual Assault	*.52*	.09	5.92	.000	*.35*	.70	-.01	.01	1.77	.080	-.00	0.19
Social Support	-4.84	1.84	-2.62	.011	*-8.51*	-1.16	.08	.09	.94	.349	-.09	.26
Sexual Assault x Social Support	.03	.06	.53	*.599*	*-.09*	.16						
PTSD							-.02	.01	-4.06	.000	-.03	-.01
PTSD x Social Support							.00	.00	.87	.389	-.00	.01

MANOVA

A multivariate analysis of variance (MANOVA) was conducted to investigate potential differences in PTSD symptomology, non-consensual sexual experiences, social support, and academic self-efficacy by gender (male, female/gender diverse) and sexual orientation

(straight/heterosexual, LGBTQIA+) groups. Using Pillai's trace, there was no significant effect of gender on any of the variables, including PTSD symptomology, non-consensual sexual experiences, social support, and academic self-efficacy, $V = .03$, $F(4, 79) = 0.62$, $p = .647$. None of the univariate effects were significant for gender differences. Similarly, there was no significant effect of sexual orientation on PTSD symptomology, non-consensual sexual experiences, social support, and academic self-efficacy, $V = .09$, $F(4, 79) = 1.85$, $p = .128$. However, we did find a significant difference between straight ($M = 27.86$, $SD = 21.70$) and LGBTQIA+ ($M = 18.61$, $SD = 18.95$) participants in the total number of non-consensual sexual experiences based on separate univariate tests for sexual orientation, $F(1, 84) = 4.30$, $p = 0.41$. Table 11 and Table 12 provide the means and standard deviations of gender and sexual orientation groups.

Table 11

Means and Standard Deviations of Non-Consensual Sexual Experiences, PTSD Symptomology, Academic Self-Efficacy (Post-Assault), and Social Support by Gender.

	Male			Female/Gender Diverse		
	M	*SD*	*n*	*M*	*SD*	*n*
NCSE	30.25	15.35	3	22.08	20.75	80
PTSD	37.25	15.69	3	36.31	19.64	80
Academic Self-Efficacy (Post-Assault)	2.72	1.38	3	2.64	0.99	80
Social Support	2.61	1.00	3	3.18	1.01	80

NCSE = Non-Consensual Sexual Experience, PTSD = Post Traumatic Stress Disorder, SE = Standard Deviation

Table 12

Means and Standard Deviations of Non-Consensual Sexual Experiences, PTSD Symptomology, Academic Self-Efficacy (Post-Assault), and Social Support by Sexual/Affectional Orientation.

	Straight/Heterosexual			LGBTQIA+		
	M	*SD*	*n*	*M*	*SD*	*n*
NCSE	27.86	21.70	35	18.61	18.95	49
PTSD	35.97	19.05	35	36.63	19.83	49
Academic Self-Efficacy (Post-Assault)	2.65	0.91	35	2.65	1.07	49
Social Support	3.11	0.85	35	3.18	1.12	49

NCSE = Non-Consensual Sexual Experience, PTSD = Post Traumatic Stress Disorder, SE = Standard Deviation

Multiple Regression

To examine the relationship between sexual assault, PTSD, social support, and academic outcomes a hierarchical multiple regression analysis was conducted to examine the unique contributions of non-consensual sexual events, PTSD symptomology, and social support in predicting academic outcomes (academic self-efficacy, GPA). Table 13 and Table 14 provide a summary of the regression analyses, presenting B, SE (B), β, *p*, and R^2 values.

For academic self-efficacy, the hierarchical multiple regression analysis revealed that non-consensual sexual experiences accounted for a significant proportion of the variance in the first step ($R^2 = -.07$, $F(1, 82) = 6.43$, $p = .013$), explaining 7% of the variance. The second step showed that the addition of PTSD symptomology significantly increased the proportion of

variance explained beyond what was accounted for by non-consensual sexual experiences (R^2 = .22, $F(2, 81) = 11.70$, $p < .001$), indicating that when PTSD symptoms are present, they account for a significant portion of the variance in academic self-efficacy. However, the third step of adding social support did not account for a significant additional proportion of variance beyond what was already accounted for by non-consensual sexual experiences and PTSD symptomology ($R^2 = .22$, $F(3, 80) = 7.71$, $p < .001$). Therefore, social support was not a significant predictor of academic self-efficacy in this model, and the final model explained 22% of the variance in academic self-efficacy. A total of 84 participants were included in the analysis.

