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# Attitudes Toward the Cervical Cancer Screening Procedure Across Trauma Types

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ATTITUDES TOWARD THE CERVICAL CANCER SCREENING PROCEDURE  
ACROSS TRAUMA TYPES

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Bachelor of Arts in Sociology

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**ABSTRACT**

Cervical cancer can be prevented or treated if the recommended gynecological care is obtained. However, there are many barriers to cervical cancer screening attendance, potentially including interpersonal trauma. Sexual assault has been consistently linked to the inadequate use of or nonattendance to routine Pap smears. Intimate partner violence (IPV) and physical assault may also lead to avoidance of cervical cancer screening. Vulnerability, involving an absence of control and being overpowered by another individual, is a common factor across interpersonal trauma types and may also occur during a Pap smear. The similarities between interpersonal trauma and cervical cancer screening and potential loss of trust and social resources stemming from the traumatic event may lead to nonattendance to the procedure.

A survey including information on demographics, trauma history, and gynecological care was completed by 329 women between the ages of 18 and 65 attending and/or working for either Cleveland State University (CSU) or Western Michigan University (WMU). Attitudes relating to trust and interpersonal relations from the Pap Smear Beliefs Questionnaire were examined (PSBQ). Interpersonal trauma was found to not predict non-routine cervical cancer screening attendance. In addition, interpersonal trauma was found to not predict distrust toward the healthcare provider, feeling on edge during the screening, feeling violated during the screening, or preference of a female provider for the Pap smear.

## TABLE OF CONTENTS

	Page
ABSTRACT.....	iv
LIST OF TABLES.....	viii
CHAPTER	
I.    LITERATURE REVIEW.....	1
1.1    Cervical Cancer .....	1
1.2    Trauma and Posttraumatic Stress Disorder.....	2
1.3    General Comment on Studying Trauma Types.....	3
1.4    Differences between Trauma Types.....	4
1.5    Barriers to Cervical Cancer Screening.....	6
1.6    Health Care, Cervical Cancer Screening, and Trauma Literature...8	
1.7    Theory.....	16
1.7.1    Social support and trust issues relating to interpersonal trauma.....	16
1.7.2    Theories of mental health.....	19
1.8    Hypotheses.....	25
II.    METHOD.....	26
2.1    Participants.....	26
2.2    Procedure.....	26
2.3    Measures.....	27
2.4    Analytic Procedure.....	31
III.   RESULTS.....	33

3.1	Missing Data.....	33
3.2	Demographics.....	34
3.3	Differences between Groups.....	37
3.3.1	Included versus excluded cases.....	37
3.3.2	CSU versus WMU participants.....	38
3.4	Cervical Cancer Screening Attendance.....	39
3.5	Trauma Exposure.....	40
3.6	Interpersonal Trauma Exposure and Routine Cervical Cancer Screening.....	44
3.7	PSBQ.....	49
3.8	Trauma Type and Interpersonal Experiences during the Pap Smear Procedure.....	50
IV.	DISCUSSION.....	55
4.1	Findings.....	55
4.2	Strengths.....	58
4.3	Limitations and Suggestions.....	59
4.4	Future Direction of Research.....	62
4.5	Implications.....	64
	REFERENCES.....	66
	APPENDICES.....	75
A.	Traumatic Stress Schedule.....	76
B.	Posttraumatic Stress Disorder Symptom Scale- Self Report Version.....	78
C.	Pap Smear Beliefs Questionnaire.....	79

D. Abbreviation Key.....81



## LIST OF TABLES

1.	Participant Demographics.....	36
2.	Chi-Square Examination of Demographic Variables between Excluded and Included Cases.....	37
3.	Chi-Square Examination of Demographic Variables between CSU and WMU...39	
4.	Pap Smear Attendance.....	40
5.	Routine Pap Smear Attendance.....	40
6.	Trauma Exposure by TSS Category.....	42
7.	Trauma Exposure by Trauma Type.....	43
8.	Trauma Exposure Categories.....	44
9.	Chi-Square Model Fit with Trauma Exposure Category as Sole Predictor.....	45
10.	Pseudo R Square Values: Trauma Exposure Category as Predictor.....	45
11.	Trauma Exposure Regressed on Cervical Cancer Screening Attendance.....	46
12.	Chi-Square Model Fit for Overall Model: Control Variables plus Trauma Exposure .....	47
13.	Pseudo R Square Values: Control Variables plus Trauma Exposure Category...47	
14.	Controls and Trauma Exposure Regressed on Cervical Cancer Screening Attendance.....	48
15.	Mean and Standard Deviations of the Interpersonal Experience PSBQ Items....	50
16.	Multivariate Tests of Significance Regarding Trauma Exposure Category and Interpersonal Experience PSBQ Items.....	51
17.	Tests of Between-Subjects Effects of Trauma Exposure Category on Interpersonal Experience PSBQ Items.....	52

## **CHAPTER I**

### **LITERATURE REVIEW**

#### **1.1 Cervical Cancer**

Cervical cancer is the 14th most frequent cancer affecting women in the United States (National Institutes of Health [NIH], 2013). The most common cause of cervical cancer is human papillomavirus (HPV) (National Cancer Institute [NCI], 2013). HPV and other risk factors such as smoking cigarettes, the use of oral contraceptives for a prolonged period of time, and having numerous sexual partners can cause abnormal cell growth in the cervix leading to cancer (NCI, 2013). Cervical cancer can be prevented or treated if abnormal cell growth or the presence of HPV is detected early by Papanicolaou (Pap smears) tests (Centers for Disease Control and Prevention [CDC], 2013). A Pap smear involves collecting and analyzing cells from the cervix and vagina in order to examine for abnormalities (NCI, 2013). Thus, Pap smears can detect precancerous activity in the cervix. Cervical cancer can be fatal especially when signs of cervical cancer are not identified early (NIH, 2013). The CDC (2013) recommends that women begin having Pap smears at age 21. The U.S. Preventive Services Taskforce (USPSTF) (2012) suggests that after age 21, women should receive a Pap smear once every three years until the age of 65.

Nonattendance to Pap smears is considered to be a risk factor for cervical cancer (NCI, 2013). According to the American Cancer Society [ACS] (2013), 60 to 80% of women suffering from advanced stages of cervical cancer did not obtain a Pap smear within the previous five years. Approximately 27% of women in the United States that are 18 years and older do not obtain suggested cervical cancer screening (National Center for Health Statistics [NCHS], 2013). Nonattendances to routine Pap smears occur due to many barriers such as low income, minority status, and a lack of knowledge about cancer and the importance of screening (Breen & Figueroa, 1996; Finney Rutten, Nelson, Meissner, 2004; Peters, Bear, & Thomas, 1989). Having experienced a trauma, specifically an interpersonal traumatic event, is another barrier being examined in psychological research.

## **1.2 Trauma and Posttraumatic Stress Disorder**

Trauma is defined as an emotional reaction to a horrible or frightful event (American Psychological Association [APA], n.d.). For example sexual assault, physical assault, natural disasters, serious injuries, and motor vehicle accidents (MVAs) can be considered terrible events that may lead to traumatic emotional responses (APA, n.d.). Shock and denial are typical reactions shortly after a traumatic event occurs (APA, n.d.). Additionally, traumatic events can conjure a fear of serious injury, death, and loss of physical safety which can lead to adverse psychological reactions (American Psychiatric Association [APA], 2000).

One potential outcome of traumatic exposure is posttraumatic stress disorder (PTSD). According to the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V)*, PTSD involves the development of distinctive signs and symptoms

after exposure to an extreme traumatic event or stressor which results in an actual or perceived threat of physical harm (APA, 2013). PTSD can develop after direct exposure, witnessing, or learning about an extreme traumatic event (APA, 2013). PTSD involves clusters of symptoms involving reexperiencing the traumatic event, increased arousal, avoidance of stimuli relating to the traumatic event, and numbing of affect (APA, 2013). Individuals must experience these symptoms for duration of one month and be subjected to a significant loss in functioning or impairment in various areas of their lives to be diagnosed with PTSD (APA, 2013).

Although approximately 50% of individuals experience a trauma at some point in their life, not all individuals that are exposed to trauma develop PTSD (Ozer, Best, Lipsey, & Weiss, 2003; Paris, 2000). The lifetime prevalence of PTSD for adults is 6.8% (U.S. Department of Veterans Affairs [VA], 2011). Additionally, the lifetime prevalence of PTSD for women is 9.7% meaning approximately one out of every ten women will experience PTSD at some point during their lives (VA, 2011). As interpersonal trauma in general, specifically sexual assault, has been thought to be related to nonattendance to cervical cancer screening, it has also been proposed that the severe outcome to trauma, PTSD, may be a unique barrier (Weitlauf et al., 2008; Weitlauf et al. 2010).

### **1.3 General Comment on Studying Trauma Types**

Trauma is a complex topic of study. Individuals with the most severe psychological difficulties may not participate in studies, limiting the generalization of findings. Prospective research is difficult to conduct due to the sensitive and spontaneous nature of trauma. Additionally, prospective research is difficult to perform on sensitive interpersonal traumatic experiences; cross-sectional, self-reported studies are commonly

conducted on interpersonal trauma populations. Furthermore, the literature on trauma type is scarce due to the complexities involved in trauma exposure. Essentially, studying each trauma type in isolation is difficult due to the rarity of traumatic events occurring once. However, some studies have been conducted that attempt to examine the differences across trauma types.

#### **1.4 Differences between Trauma Types**

An interpersonal traumatic event involves a perpetrator targeting a victim and inflicting sexual, physical, or emotional harm on her or him. Examples of interpersonal traumatic events include sexual and physical assault. Noninterpersonal traumatic events do not involve a perpetrator and are typically accidental, such as MVAs, or outside of human control, such as natural disasters. Interpersonal traumatic experiences are associated with a higher level of posttraumatic stress symptoms (McCloskey & Walker, 2000). Subsequently, individuals who have experienced an interpersonal trauma have been found to have higher levels of PTSD than noninterpersonal trauma survivors (Kelley, Weathers, McDevitt-Murphy, Eakin, & Flood, 2009; Shakespeare-Finch & Armstrong, 2010). Additionally, PTSD appears to be more severe and chronic when the traumatic experience involved the intent of harm by another individual (Kelley et al., 2009). Interpersonal traumatic events are also considered to produce more problematic challenges involved with coping with and recovering from the trauma compared to accidental, noninterpersonal traumatic experiences (Amstadter & Vernon, 2008).

Emotional reactions to traumatic events appear to differ by trauma type. For example, PTSD symptom patterns appear to be different across specific trauma types such as sexual assault, MVAs, and a sudden loss of a loved one (SUD) (Kelley et al.,

2009). With regard to symptom severity, Kelley et al. (2009) found that individuals who experienced a sexual assault had higher levels of conditioned risk for developing PTSD in addition to greater levels of total PTSD symptom severity than individuals who experienced a MVA or a SUD. Additionally, constellations of symptoms appear to differ across trauma types. Kelley et al. (2009) found that PTSD symptoms that are associated with interpersonal loss were experienced at higher levels in participants who experienced a sexual assault or SUD. These symptoms include a limited range of affect, the lack of ability to feel love toward others, detachment, separation, and avoidance of feelings related to the trauma (Kelley et al., 2009). Individuals in the sexual assault and MVA groups tended to have high levels of fear-conditioned responses including hypervigilance and physiological reactions to traumatic triggers (Kelly et al., 2009). Overall, individuals who experienced sexual assault not only had higher symptom severity, but also had both interpersonal loss and fear-conditioned symptoms in contrast to those who experienced a MVA or SUD (Kelley et al., 2009).

Another topic relating to trauma type is the amount of traumatic exposure an individual experiences. Individuals who experience chronic traumatic situations appear to suffer from higher levels of psychological maladjustment than those who have been exposed to a single traumatic event (McCloskey & Walker, 2000). Some researchers have explicitly attempted to examine posttraumatic stress in single-event traumatic situations versus conditions of frequent trauma exposure. McCloskey and Walker (2000) examined children that experienced a single-event traumatic event and children who were exposed to chronic family abuse. Similar to the findings mentioned previously, PTSD symptoms were associated at higher levels with interpersonal traumatic

experience than with noninterpersonal trauma exposure (McCloskey & Walker, 2000). This finding is potentially due to the fact that interpersonal traumatic events tend to be associated with a motivated harm-inflicting other whereas noninterpersonal traumatic exposure normally occur without intent (McCloskey & Walker, 2000). Overall, children who were exposed to chronic family violence experienced higher levels of PTSD symptoms due to the possible notion of sensitization: with each exposure to a trauma, the probability of future traumatic events leading to the development of symptoms increases (McCloskey & Walker, 2000; Paris, 2000; Schumm, Briggs Phillips, & Hobfoll, 2006). In general, the type and frequency of trauma are important factors to consider when examining trauma related phenomena since the severity and likelihood differences across trauma types relate to posttrauma adjustment and PTSD symptomatology.

### **1.5 Barriers to Cervical Cancer Screening**

The literature on cervical cancer screening attendance reveals that there are many barriers and reasons for nonattendance to routine Pap smears. Factors that are considered barriers to cervical cancer screening include access to medical services, level of education, income level, and insurance coverage and cost (Ackerson & Gretebeck, 2007; ACS, 2006; CDC, 2006; Sambamoorthi & McAlpine, 2003). Race and ethnicity also play a role in cervical cancer screening attendance (Ackerson & Gretebeck, 2007; ACS, 2006; CDC, 2006). For example, compared to other races, African American women tend to have lower rates of attendance to routine cervical cancer screening as they age (ACS, 2006). African American and Hispanic women that do not have healthcare and have low levels of education and income appear to have low rates of Pap smear attendance (Ackerson & Gretebeck, 2007). Women without a partner and children as well as older

women have also been found to attend recommended cervical cancer screenings at lower rates (Olesen, Butterworth, Jacomb, & Tait, 2012). In addition, smoking cigarettes, obesity, depression, and lower levels of physical functioning have been associated with nonattendance to cervical cancer screening (Olesen, 2012).