The hierarchical multiple regression analysis was used to predict GPA, with non-consensual sexual experiences, PTSD symptomology, and social support as predictors. In the first model, non-consensual sexual experiences did not account for a significant proportion of the variance ($R^2 = -.00$, $F(1, 80) = 0.21$, $p = .649$), explaining less than 1% of the variance in GPA. The second model showed that the addition of PTSD symptomology significantly increased the proportion of variance explained ($R^2 = .23$, $F(2, 79) = 11.86$, $p < .001$), indicating that when PTSD symptoms are present, they account for 23% of the variance in GPA. This suggests that PTSD symptomology is a significant predictor of GPA in this sample. However, the third model of social support did not account for a significant proportion of the variance beyond what was already accounted for by non-consensual sexual experiences and PTSD symptomology ($R^2 = .24$, $F(3, 78) = 8.29$, $p < .001$). This indicates that social support may not be a significant predictor of academic outcomes in this sample after accounting for other predictors. A total of 82 participants were included in the analysis.

Table 13

Summary of Regression Analyses for Predicting Academic Self-Efficacy (N = 84)

Predictor	B	SE (B)	β	p	R^2
Step 1					.07
NCSE	-.01	.01	-.27	.013	
Step 2					.22
NCSE	-.00	.01	-.23	.846	
PTSD	-.02	.01	-.46	< .001	
Step 3					.22
NCSE	-.00	.01	-.02	.841	
PTSD	-.024	.01	-.46	< .001	
Social Support	.01	.10	.01	.953	

NCSE = Non-Consensual Sexual Experience, PTSD = Post Traumatic Stress Disorder

Table 14

Summary of Regression Analyses for Predicting GPA (N = 82)

Predictor	B	SE (B)	β	p	R^2
Model 1					-.00
NCSE	-.00	.01	-.05	.649	
Model 2					.23
NCSE	-.01	.01	.25	.038	
PTSD	-.03	.01	-.56	< .001	
Model 3					.24
NCSE	-.01	.01	.22	.069	
PTSD	-.02	.01	-.53	< .001	

Social Support	.09	.09	.122	.297

CHAPTER 5: Discussion

Sexual assault is a common experience for those in post-secondary, with far-reaching psychological and academic consequences. Previous research has shown that experiencing sexual assault has been found to result in drops in GPA, increased attrition rate, and increased struggles attending classes and completing assignments (for a systematic review see, Molstad et al., 2021). The current study looked to expand on the well-researched negative consequences of experiencing sexual assault during post-secondary education to explore what drives this relationship. In line with suggestions from previous research (e.g., Banyard et al., 2020; Griffin & Read, 2012; Jordan et al., 2014), the current study explored how PTSD symptomology mediated the relationship between sexual assault and poorer academic outcomes.

Experiencing more non-consensual sexual events was positively correlated with PTSD symptomology scores. Similarly, experiencing more non-consensual sexual events were positively correlated with meeting or exceeding the PTSD cut-off score. Furthermore, there was little difference between the correlation of sexual assault and PTSD symptomology regardless of if the assault was completed or attempted. Participants who responded with higher PTSD symptomology experienced negative academic outcomes following sexual assault. Overall PTSD symptomology was found to be negatively correlated to GPA. Meeting or exceeding the cut-off score for higher levels of PTSD symptom severity was also negatively related to GPA. Similar results were found for both overall PTSD symptomology and cut-off scores for academic self-efficacy, with increased PTSD symptomology being negatively correlated to academic self-efficacy. Higher overall scores of PTSD symptomology were also positively related to dropping classes, difficulty working or completing assignments, and grades dropping. Finally, in support

of Hypothesis 1, mediation analyses confirmed that the relationship between non-consensual sexual experiences and negative academic outcomes is mediated by PTSD symptomology.