Previous negative experiences with the cervical cancer screening procedure may prevent a woman from returning for future exams or cause her to be difficult to examine (Ackerson, Pohl, & Low, 2008; Ackerson, 2012; Huber, Pukall, Boyer, Reissing, & Chamberlain, 2008; Oscarsson, Benzein, & Wijma, 2008). Women who have not experienced an interpersonal trauma may still feel discomfort, pain, or fear when receiving a Pap smear (Ackerson et al., 2008; Ackerson, 2012; Huber et al., 2008; Oscarsson et al., 2008). Furthermore, Orbell and Sheeran's review of cervical cancer screening literature (as cited in Oscarsson et al., 2008) revealed that the procedure may lead to feelings of shame and embarrassment in women in general since it involves the examination of a private area of the female anatomy.

In addition, a general lack of knowledge of the purpose and importance of Pap smears may also be a reason for nonattendance (Ackerson et al., 2008; Ackerson, 2010; Ackerson, 2012). Women who do not understand the purpose of cervical cancer screening may think that not experiencing any signs or symptoms is an indication that they are healthy, even though they still may have cervical cancer (Ackerson et al., 2008; Oscarsson et al., 2008). Similarly, women who are not sexually active and believe that Pap smears detect sexually transmitted diseases (STDs) may not attend routine screenings (Ackerson et al., 2008). Women who do not understand the purpose and importance of



cervical cancer screening may also feel that receiving a Pap smear is not a productive use of their time due to prior commitments such as work and family (Oscarsson et al., 2008).

Interpersonal trauma may also serve as a barrier to cervical cancer screening. Added to many of the above reasons and barriers, interpersonal trauma may push a woman further toward nonattendance to routine Pap smears. The literature on general healthcare and trauma as well as research on cervical cancer screening attendance and trauma shed light on the association between interpersonal trauma and Pap smear distress and nonattendance.

### **1.6 Health Care, Cervical Cancer Screening, and Trauma Literature**

Overall, trauma survivors tend to use more medical services and have higher healthcare costs compared to those who have not experienced a traumatic event (Elhai, North, & Frueh, 2005). Essentially, empirical studies have found that trauma exposure increases the probability of pursuing medical care (Elhai et al., 2005). In their meta-analysis of studies concerning trauma survivors and medical service use, Elhai et al. (2005) found that higher amounts of lifetime trauma exposure and a diagnosis of PTSD were associated with an increased use of medical services. However, interpersonal trauma, specifically sexual assault, appears to have a more potent negative influence on certain medical seeking behaviors.

Inadequate preventive health care behaviors have been associated with experiencing an interpersonal trauma. In their study on preventive health care behaviors in a population of mentally ill women, Steiner et al. (1998) found that women who had experienced rape in adulthood were less likely to receive routine screenings including Pap smears than women who had not been raped as adults. Physical abuse and childhood

sexual abuse also were associated with decreased use of preventative health measures, although the results were not found to be significant (Steiner et al., 1998). Overall, Steiner et al. (1998) concluded that women who had a history of interpersonal victimization received lower rates of preventative health care than women who had not experienced interpersonal traumas.

In addition, theories regarding the reason for the potentially lower rates of preventative healthcare among sexual assault survivors exist. Many negative health behaviors have been linked as outcomes of sexual assault including smoking, substance use, and unsafe sexual behavior (Cloutier, Martin, & Poole, 2003; Felitti, 1994; Kilpatrick, Acierno, Resnick, Saunders, & Best, 1997). On the other hand, Watson-Johnson, Townsend, Basile, and Richardson (2012) hypothesized that emotional and physiological reactions brought on by sexual assault may negatively affect positive health behaviors such as healthcare utilization and cancer screening. Overall, Watson-Johnson et al. (2012) found that sexual assault was a potential barrier to obtaining mammograms and not necessarily related to a decreased in cervical cancer screening attendance. However, the research on sexual assault and cervical cancer screening attendance has contrary findings.

The current literature on the association between cervical cancer screening behaviors and traumatic experiences appears to follow a trend. Studies have found that experiencing a sexual assault, particularly childhood sexual abuse, may serve as a barrier to and a source of discomfort during routine cervical cancer screenings. Partner violence involving sexual violence, physical victimization, or both traumas, has yielded mixed results regarding whether it is a barrier to or cause of distress during customary cervical

cancer screenings. Physical assault has not appeared to be studied in isolation potentially due to the complicated nature of abuse situations with many involving sexual and physical assault. Other traumatic experiences have not been found to be associated with cervical cancer screening discomfort or attendance rate.

The United States Department of Justice (USDOJ) defines sexual assault as any sexual behavior or contact that takes place in the absence of consent, including fondling, attempted rape, and coerced sexual intercourse (2013). A nationally representative survey of adults in the United States found that approximately 1 in 5 women experienced rape at some point during their lives (Black et al., 2011). In addition, nearly 1 in 20 women experienced other forms of sexual violence, such as unwanted sexual touching, within the prior year (Black et al., 2011). Sexual assault has been found to be a barrier to proper cervical cancer screening use (Cadman, Waller, Ashdown-Barr, & Szarewski, 2012). Specifically, childhood sexual abuse has been consistently linked to inadequate use of or nonattendance to routine cervical cancer screenings and negative experiences during the exam (Farley, Golding, & Minkoff, 2002; Leeners et al., 2007; Olesen et al., 2012). Furthermore, many studies have reported that sexual assault and childhood sexual abuse are associated with more discomfort, distress, and negative feelings during Pap smears and gynecological exams in general (Cadman et al., 2012; Hilden, Sidenius, Langhoff-Roos, Wijma, & Schei, 2003; Leeners et al., 2007; Robohm & Buttenheim, 1996; Smith & Smith, 1999; Weitlauf et al., 2008; Weitlauf et al., 2010). Discomfort, distress, and negative experiences during cervical cancer screenings as well as cognitions and memories from sexual trauma can lead to a fear of gynecological exams which may cause avoidance of the procedure (McGregor, Jülich, Glover, & Gautam, 2010).

Additionally, in some studies, PTSD has been found as a unique element that may serve as a barrier to or increase discomfort during cervical cancer screening (Weitlauf et al., 2008; Weitlauf et al., 2010).

Common theories explaining the reasons sexual assault has been found as a barrier to cervical cancer screening involve the potentially invasive nature of the procedure as well as similarities of the screening to the experience of sexual assault. Gynecological exams may be viewed as invasive for many women, especially those who have experience sexual trauma. Sexual assault and cervical cancer screening can be viewed as parallels; the absence of clothing, the position a woman is in, the insertion of speculum paired with potential pain, and common phrases stated by medical professionals such as “it will not hurt” and “relax” during a Pap smear may be similar in nature to the sexual trauma a woman has experienced (Cadman et al., 2012; Leeners et al., 2007; McGregor et al., 2010; Robohm & Bittenheim, 1996; Smith & Smith, 1999; Weitlauf et al., 2008). Additionally, sexual assault survivors might experience similar feelings of vulnerability involving not having control and being overpowered by another individual during both a sexual assault and a Pap smear (Cadman et al., 2012; Hilden et al., 2003; Leeners et al., 2007; Smith & Smith, 1999).

The similarities of sexual assault and cervical cancer screening may cause a woman to feel threatened leading to retraumatization during the Pap smear, triggering memories, thoughts, and physical responses originally experienced during sexual assault (Farley et al., 2002; McGregor et al., 2010; Robohm & Bittenheim, 1996; Weitlauf et al., 2008). Sexual assault survivors may relive traumatic events and respond to cervical cancer screening with distress, flashbacks, numbing, or dissociation, all which are

elements of PTSD (McGregor et al., 2010; Robohm & Bутtenheim, 1996; Weitlauf et al., 2008; Weitlauf et al., 2010). Women with a diagnosis of PTSD might especially experience powerful cues or flashbacks leading to a traumatic reaction during a Pap smear (Weitlauf et al., 2008). Furthermore, avoidant coping methods experienced by many individuals exposed to trauma could possibly lead to the avoidance of cervical cancer screening in the population of sexual assault survivors due to the possible traumatic cues involved in a Pap smear (Cadman et al., 2012; Farley et al., 2002; Weitlauf et al., 2008; Weitlauf et al., 2010). Additionally, the feelings that arise from the potentially retraumatizing procedure may play a role in Pap smear discomfort and attendance. For example, in childhood sexual abuse survivors, the gynecological exam appears to evoke higher levels of shame, fear, and anxiety, all feelings which might further promote avoidance of cervical cancer screening (Robohm & Bутtenheim, 1996).

Feelings such as shame, fear, and anxiety as well as traumatic reactions and the vulnerability felt during the Pap smear procedure in survivors of sexual assault can be considered barriers to screening. In their study, Cadman et al. specifically outline potential barriers for cervical cancer screening stemming from sexual assault trauma. Cadman et al. (2012) examined survivors of sexual assault and found support for a decrease in cervical cancer screening for this population. The results of their study yielded numerous barriers to screening attendance including embarrassment; self-consciousness; feelings of shame, guilt, fear, and anxiety; vulnerability due to a power difference between the woman and medical professional; trust of the medical professional and safety during the exam; physical pain; and similarities to abuse situations and sexual victimization (Cadman et al., 2012). Five of the women in this study considered Pap

smears to be like rape (Cadman et al. 2012). Most powerfully, four of the woman in this study expressed that they “rather die of something that the screening would pick up than be in that position again”, meaning they felt that the possibility of having cervical cancer was less fear educing than a Pap smear (Cadman et al. 2012). Sexual assault can have a strong influence on behaviors and feelings toward cervical cancer screening; some survivors of sexual assault appear to avoid screening to actually avoid the mentioned feelings experienced during the cervical cancer screening procedure.

Altogether, cervical cancer screening may serve as a similar experience producing a traumatic reaction in survivors of sexual assault. If the gynecological exam serves as a reminder of a woman’s assault, the procedure may cause posttraumatic responses, feelings of anxiety, fear, and shame, vulnerability, powerlessness, and invasion of privacy. All of these factors may cause sexual assault survivors to experience extreme distress and discomfort during screening or to avoid routine Pap smears. However, more prospective research is needed in this area to further clarify the role as sexual assault as a barrier to cervical cancer screening attendance, as well as PTSD as a potential additional barrier.

Intimate partner violence (IPV) is normally defined as involving emotional, physical, or sexual victimization, or a mixture of the three, by a significant other (Gandhi et al., 2010; Hathaway et al., 2000; Lemon, Verhoek-Oftedahl, & Donnelly, 2002). As mentioned previously, sexual assault involves unwanted sexual behaviors and contact without consent (USDOJ, 2013). In general, physical assault, or physical violence, can be defined as the purposeful use of force with the intent of harming, injuring, incapacitating, or killing another individual (CDC, 2010). Pushing, punching, and use of

a weapon are just a few forms of physical assault (CDC, 2010). Both sexual and physical assault can be involved in IPV.

Research concerning IPV and cervical cancer screening attendance has yielded mixed results. Gandhi et al. (2010) and Loxton, Powers, Schofield, Hussain, and Hosking (2008) found that partner violence was associated with nonattendance of routine cervical cancer screenings within middle aged women, suggesting that IPV potentially interacts with age serving as a barrier to screening. Conversely, Hathaway et al. (2000) found that women who had experienced IPV were equally as likely to receive Pap smears as those who had not faced IPV. Additionally, Lemon et al. (2002) found that women who had experienced IPV were more likely to receive Pap smears than women who had not come in contact with IPV. Three of the mentioned studies had similar limitations; the studies were conducted on cross-sectional, community based surveys that contained a possible underrepresentation of IPV as well as overrepresentation of Pap smear rate due to a social desirability bias (Lemon et al., 2002). In addition, physical and sexual assault were not differentiated from one another in these studies; IPV may involve a combination of the two. Therefore, it is difficult to see if physical or sexual IPV play differing roles when it comes to receiving routine cervical cancer screenings.

In addition to the findings previously mentioned, Modesitt et al. (2006) found that women who have experienced IPV are diagnosed with cervical cancer during later stages of the disease, possibly indicating inadequate screening behaviors for cervical cancer in women with a history of IPV. The propositions concerning the reason IPV may be connected with inadequate or lower rates of screening are similar to the theories for sexual assault in isolation. In regard to theories relating to IPV and cervical cancer

screening rates, Loxton et al. (2008) mentioned the possibility of cervical cancer screening being viewed as invasive by middle-aged IPV survivors. This notion stems from the finding that this population of middle-aged IPV survivors underwent non-invasive procedures, such as blood pressure and cholesterol tests, at the same rate as women who had not experienced IPV, but had lower rates of cervical cancer screening which can be considered invasive (Loxton et al., 2008). Similarly, Gandhi et al. (2010) mentioned that middle-aged survivors of IPV may find the cervical cancer screening procedure as invasive and traumatic, therefore leading to avoidance of the procedure.

None of the studies regarding IPV and cervical cancer rate addressed the issue of discomfort. Although Hathaway et al. (2000) found that IPV survivors and women without an IPV history had the same rate of cervical cancer screening, and Lemon et al. (2002) found that IPV survivors were more likely to receive Pap smears than those without a history of IPV, it is unknown whether those who experienced IPV went through a state of retraumatization during past or their most recent cervical cancer screening. Additionally, the reasons why middle-aged women had lower rates of cervical cancer screening in the Gandhi et al. (2010) and Loxton et al. (2008) studies are unclear and may involve previous retraumatizing Pap smears. Overall, more research is needed to further the link between IPV and the cervical cancer screening experience, as well as studies that separate sexual and physical assault, if possible.

Other types of traumatic exposure, such as non-interpersonal traumas, have not been found to be associated with inadequate use or nonattendance to routine cervical cancer screenings (Farley et al., 2002). For example, Farley et al. (2002) did not find significant associations between any other traumatic experience besides sexual assault,



such as natural disasters, robbery, serious accidents, or receiving news of a death or serious injury, and cervical cancer screening behavior. Noninterpersonal traumatic experiences tend to lack a perpetrator causing the incident and do not contain similarities to the Pap smear procedure which might be part of the reason associations have not been found between these traumatic situations and cervical cancer screening distress and rates. In addition, as mentioned previously, physical assault in isolation has received a lack of attention with regard to its association with cervical cancer screening attendance possibly due to the complexities of trauma.

The nature of interpersonal traumatic events may lead to specific elements of distrust of the cervical cancer screening procedure and the medical professional conducting the screening. All traumatic experiences may cause individuals to fear undesirable cervical cancer screening results; however, interpersonal traumas not only have the element of similarity between trauma and procedure, but may also produce an additional fear of distrust. Trust attitudes toward the cervical cancer screening procedure may be an important factor that distinguishes between interpersonal and noninterpersonal trauma with regard to attendance to Pap smears.