The results of the study partially confirmed Hypothesis 2a, that social support would be positively related to academic outcomes.. Social support was found to be positively related to GPA post-assault, but social support was not significantly correlated to academic self-efficacy. The results of the study did not support Hypothesis 2b, that social support would be negatively related to PTSD symptomology. Social support was not significantly correlated with neither PTSD symptomology nor PTSD cut-off scores. A lower number of participants reported seeking out supports for PTSD compared to seeking support for sexual assault. Additionally, participants reported seeking out informal social supports (e.g., friends) at higher rates, whereas participants reported seeking out counselling/therapy at higher rates for PTSD. One potential reason for why social support was not significantly related to PTSD symptomology could be due to the low percentage of participants that reported seeking any support for PTSD. This may have contributed to not finding a statistically significant influence of social support on PTSD symptomology levels. Additionally, given that a larger percentage of participants sought out formal social supports for PTSD, one potential impact on rates of support sought may be barriers to formal mental health care. In Canada, those who did not have their needs for mental health care met reported barriers related to personal circumstances (e.g., not knowing where to get support, financial limitations; Statistics Canada, 2019). Additionally, with PTSD symptomology includes struggles with avoidance (Anxiety and Depression Association of America, n.d.) which may present an additional struggle to seek support in addition to the barriers discussed previously. Since the current study did not explore when participants sought social support for sexual assault and/or PTSD, it is unclear if individuals may have sought supports for sexual

assault prior to seeking support for PTSD symptomology. Negative reactions to disclosure of sexual assault by social supports can contribute to maladaptive coping, impacting future help-seeking behaviour (Littleton, 2010). Additionally, positive disclosure reactions can reduce PTSD symptomology and negative reactions from social supports is related to increased PTSD symptoms. Thus, participants may not seek out further supports if they develop PTSD symptomology if they have had negative disclosure reactions. Finally, participants completed a PTSD symptomology scale in the survey that did not provide feedback and is not used for diagnosis, so participants may not know if they have PTSD which may impact the overall reported support sought.

Hypotheses 3, that social support would moderate the mediated relationship found in Hypothesis 1, was not confirmed. The current study had a small sample size and the distribution of scores was likely truncated because of the selection effect as participants were required to have been assaulted to participate, which limits the power to be able to detect interactions between the variables (Aguinis & Gottfredson, 2010). Future research would benefit from a larger sample size and including individuals who have not been assaulted to get a more accurate distribution to be able to explore interactions.

Therefore, these results indicate that sexual assault has negative psychological and academic consequences for victims of assault. Moreover, this study highlights the importance of examining PTSD as a mediator to better explain why sexual assault leads to negative academic outcomes. As previous research has shown, PTSD is negatively associated with executive functioning (Scott et al., 2015). These results have significant practical implications because it shows that traumatic events such as sexual assault result in not only psychological problems but also problems with general life functioning such as academic outcomes. These implications are

explored further on in the chapter. Next, I will discuss limitations to the current study, future directions, and end with a more thorough discussion of practical and research implications.

Limitations

Demographic Limitations

The demographics of this survey mirror that of prior research (e.g., Molstad et al., 2021), where the sample is predominantly Female and European. However, one potential limitation of the study is that the options provided on the survey for gender identity included "male" and "female", which are not gender identities but sex. This may have impacted the demographics that were reported and may have resulted in an increase drop out in participants who did not identify within the gender binary of "male" and "female". Survey creation was primarily created with and informed by current best practices in respecting and honoring gender diversity in psychological research. For example, the current study did not use a binary option for gender, which has been associated with trans and non-binary participants feeling misgendered and denied their identity, in addition to creating issues around validity and reliability in psychological research (Cameron & Stinson, 2019). Additionally, the word "other" was not used as an open-ended option, which can perpetuate the erasure of nonbinary individuals and may "suggest that genders beyond the binary are abnormal" (p. 6; Cameron & Stinson, 2019). Instead, options provided outside of male, female, non-binary, and transgender, included 1) I do not identify as any of the above. I identify as: (Open response); 2) Unsure; and 3) Prefer not to disclose. All but the "male" and "female" options align with Cameron and Stinson's (2019) recommendations for inclusive measures of sex and gender. Future research will benefit from changing the language in the survey to "man" and "woman" to align fully with the best practices for psychological research.

Additionally, this study was only open to individuals who were residents of Alberta, which may decrease the generalizability across provinces or other countries. Researchers have discussed the concept of WEIRD (Western, Educated, Industrialized, Rich, and Democratic; Henrich et al., 2010) samples, and how this group may be outliers compared to other populations. Given that the research took place in Canada and since it is a non-probability sample, the findings may not generalize to other populations. Additionally, the findings may be slightly inflated as those who identify as a female are more likely to exhibit increased severity in PTSD symptomology (Tolin & Foa, 2008).