## **1.7 Theory**

**1.7.1 Social support and trust issues relating to interpersonal trauma.** Lack of social support, social resources, mistrust, and more intense emotional maladjustment may be associated with interpersonal trauma and lower rates of cervical cancer screening attendance. Social support can serve as a buffer to psychological outcomes that arise after stressful experiences, such as sexual assault (Kimerling & Calhoun, 1994; Schumm et al., 2006). Thus, social support may serve to buffer fear of the cervical cancer

screening procedure. Leeners et al. (2007) study indicated that a high percentage, 81.2, of their participants who had been sexually assaulted as a child did not perceive receiving any social support during or soon after the traumatic experience occurred. Similarly, Watson-Johnson et al. (2012) found that individuals who experienced sexual assault had lower rates of social and emotional support.

Furthermore, Ackerson et al. (2008) found that mothers, grandparents, friends, and physicians serve as social supports that influence a women's cervical cancer screening attendance. Additionally, Luszczynska, Durawa, Scholz, and Knoll (2012) examined empowerment beliefs and cervical cancer screening attendance and concluded that empowered women were able to retrieve resources, such as social support for cervical cancer screening, and use them effectively. Women who have experienced a violent crime have been found to report negative responses from their support networks of friends and families (Andrews, Brewin, & Rose, 2003). Therefore, women who are survivors of sexual or physical assault may not receive positive social support to help them overcome fear related to cervical cancer screening.

A perceived or actual lack of social support may be related to mistrust. Additionally, the element of trust can be associated with power. Since a power differential exists between the woman receiving a Pap smear and the medical professional performing the exam, a woman might feel vulnerable and threatened (Cadman et al., 2012). If a survivor of an interpersonal trauma does not trust medical professionals and does not have social support or resources to help facilitate trusting relationships and to promote cervical cancer screening, she may avoid screening altogether to ultimately escape feeling vulnerable and threatened. An elevated level of distrust of the medical

field has been found to be associated with cervical cancer screening nonattendance (Yang, Matthews, & Hillemeier, 2011).

Survivors of sexual assault may not seek gynecological care due to mistrust and fear (Robohm & Buttenheim, 1996). Many survivors of sexual and physical assault have personally known the perpetrators of the assault (Black et al., 2011; Gutner, Rizvi, Monson, & Resick, 2006; Planty, Langton, Krebs, Berzofsky, & Smiley-McDonald, 2013). Therefore, it is logical to propose that trusting new individuals may become hard after a person has experienced an assault at the hand of someone she or he personally knew, such as a relative, friend of the family, or significant other. In addition, fear caused by the medical professional's sex, potentially related to the sex of the perpetrator, is possible (Ackerson, 2012). Cadman et al. (2012) found that some of the sexual assault survivors in their study seemed to have a difficult time grasping how they could trust individuals that are strangers or acquaintances, including medical professionals that perform the cervical cancer screening procedure. Furthermore, these women wanted to have trusting relationships with the medical professional conducting the Pap smear in order to feel safe during the procedure (Cadman et al., 2012). Similarly, Robohm and Buttenheim (1996) found that some of the women in their study did not know if their medical professional was trustworthy or if their medical professional would react in a negative way to their disclosure of sexual assault. Lack of sensitivity, effective communication, and transmitting of information about the procedure from the medical professional performing the Pap smear can add to the potential mistrust felt by sexual assault survivors (Ackerson, 2012; Cadman et al., 2012; Robohm & Buttenheim, 1996).

**1.7.2 Theories of Mental Health.** Some broad theories of mental health that may help explain why cervical cancer screening attitudes potentially differ across trauma type relate to social support and resources. Kaniasty and Norris (2008) discuss a patterned theory of perceived social support and posttraumatic symptoms after noninterpersonal traumas of natural disaster. Kaniasty and Norris explained the roles of two differing theories that appear to be intertwined. The first is the social causation theory which posits that social support resources promote and aid in healthy psychological adjustment whereas a lack of them can cause psychological suffering (Johnson, Cohen, Dohrenwend, Link, & Brook, 1999; Kaniasty & Norris, 2008). The second theory of social support involves the idea of social selection which posits that individuals with psychological disorders experience a loss of social support resources as a result of the effect their symptoms has on their relational network (Johnson et al., 1999; Kaniasty & Norris, 2008).

In their study on natural disasters, Kaniasty and Norris (2008) found both theories to be involved. During the first 6 to 12 months after experiencing a natural disaster, individuals encountered social causation; individuals without social support resources experienced more psychological distress (Kaniasty & Norris, 2008). During the 12 to 18 month phase, both social causation and selection appear to occur simultaneously (Kaniasty & Norris, 2008). If individuals did not begin to heal psychologically from the trauma after 18 months, they began to experience social selection due to a lack of recovery weighing heavily on their social support systems (Kaniasty & Norris, 2008). Society tends to give a timeline to recovery from certain experiences and when individuals fail to process these situations in a timely fashion, they are viewed as

abnormal (Kaniasty & Norris, 2008). Overall, social causation, social selection, and an overall loss in social support due to psychological distress may be more salient for those undergoing symptoms from an interpersonal trauma.

Another theory relating to social support resources in mental health is the conservation of resources (COR) theory. The COR theory posits the notion that resource loss is the principal driving force behind psychological stress (Hobfoll, Johnson, Ennis, & Jackson, 2003). Resources serve to enhance an individual's psychological well-being and balance and prevent stressful situations (Hobfoll et al., 2003). Additionally, the COR theory hypothesizes that resource loss is more powerful to an individual's psychological state than resource gains (Hobfoll et al., 2003).

With regard to the COR theory, individuals who experience an interpersonal trauma may experience a greater loss of resources than those who experience noninterpersonal trauma. For example, an individual who experiences a MVA that was not her or his fault is most likely not going to be judged for the incident and may receive a wealth of social support and resources from family and friends. However, in a society fueled by gender expectations and victim blaming, an individual who is sexually assaulted may experience a loss in their social support network and therefore the cutting of ties of their resource availability. Even though social support and resource loss can occur during any type of stressful situation, it might occur more often and faster after an interpersonal traumatic experience than with noninterpersonal traumas. Therefore, the social causation, social selection, and COR theories of social support resources may manifest differently across various trauma types.

Overall, a possible theory derived from the literature on mental health, social support, and stress consists of the notion that noninterpersonal traumas such as MVA and natural disasters are less socially stigmatized than interpersonal traumas such as sexual assault and physical assault. The stigmatization arising from interpersonal traumatic experiences may cause an individual to be labeled as abnormal at the outset causing the diminishment of social support and resources at a faster pace than for those who experience a noninterpersonal trauma. Individuals with a lack of support and resources from their environment may experience more psychological distress, issues with emotional regulation, and distrust of others due to their losses.

Trauma types appear to differ with respect to emotional reactions during and after the traumatic encounter (Amstadter & Vernon, 2008). Amstadter and Vernon (2008) compared sexual assault, physical assault, transportation accident, and illness or injury with regard to emotional reactions to the traumatic experience. They expressed that that the interpersonal trauma types, sexual and physical assault, are thought to be more challenging to process and cope with due to their relational nature (Amstadter & Vernon, 2008). Participants who experienced sexual assault suffered from dramatic and challenging increases in emotions after the traumatic event occurred (Amstadter & Vernon, 2008).