Recruitment Limitations

One struggle regarding recruitment included finding a large enough sample. Despite repeated postings on social media and outreach to sexual assault services both on and off campus, the study was just below the G*Power calculation of 107 participants as an ideal sample size (N = 100). One potential reason for the struggle in recruitment is that sexual assault survivors may be reluctant to engage in research regarding sexual assault due to stigma and/or rape culture myths (Suarez & Gadalla, 2010). Additionally, survivors may be reluctant to engage out of fear of a negative reaction from those they disclose their assault to. However, research has found that negative responses to disclosure can impact future help-seeking behaviour, coping, and PTSD levels (Littleton, 2010; Orchowski et al., 2013b; Ullman & Peter-Hagene, 2014). Given the online format of this study individuals did not receive positive nor negative reactions to their disclosure, which may have impacted their interest in completing the survey. Additionally, the study did not explore if participants have disclosed their assault prior to completing the survey and how that disclosure was received, which could have impacted participants comfort and/or ability to complete the survey.

Another limitation with recruitment was the diversity of the sample as discussed above. As the sample was only 30% non-European ancestry, 3% male, and 11% gender diverse, the current study may not be generalized to these groups' experiences with sexual assault, PTSD, and academic outcomes. Although specific clubs, groups, or organizations (e.g., LGBTQIA+, BIPOC run) were invited to share the research poster, concerns were raised about triggering their clients or group members due to the topic of research. Rosoff's (2018) paper regarding ethical ways to engage in sexual assault research with college students suggests survivors may feel empowered or glad that there is research going on in their community regarding their experience of sexual assault. Additional research has found that victims of sexual assault report positive reactions and seek additional services following participation in this topic of research (Kirkner et al., 2019), and participants have no substantial increase in distress following being asked about trauma (Jaffe et al., 2015). Rosoff also states that participants who engage in sexual assault research on average experience minimal levels of distress during the process, and most college students believe it is important to ask these questions. The concerns raised by the groups contacted for recruitment were validated and respected and I did not pressure or try to convince the groups to engage in or share the research notice.

Despite the positives of engaging in this research as noted above, survey flow and structuring may have impacted the participants' completion rate. Given the positive reactions to engaging in sexual assault research, the current study may have benefitted from different survey structuring as there were many responses where individuals dropped off while completing the sexual assault scale which impacted the overall sample size. The survey started with the sexual assault scale, then moved into the other variables (e.g., academic outcomes, PTSD, social support), and participants may have been more likely to drop off by being asked potentially

triggering questions earlier in the survey. It is important to note that the absence of screening questions for non-consensual sexual experiences at the beginning of the survey was a deliberate decision, as discussed in Chapter 3. However, this resulted in some data being collected that was ultimately eliminated from the analysis during data cleaning. As a result, the overall sample size was affected, and it is possible that the exclusion of this data may have impacted the study's findings.

Survey Design Limitations

Another limitation of the study is relevant to the time frame between experiencing sexual assault and participating in the study. Participants were asked to identify which year of their post-secondary journey the assault(s) happened. The survey design did not account for the number of events of sexual assault that participants reported, which made it impossible to be able to get a clear understanding of which assaults happened when. Future research would benefit from clarifying the time that has lapsed between the assault and participation as responses may compound with each event and may change the interpretation of the results of the study. This is because the length of time that has elapsed between the event and participation may affect the participant's responses and how those responses relate to PTSD symptomology. By understanding this time difference, researchers can better interpret the study's results and determine if differences in PTSD symptomology exist and impact PTSD differently. Additionally, participants were asked to participate if they had an experience of sexual assault since the age of 18. However, given the rates of sexual assault and abuse in childhood and adolescence, it is likely that some participants have had experiences prior to the recruitment inclusion criteria. Future research would benefit from exploring how experiences from childhood

and adolescence may compound as adult experiences happen, potentially impacting the findings and interpretation of the findings of the study.

Future Directions

The results of this study found significant associations within the single group of individuals who have had non-consensual sexual experiences. However, future research would benefit from comparing those who have not experienced sexual assault and those who have experienced sexual assault to explore differences within groups. Future research may also benefit from exploring known predictors of academic success such as conscientiousness, motivational factors (e.g., locus of control, optimism), and approaches to learning (e.g., deep vs. surface) mediate the relationship between experiencing sexual assault and academic consequences (Richardson et al., 2012). Additionally, given the limited diversity of the current study sample, there was no significant differences by gender, and only one univariate result was found from the MANOVA regarding sexual/affectional orientation. Ethnicity differences were not able to be explored because of the lack of diversity in the sample. Future research could benefit from a larger and more diverse sample size where conclusions could be drawn between the different experiences across gender, sexual/affectional orientation, and ethnic diversity.

Differing responses to stress and trauma, such as fight, flight, freeze, or fawn stress responses have been found to impact reporting in individuals who have experienced sexual assault (Pinciotti & Seligowski, 2021). Specifically, that those who experience “freeze” responses are less likely to report to law enforcement and those with “fight” responses increase the likelihood that the survivor will report to law enforcement. Further research could use the fight-flight-freeze-fawn framework to expand on how these relate to PTSD symptom severity following assault, and further, how this may impact academic outcomes.

Finally, future research could explore protective factors such as resilience, personality, and other psychosocial contextual influences (Richardson et al., 2012). Some participants in the current study reported having fewer struggles with school following sexual assault. Exploring protective factors would be beneficial as post-secondary institutions could develop programs and interventions that increase protective factors against the negative academic consequences of experiencing sexual assault and PTSD symptomology. For example, post-traumatic growth is defined as when individuals have had positive psychological growth following a traumatic event (Ulloa et al., 2016). Ulloa et al. reviewed post-traumatic growth related specifically to sexual violence and found that victims of sexual violence differed across studies of what domains of life positively changed for them following assault. For example, some studies found a greater appreciation for life, increased satisfaction in relationships, and a stronger sense of self following the assault. Additionally, Kirkner and Ullman's (2020) found that less PTSD was predictive of more post-traumatic growth, but also discuss that previous research has found conflicting results. Unfortunately, a lack of substantial empirical evidence stemming from methodological issues on post-traumatic growth and resilience research (Infurna & Jayawickreme, 2019) may contribute to the conflicting results found in current literature. Thus, future research could benefit from clarifying the relationship between PTSD, post-traumatic growth, and resilience, including exploring it as a protective factor.

Implications for Practice, Policy, & Research

Practice

The result of the study could have implications for both counselling and post-secondary institution supports. Understanding that PTSD symptomology mediates the relationship between sexual assault and academic outcomes may assist in informing therapists, psychologists, and

school counsellors about outcomes of sexual assault they may have previously not known. This study is also impactful to counselling psychology through increased understanding of what causes the decline in academic outcomes after sexual assault and informing the creation of helpful interventions or supports for students who have experienced this. Recent research found that that 74% of individuals met diagnostic criteria for PTSD one month following sexual assault, but "most symptom recovery happened within the first three months following sexual assault" (Dworkin et al., 2021). This indicates that the first several months following sexual assault are instrumental for the healing process.

Understanding that PTSD symptomology functions as the mediator between sexual assault and negative academic outcomes also informs post-secondary institutions and counsellors of survivors needs following sexual assault. Post-secondary institutions can update their current practice for supporting students with healing following sexual assault while also supporting their academic success. For example, as there was no significant difference found in GPA's pre- and post-assault those providing support (e.g., counsellors, peer supports, academic advisors) would benefit from exploring other predictors of academic outcomes such as academic self-efficacy, personality traits (e.g., conscientiousness), and locus of control (Richardson et al., 2012). McCauley and Casler (2015) discuss more ways to help sexual assault victims in post-secondary. For example, creating campus climate surveys to see how prevalent sexual assault is on campus. The campus climate surveys may lead to more informed ways to improve preventative measures on campus and allow for allocation for greater resources for victims of sexual assault on campus. Greater resources for individuals interacting with victims, and hearing of their experiences of sexual assault may result in faster, more appropriate, and useful resources for the victims by listening to feedback from those with lived experience.

Policy

Policy around sexual assault on campuses differs greatly between post-secondary institutions. One review of sexual assault policies of all public universities in Canada found that one fifth of relevant policies were sexual assault specific, with the remaining policies falling under codes of conduct, harassment, and discrimination policies (Lee & Wong, 2019). Additionally, only 13% of Canadian universities have sexual assault support centers, and only 38% of universities have information on support services (on- or off-campus) in their policies. This review also explored comprehensiveness of policies in Canadian post-secondary institutions, with a mean rating of 3.6/9, with variations relating to geographic location, university budget, and student populations. For example, campuses with smaller student populations were less likely to have campus resources than those with student populations above 30,000 (Lee & Wong, 2019). These findings show the lack of policy efficaciousness, indicating a need for post-secondary institutions to develop better policies around sexual assault and the academic consequences that occur as a result.