Emotions that increased in individuals who experienced a sexual assault included shame and anger. Amstadter and Vernon (2008) suggested that shame and anger may increase in sexual assault survivors due to destructive comments and actions from their social environment. Participants who were physically assaulted similarly experienced an increase in anger (Amstadter & Vernon, 2008). Additionally, sexual and physical assault

survivors suffered from an increase in sadness (Amstadter & Vernon, 2008). Overall, participants who experienced transportation accidents and illness or injury related trauma did not appear to suffer from as much shame, anger, and sadness as those who went through an interpersonal trauma. Amstadter and Vernon (2008) hypothesized that the lack of the intense emotions of shame, anger, and sadness in noninterpersonal trauma survivors stemmed from the notion that most of these traumas were accidental and did not involve intent to do harm by another individual. Overall, it appears the interpersonal trauma types examined in this study held more intense and deferential emotional reactions than the noninterpersonal trauma types due to the relational nature of the experience.

A potential logical hypothesis arises when examining how emotions may play a role in differing attitudes between trauma types toward cervical cancer screening. Most traumas that subsequently lead to posttraumatic stress or psychological suffering instill some level of fear. Many traumas may condition a fear of death and therefore individuals who have experienced a trauma might be fearful of receiving negative results relating to their Pap smear. Furthermore, women in general may fear undesirable results regarding their Pap smear, regardless of traumatic exposure. However, individuals who experience an interpersonal trauma have a feature that is missing from noninterpersonal trauma: intent and infliction of harm by another person. Adding the possible loss of social support and resources, judgments from society, and the intense emotions felt by individuals who undergo an interpersonal trauma, it seems logical that these factors may add to cause mistrust of others. Therefore, individuals who have gone through an interpersonal trauma may fear death or injury and also might be mistrusting of others,

including gynecologists who conduct potentially invasive and painful procedures that could be reminiscent of a traumatic experience.

In addition, adjustment that occurs after a trauma has been experienced may differ across trauma types (Shakespeare-Finch & Armstrong, 2010). In their study on differences between sexual assault, MVAs, and bereavement survivors, Shakespeare-Finch and Armstrong (2010) found that individuals who experienced a death of a loved one experienced higher levels of posttraumatic growth (PTG) overall compared to individuals who were sexually assaulted. PTG involves a sense of positive growth resulting from the process of overcoming the challenges of a traumatic event (Shakespeare-Finch & Armstrong, 2010).

Shakespeare-Finch and Armstrong (2010) note that the less growth reported by the sexual assault group of participants may be due to the interpersonal nature of the trauma as well as trust issues resulting from the traumatic act causing them to become more withdrawn. Conversely, individuals who are experiencing bereavement may try to contact and seek comfort from other relevant individuals in their lives due to a possible new appreciation for life and acceptance of life's fragile nature (Shakespeare-Finch & Armstrong, 2010). Trust issues may cause individuals who have experienced a sexual assault to remain in fear longer, unlike individuals suffering through bereavement who may ultimately have more opportunities to reach out to others. Furthermore, although not examined in the study, individuals who have experienced a physical assault may also remain in fear longer and not seek social support due to this fear. Although research in support of the notion and definition of PTG is mixed, this study may lend insight into differences between interpersonal and noninterpersonal traumatic experiences (see



discussion by Johnson et al., 2007 and Westphal & Bonanno, 2007 on PTG as a construct).

Overall, it is possible that the lack of growth reported in the sexual assault group extends or leads to less relational growth with other individuals due to loss of trust as well as the previously discussed notions of social support loss. Additionally, individuals experiencing bereavement may be perceived as normal and receive more social support since grieving after death is generally viewed as a standard behavior. In contrast, sexual assault tends to be stigmatized and adverse reactions may lead to perceived abnormality causing a loss of social support. PTG and posttrauma social support levels appear to weigh differently for interpersonal trauma than for noninterpersonal trauma, leading to possible mistrust of others.

Taken together, a perceived or real loss of social support, loss of resources, emotional instability, and less relational growth after an interpersonal trauma may all lead to a mistrust of the cervical cancer procedure and the medical professional performing the exam. Furthermore, mistrust may lead to avoidance of cervical cancer screenings. Since a Pap smear involves similar elements to interpersonal traumas, such as potential pain and power differential, there is a possibility that women may feel threatened during the screening. Without a strong relationship built between the healthcare provider and the woman receiving a Pap smear, discomfort or avoidance of the exam may occur.

Although all trauma types may instill fear or injury, interpersonal trauma adds another element involving a fear of intentional perpetration of a traumatic event in the future by another individual which may be strengthened by a loss in social support, resources, and positive relationships as well as emotional maladjustment.

## 1.8 Hypotheses

A basic definition of the concept of trust is an individual having confidence in in the integrity of another person (Larzelere & Huston, 1980). Additionally, concepts included in definitions of trust include dependability, confidence, capability, and mutuality (Corazzini, 1977). Women who have experienced an interpersonal trauma may have lost confidence in the integrity of other individuals. Heightened levels of perceived vulnerability and feelings of potential violation by others might cause a lack of dependability and confidence in medical professionals, especially during procedures that contain similar aspects to a woman's interpersonal trauma such as the Pap smear. In this study, attitudes related to trust will be examined in relation to the cervical cancer screening procedure.

Firstly, it is hypothesized that women who have experienced interpersonal trauma are less likely to receive routine Pap smears compared to those who have faced only noninterpersonal traumatic events or have never been subjected to a traumatic experience. Additionally, not trusting a Pap smear provider may cause an individual to feel violated or on edge during the procedure and experiencing an interpersonal trauma inflicted by a man may cause a preference for a female provider. Therefore, four hypotheses relating to trust will be tested: women who have experienced interpersonal trauma will be (1) less likely to trust providers performing the Pap smear; (2) more likely to feel violated while receiving a Pap smear; (3) more likely to feel on edge during the Pap smear procedure; and (4) more likely to prefer female providers to perform Pap smears when compared with women who have not been exposed to interpersonal trauma.

## **CHAPTER II**

### **METHOD**

#### **2.1 Participants**

The results of this study are based on a survey conducted on 329 women between the ages of 18 and 65 attending and/or working for either Cleveland State University (CSU) or Western Michigan University (WMU), two large universities located in Midwestern United States. The survey for this study was located through the survey development website SurveyMonkey.com. Participants were recruited by various means through the universities. For example, emails as well as personal visits to undergraduate and graduate classes were used as approaches to recruitment. Students were provided with information about the purpose of the study and the website location of the survey through these methods of recruitment.

#### **2.2 Procedure**

Participants completed a single survey which took approximately 30 minutes to complete. Follow-up procedures were not involved. Women interested in the survey first viewed the informed consent document at the website where the survey was located. At this point, women were able to decide if they were willing to participate in the study. If

willing, participants were instructed to complete the study and were given directions for responding to the items on the survey.

Following the survey, participants were presented with information regarding local cervical cancer screening and counseling services in case any of the women participating wanted access to these resources. Lastly, participants at CSU were offered a chance to enter a drawing to win gift cards to the university's book store. Similarly, the participants at WMU were able to enter a drawing to win gift cards to the university's dining halls. Participants drawn from the entry as winners were notified through email after the data collection for the study was complete.