The findings in this study have implications for policy in post-secondary educational settings. This study may contribute to educational psychological theories on what influences academic outcomes and the role that trauma and PTSD may play for those in post-secondary. Additionally, because of the findings in this study, post-secondary institutions could develop policy around extenuating circumstances for dropping courses without penalty, leaves of absence, and increased accommodation for those who are survivors of sexual assault struggling with PTSD symptomology. Most post-secondary policy is focused on sexual violence prevention rather than policy about the institutions response after violence has occurred (Streng & Kamimura, 2015). Specifically, effort is put into programs, workshops, and courses which have

been found to be effective in reducing stereotypes and violence on campuses (Jozkowski, 2015; Rothman & Silverman, 2007).

Existing models such as The Information Seeking of Sexual Assault Survivors (ISSAS) model could be adopted as a post-secondary policy to aid sexual assault victims in getting help and finding resources both in and outside of university (Skinner and Gross, 2017). Victims utilizing the ISSAS move through the model starting with an appraisal of needs, which creates the important perception of availability to help. The individuals assisting victims then acknowledge and work to move through enablers and barriers to get information to the victim. These enablers and barriers include things such as socioeconomic status, social location, and stigma. The victim is then given formal resources such as institutions, crisis teams, or law enforcement, as well as informal resources, which are people to support informally. Recorded information such as websites, or books specifically talking about the healing process is also given to the victim. There are final assessments to see if needs were met, and in the circumstances that they were not, the model starts over again. This model could be updated to incorporate the current study's findings to include academic needs appraisals as well.

In addition to post-secondary institutions, psychologists, counsellors, and other frontline and/or direct service providers could benefit from expanding supports to include academic supports. Post-secondary students may not know about the academic consequences of PTSD symptomology and sexual assault, underscoring the importance of service providers providing psychoeducation and other resources to provide competent care to survivors. For example, psychoeducation could be provided through workshops offered to students during orientation week, to faculty and staff through required university modules or continuing education, and by putting on workshops or other events for students, staff, and faculty to attend.

Research

The importance of this line of research to the field of study are multiple. Most published research to date has found that experiences of sexual assault negatively impact GPA (e.g., Baker et al., 2016; Jordan et al., 2014; Wood et al., 2018). However, previous research has not explored how trauma (e.g., post-traumatic stress disorder) functions regarding this relationship. Given the results of the study, research can now explore other possible mediators and moderators that will help expand the understanding of PTSD and academic outcomes following sexual assault. As the current study found that PTSD mediates the relationship between sexual assault and negative academic outcomes, research around evidence-based treatments and interventions to support survivors is imperative to advance the understanding of how to decrease the impact of sexual assault on academic outcomes.

As the current study did not find a significant moderating impact of social support on PTSD symptomology and academic outcomes, other forms of coping with sexual assault and PTSD symptomology could be explored. Some areas for exploration could include expanding on recent research which has found links between self-compassion and problem-focused coping (DeCou et al., 2019), as increased self-compassion is associated with lower PTSD symptomology (Winders et al., 2020). Williamson (2019) found that women who experienced sexual trauma as opposed to other kinds of trauma had lower levels of self-compassion. Not only has self-compassion has also been found to mediate the relationship between social support and PTSD, but social support was positively related to self-compassion (Maheux & Price, 2016). Thus, the lack of significant moderation of social support invites the possibility of other constructs that are influencing and are influenced by social supports.

Conclusion

The current study examined the relationship between sexual assault and negative academic outcomes, specifically exploring whether PTSD symptomology mediated this relationship and whether social support moderated this process. The results supported the hypothesis that experiencing more non-consensual sexual events was positively correlated with PTSD symptomology, which in turn was negatively correlated with academic outcomes such as GPA, academic self-efficacy, and dropping classes. Although social support was found to be positively correlated with GPA post-assault, social support was not significantly related to PTSD symptomology nor played a moderating role in the mediated relationship between sexual assault and academic outcomes. These findings indicate that sexual assault has significant negative psychological and academic consequences for victims and highlight the importance of examining PTSD as a mediator in understanding these consequences. While limited by its predominantly female and European sample and its reliance on self-report measures, future research should aim to include a more diverse sample and consider other potential mediators and moderators in the relationship between sexual assault and academic outcomes.

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Appendix A: Demographic Questions

1. What is your age?
2. What is your gender?
    a. Male
    b. Female
    c. Non-binary
    d. Transgender
    e. I do not identify as any of the above. I identify as:
    f. Unsure
    g. Prefer not to disclose
3. What is your ancestry? Please select all that apply:
    a. Indigenous
    b. African
    c. Arab/West African
    d. Caribbean
    e. East Asian (China, Hong Kong, Japan, South Korea, etc.)
    f. European
    g. Latin, Central, and South American
    h. Pacific Islands
    i. Southeast Asian (India, Pakistan, Nepal, etc.)
    j. Other
    k. Unsure
4. What is your sexual/affectional orientation?

a. Straight (Heterosexual)

b. Gay

c. Lesbian

d. Bisexual

e. Not listed: Please specify

f. Prefer not to disclose

Appendix B: Modified Sexual Assault Measure

Sexual Experiences Survey Short-Form Victimization Revised (SES-SFV; Koss et al., 2007)

The following questions will ask you about your non-consensual sexual experiences.

Non-consensual sexual experiences are defined as any act that invades an individual's sexual privacy, including when there is a lack of capacity to consent (e.g., sexual assault, rape, sexual abuse, unwanted touch, verbal intimidation). Please note that the non-consensual experiences do not need to have been reported in any way to complete this survey.

On the next page, place a check mark in the box showing the number of times each experience has happened to you. If several experiences occurred on the same occasion--for example, if one night someone told you some lies and had sex with you when you were drunk, you would check both boxes. If you have experienced any of the following, please note how many times you have experienced this.

1. Someone touched me or removed some of my clothes without my consent (but did not attempt oral sex/penetration) by:

   Select how many times this has happened since you graduated high school (0, 1, 2, 3+)

   a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.
   b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.

c. Taking advantage of me when I was too drunk or out of it to stop what was happening.
d. Threatening to physically harm me or someone close to me.
e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.

2. Someone had oral sex with me or made me have oral sex with them without my consent by:

   Select how many times this has happened since you graduated high school (0, 1, 2, 3+)

   a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.
   b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.
   c. Taking advantage of me when I was too drunk or out of it to stop what was happening.
   d. Threatening to physically harm me or someone close to me.
   e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.

3. Someone penetrated me vaginally/anally without my consent (e.g., fingers, penis, objects) by:

   Select how many times this has happened since you graduated high school (0, 1, 2, 3+)

a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.
b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.
c. Taking advantage of me when I was too drunk or out of it to stop what was happening.
d. Threatening to physically harm me or someone close to me.
e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.

4. Someone forced me to penetrate them (e.g., penis, fingers, objects):

Select how many times this has happened since you graduated high school (0, 1, 2, 3+)

a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.
b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.
c. Taking advantage of me when I was too drunk or out of it to stop what was happening.
d. Threatening to physically harm me or someone close to me.
e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.

The questions on the following pages will ask you about attempted non-consensual sexual experiences. Place a check mark in the box showing the number of times each experience has happened to you. If you have experienced any of the following, please note how many times you have experienced this.

5. Even though it didn't happen, someone TRIED to have oral sex with me, or make me have oral sex with them without my consent by:

   Select how many times this has happened since you graduated high school (0, 1, 2, 3+)

   a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.
   b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.
   c. Taking advantage of me when I was too drunk or out of it to stop what was happening.
   d. Threatening to physically harm me or someone close to me.
   e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.

6. Even though it didn't happen, someone TRIED to penetrate me vaginally/anally (e.g., penis, fingers, objects) without by consent by:

   Select how many times this has happened since you graduated high school (0, 1, 2, 3+)

a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.
b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.
c. Taking advantage of me when I was too drunk or out of it to stop what was happening.
d. Threatening to physically harm me or someone close to me.
e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.

7. Even though it didn't happen, someone TRIED to force me to penetrate them without by consent by:

   Select how many times this has happened since you graduated high school (0, 1, 2, 3+)

   a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.
   b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.
   c. Taking advantage of me when I was too drunk or out of it to stop what was happening.
   d. Threatening to physically harm me or someone close to me.
   e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.

8. Have you ever been raped?

    a. Definitely not

    b. Probably not

    c. Might or might not have been

    d. Probably yes

    e. Definitely yes

9. It is okay if you cannot remember but indicate to the best of your ability which year of your education you had these experience(s). If you had more than one experience in different years, you may select more than one option to represent your experience.
    a. Prior to starting university (e.g., last year of high school, summer before university)
    b. First year
    c. Second year
    d. Third year
    e. Fourth year
    f. Fifth year
    g. Sixth year (or more)
    h. Unsure

Appendix C: Trauma Measure

Post-Traumatic Stress Disorder Checklist-5 (PCL-5; Weathers et al., 2013)

Below are 20 statements regarding feelings you have had in relation to experiencing sexual assault. In the past month, how much were you bothered by the following:

0-Not at all, 1-A little bit, 2-Moderately, 3-Quite a bit, 4-Extremely

1. Repeated, disturbing, and unwanted memories of the stressful experience?

2. Repeated, disturbing dreams of the stressful experience?

3. Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)?