### **2.3 Measures**

Participants were asked to respond to basic questions on demographics, cervical cancer screening history, and gynecological care. Income, insurance coverage, employment, and race and ethnicity are demographic variables that were accounted for in the analyses of the hypothesis relating to cervical cancer adherence, since these variables have been found to be barriers to screening. Furthermore, cervical cancer screening history was used to separate participants into groups regarding attendance to the procedure. In addition, standardized measures concerning history of trauma, symptoms of PTSD, attitudes toward cervical cancer screening, understanding of cervical cancer screening, and locus of control were also completed by the participants whom partook in this survey. For purposes of this specific study, only the measures needed to address the hypotheses are explained in detail.

a. The Traumatic Stress Schedule (TSS) (Appendix A) is a measure that screens for exposure to nine specific types of traumatic events (Doctor & Shiromoto, 2009;

Norris, 1990). A modified version of the TSS was used for this study. Eight traumatic events were screened for in this study: robbery, physical assault, sexual assault, traumatic death of a friend or family member, property damage or injury due to a fire, serious MVA, witnessing an injury or death of another individual, and physical injury not related to a MVA. In addition, the TSS contains an open-ended question asking whether an individual has experienced a “terrifying” or “shocking” traumatic event not included in the prior questions (Doctor & Shiromoto, 2009; Norris, 1990). In the interview form of the TSS, 12 additional questions are asked for each traumatic event that an individual indicates he or she has experienced (Doctor & Shiromoto, 2009). For purposes of this study, between five and seven further questions were asked for the traumatic events in survey format, including an open-ended question allowing for a description of the event and closed-ended questions concerning the scope of the event and the extent of threat to life, injury, and distress the event caused (Doctor & Shiromoto, 2009; Norris, 1990). In this study, the TSS was used specifically to separate participants into groups according to trauma exposure and to control for the number of traumatic events experienced.

The reliability of the TSS has been found to be good; the test-retest reliability of the TSS was found to be .88 over a one-week period (Norris, 1992). However, although the TSS is thought to perform well as a screening measure, there appears to be an absence of comprehensive research assessing the psychometric properties of the trauma measure (Doctor & Shiromoto, 2009).

b. The Posttraumatic Stress Disorder Symptom Scale- Self Report Version (PSS-SR) (Appendix B) is a self-report measure of PTSD that is comprised of 17 items (Foa, Riggs, Dancu, & Rothbaum, 1993). The items on the PSS-SR correspond to three of the

PTSD symptom criteria, Cluster B, C, and D, found originally in the DSM-III-R (Foa et al., 1993). Specifically, Cluster B involves symptoms related to reexperiencing the traumatic event, Cluster C is comprised of symptoms of avoidance of stimuli associated with the trauma and numbing of affect, and Cluster D contains signs of heightened levels of arousal (APA, 2013). Four items on the PSS-SR are related to Cluster B, seven items with Cluster C, and six with Cluster D (Foa et al., 1993).

The PSS-SR is intended to examine the severity felt during the previous two weeks for each PTSD criterion on a four-point scale ranging from 0, indicating not at all, to 3, signifying very much (Foa et al., 1993). The total score on the PSS-SR ranges from 0 to 51; higher scores signify severe PTSD related symptoms, whereas lower scores indicate mild or an absence of symptoms (Foa et al., 1993). A score for total severity and subscale scores for reexperiencing, avoidance, and arousal are generated by summing the responses that are connected to each construct (Foa et al., 1993). In this study, the PSS-SR was included for examination of a potential inclusion of PTSD severity as a control, but was significantly correlated with interpersonal trauma exposure and, therefore, not examined as a control.

A PTSD diagnosis is suspected if at least 1 reexperiencing, 2 avoidance, and 3 arousal symptoms are reported (Foa et al, 1993). Overall, the reliability of the total severity scale (Cronbach's  $\alpha = .91$ ) and the subscales for reexperiencing ( $\alpha = .78$ ), avoidance ( $\alpha = .80$ ), and arousal ( $\alpha = .82$ ) are good (Foa et al., 1993). Additionally, the PSS-SR has been found to have good concurrent and convergent validity (Foa et al., 1993).

c. The Pap Smear Beliefs Questionnaire (PSBQ) (Appendix C) is a 31 item self-report measure that is intended to examine attitudes women hold toward cervical cancer screening (Ackerson, 2014). Specifically, the PSBQ assess beliefs about Pap smears, experiences with previous gynecological exams, and views on vulnerability to developing cervical cancer (Ackerson, 2014). The items on the PSBQ are answered on a Likert scale ranging from 1, strongly disagree, to 5, strongly agree (Ackerson, 2014). Total scores on the PSBQ range from 31 to 155; higher scores signify a more positive attitude toward Pap smears (Ackerson, 2014). The four subscales that can be derived from the responses on the PSBQ are areas involving experiences with previous gynecological exams, perceptions of cervical cancer vulnerability, beliefs about the benefits of obtaining a Pap smear, and views on what constitute as barriers to cervical cancer screening (Ackerson, 2014). Questions from the PSBQ that comprise a factor concerning interpersonal experiences and trust with Pap smear providers were examined in this study (Ackerson, 2014). Specifically, questions relating to trust of the healthcare provider performing the Pap smear, feelings of being on edge and violated during the procedure, and gender preference of the healthcare provider were examined.

The PSBQ has been found to possess good overall reliability; the PSBQ has good test-retest reliability ( $r=7.23$ ), good overall internal consistencies (Cronbach's  $\alpha=.84$ ), and moderate to good internal consistencies of the subscales ("Exam Experience"  $\alpha=.86$ , "Vulnerability"  $\alpha=.78$ , "Benefit Beliefs"  $\alpha=.66$ , and "Barrier Beliefs"  $\alpha=.83$ ) (Ackerson, 2014). The PSBQ is currently an unpublished measure, and is being examined further for psychometric properties (Ackerson, 2014).

## 2.4 Analytic Procedure

The first analysis involved assessing cervical cancer screening attendance across trauma types to examine if the participants who have experienced interpersonal trauma are less likely to attend the procedure than those who have not experienced an interpersonal traumatic event. In this analysis, a question concerning cervical cancer screening history was used to determine attendance status. The TSS was used to specify which trauma exposure category (i.e. “no trauma”, “noninterpersonal trauma only”, or “interpersonal trauma”) participants belong to for all of the analyses. For the first analysis, a logistic regression was conducted.

Many variables that may be related to cervical cancer screening attendance were accounted for in this analysis. A few of the demographics inquired about in the survey (i.e. income, insurance coverage, employment, and race and ethnicity) were controlled for due to the likelihood that these variables are barriers to cervical cancer screening (Ackerson & Gretebeck, 2007; ACS, 2006; CDC, 2006; Sambamoorthi & McAlpine, 2003). Lastly, the number of traumatic experiences was also accounted for by examining items from the TSS concerning the frequency of trauma exposure.

The second analysis examined various interpersonal and trust attitudes toward the cervical cancer screening procedure across trauma types by examining one of the four factors derived from the PSBQ, which concerns interpersonal experiences with Pap smear providers. This factor involves seven questions relating to trust, feelings of being on edge and violated during the procedure, and gender preference of the healthcare provider. As stated previously, it was hypothesized that participants who have experienced interpersonal trauma would be (1) less likely to trust the providers performing the Pap



smear and more likely to (2) feel violated and (3) on edge during the screening, and (4) to prefer a female provider for the procedure when compared with participants who have not experienced an interpersonal trauma. These four hypotheses were examined through a multivariate general linear model (multivariate GLM).