4. Feeling very upset when something reminded you of the stressful experience?

5. Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)?

6. Avoiding memories, thoughts, or feelings related to the stressful experience?

7. Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)?

8. Trouble remembering important parts of the stressful experience?

9. Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?

10. Blaming yourself or someone else for the stressful experience or what happened after it?

11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?

12. Loss of interest in activities that you used to enjoy?

13. Feeling distant or cut-off from other people?

14. Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?

15. Irritable behavior, angry outbursts, or acting aggressively?

16. Taking too many risks or doing things that could cause you harm?

17. Being “superalert” or watchful or on guard?

18. Feeling jumpy or easily startled?

19. Having difficulty concentrating?

20. Trouble falling or staying asleep?

Appendix D: Academic Outcome Measure

Multidimensional Scales of Perceived Self-Efficacy subscale of Self-Regulated Learning Scale (MSPSE; Bandura, 1990)

Academic Consequences of Victimization (Kaufman et al., 2019)

Questions 2-9: 1 - Not well at all, 2 – Slightly well, 3 – Moderately well, 4 – Very well, 5 – Extremely well.

Question 10: 1 – Much more, 2 – Somewhat more, 3 – About the same, 4 – Somewhat less, 5 – Much less.

1. What is your current GPA?
    a. 0-4

Below are nine questions regarding your experience as a student following sexual assault. Please select the choice that represents your experience best:

2. How well can you finish assignments by deadlines?
3. How well can you concentrate on school subjects?
4. How well can you take notes of class/lecture instruction?
5. How well can you plan your schoolwork?
6. How well can you organize your schoolwork?
7. How well can you remember information presented in class and textbooks?
8. How well can you motivate yourself to do schoolwork?
9. How well can you participate in class discussions?
10. How much has the sexual assault impacted your performance in school? Since the assault, have you (select all that apply):

a. Had to drop a class?

b. Been unable to do work or assignments?

c. Had your grades drop?

11. What was your GPA prior to experiencing sexual assault?

    a. 0-4

Below are nine questions regarding your experience as a student before sexual assault. Please select the choice that represents your experience best:

12. How well can you finish assignments by deadlines?
13. How well can you concentrate on school subjects?
14. How well can you take notes of class/lecture instruction?
15. How well can you plan your schoolwork?
16. How well can you organize your schoolwork?
17. How well can you remember information presented in class and textbooks?
18. How well can you motivate yourself to do schoolwork?
19. How well can you participate in class discussions?

Appendix E: Social Support Measure

Medical Outcomes Survey Social Support Survey (Sherbourne & Stewart, 1991)

People sometimes look to others for companionship, assistance, or other types of support. How often is each of the following kinds of support available to you if you need it?

0-None of the time, 1-A little of the time, 2-Some of the time, 3-Most of the time, 4-All of the time

Emotional/Informational Support

1. Someone you can count on to listen when you need to talk
2. Someone to give you information to help you understand a situation
3. Someone to give you good advice about a crisis
4. Someone to confide in or talk to about yourself or your problems
5. Someone whose advice you really want
6. Someone to share your most private worries and fears with
7. Someone to turn to for suggestions about how to deal with a personal problem
8. Someone who understands your problems

Tangible Support

9. Someone to help you if you were confined to bed
10. Someone to take you to the doctor if you needed it
11. Someone to support you with meeting your basic needs if you needed (food, housing, transportation, etc.)

Affectionate Support

12. Someone who makes you feel loved and wanted

Positive Social Interaction

13. Someone to do enjoyable activities with

Additional Item

14. Someone to do things with to help you get your mind off things

Have you ever received support in regard to experiencing sexual assault from any of the below supports? Please select all that apply:

15. Counselling/Therapy
16. Peer support groups
17. Medical/Hospital facilities
18. Community organizations
19. Spiritual/Religious community
20. Family
21. Friends
22. Other (Please specify):
23. I have not received support

Have you ever received support in regard to PTSD (non-consensual sexual experiences related)? Please select all that apply:

24. Counselling/Therapy
25. Peer support groups
26. Medical/Hospital facilities
27. Community organizations
28. Spiritual/Religious community

29. Family

30. Friends

31. Other (Please specify):

32. I have not received support