## **CHAPTER III**

### **RESULTS**

#### **3.1 Missing Data**

Initially, 392 women began to participate in the survey for this study. One 17 year-old participant did not meet the age requirement to participate in the study and was therefore excluded from analysis. In addition, missing data was examined for potential exclusion of participants. A common practice in data analysis involves the exclusion of cases that fail to complete 50% or more of a survey (Hair, Black, Babin, & Anderson, 2009). An examination of the cases using the NMISS function in SPSS revealed that 56 participants failed to complete 50% or more of the survey items and measures required to test the hypotheses for this study, which lead to their exclusion from analysis.

Approximately 30 (54%) of these 56 excluded participants failed to respond to 80% or more of the survey items. In addition, although slightly below the recommended cutoff of 50%, six additional participants that responded to 48.7% of the survey items and measures being analyzed for this study were excluded from the examination of the hypotheses. An additional common practice in data analysis is the deletion of cases that are missing data on the dependent variable(s) to prevent artificial inflation in associations

with the independent variables (Hair et al., 2009). The 62 excluded participants are missing data on the dependent variables used in the analyses.

To examine for the existence of patterns of the missing data, the variables were dichotomized into valid and missing categories and assessed for the initial 391 cases. Phi coefficient correlations revealed that every participant responded to basic demographic information. However, the correlations between the valid and missing categories are significant at the  $p=.000$  level; therefore, the participants who did not respond to the questions about Pap smears also did not respond to the items on the TSS, PSS-SR, and the PSBQ. Although the presence of significant correlations between the missing data variables indicate potential problematic patterns of missing data, in this case, it appears that the general pattern of excluded participants involves the discontinuation of responding to the survey shortly after responding to the initial demographic information. The missing data from this internet based survey may be the result of any number of factors including issues with internet connectivity, accidental closing of the browser containing the survey, loss of a desire to participate, and the sensitive and private topics comprising the survey. A total of 329 participants completed the majority of the survey items and were used to conduct the analyses for this study.

### **3.2 Demographics**

Table 1 outlines the demographic data for the sample of participants. Of the 329 participants, 209 indicated that they were attending and/or working for WMU. The remaining 120 participants reported attending and/or working for CSU.

The average age of participants is 27 years ( $SD= 10.34$ ). As shown in Table 1 below, around half (53%) of the participants fall within the 18-23 age range. As the age

range increases, the number of participants in each grouping decreases. Only 6 participants (1.8%) reported an age between 56-65 years.

The majority (85%) of the participants are Caucasian. The remaining participants are mostly African American/black (10%), with Hispanic (2.4%), Asian (1.5%), and Native American (.3%), comprising the smallest represented ethnicities in the sample. Ten participants selected “other” for their race or ethnicity and were categorized accordingly. For example, participants who indicated that they are Asian American were categorized as “Asian”.

Income level was collected in a categorical fashion for this study. The most frequently reported (55%) annual individual income level was less than \$10,000. In contrast, the most frequently reported (38%) household income level was more than \$50,000.

Around half (47%) of the participants reported receiving health insurance through their parents. Approximately 1 in every 4 participants indicated receiving health insurance through their employer. Roughly 13% of participants reported that they did not have health insurance.

Approximately half (51%) of the participants indicated working on a part-time basis and roughly one-fourth (23%) of the participants reported working full-time jobs. The remaining fourth (26%) of participants indicated that they were unemployed. Regarding student status, approximately two-thirds (67%) of the participants signified an undergraduate student status at their university, whereas around 28% indicated graduate student status. A small number of participants were both students and employees at their university (3.0%), or were employees for one of the universities (2.7%).

Table 1  
*Participant Demographics*

	Frequency	Percent
<b>University</b>		
WMU	209	63.5
CSU	120	36.5
<b>Age Range</b>		
18-23	173	52.6
24-29	69	21.0
30-36	35	10.6
37-43	14	4.3
44-49	15	4.6
50-55	17	5.2
56-65	6	1.8
<b>Race/Ethnicity</b>		
Caucasian	281	85.4
African American/Black	34	10.3
Hispanic	8	2.4
Asian	5	1.5
Native American	1	.3
<b>Annual Individual Income</b>		
Less than \$10,000	181	55.0
\$10,000 to \$20,000	63	19.1
\$20,001 to \$30,000	30	9.1
\$30,001 to \$40,000	13	4.0
\$40,001 to \$50,000	15	4.6
More than \$50,000	27	8.2
<b>Annual Household Income Level</b>		
Less than \$10,000	55	16.7
\$10,000 to \$20,000	48	14.6
\$20,001 to \$30,000	37	11.2
\$30,001 to \$40,000	34	10.3
\$40,001 to \$50,000	29	8.8
More than \$50,000	126	38.3
<b>Insurance</b>		
No health insurance	44	13.4
State health insurance (Medicaid)	23	7.0
Insurance through employer	76	23.1
Insurance through parents	156	47.4
Insurance through spouse/partner	30	9.1

Employment			
Full time		76	23.1
Part time		168	51.1
Unemployed but searching for employment		31	9.4
Unemployed by choice		54	16.4
Student Status			
Undergraduate Student		219	66.6
Graduate Student		91	27.7
Neither; Staff		9	2.7
Student and Staff		10	3.0

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*Note.* N=329 for each variable

### 3.3 Differences between Groups

**3.3.1 Included versus excluded cases.** As shown in Table 2, cross tabulations and chi-square analyses revealed that the only significant difference between the excluded cases and the participants used for the analysis regarding demographic variables was level of annual individual income. A larger number of participants than expected that were excluded from the analysis indicated that their annual individual income level was less than \$10,000 a year ( $p=.043$ ). However, as demonstrated in Table 2, the excluded and included participants did not differ in terms of university ( $p=.926$ ), race ( $p=.345$ ), age ( $p=.939$ ), annual household income ( $p=.058$ ), insurance coverage ( $p=.941$ ), employment ( $p=.652$ ), and student status ( $p=.200$ ), when examining the values at a .05 level of significance.

Table 2  
*Chi-Square Examination of Demographic Variables between Excluded and Included Cases*

Variables	$\chi^2$	<i>df</i>	<i>p</i>
University	.009	1	.926
Race	4.402	4	.345
Age	28.026	41	.939
Individual Income	11.46	4	.043
Household Income	10.680	5	.058

Insurance	.784	4	.941
Employment	1.635	3	.652
Student Status	4.646	3	.200

*Note:*  $N=391$  for all of the presented variables

**3.3.2 CSU versus WMU participants.** As previously discussed, the data for this study was collected from two universities, CSU and WMU. CSU is primarily a commuter university, and WMU has a larger number of students residing on campus. Furthermore, the universities are located in different states. Therefore, differences between the two universities are probable. As shown in Table 3, cross tabulations and chi-square analyses of the demographic variables revealed significant differences ( $p=.000$ ) between the universities regarding race, age, individual income, insurance, employment, and student status.

The summary of the differences is as follows: the participants at CSU appear to represent more diversity, with 73% classifying themselves as Caucasian, and 19% as African American/black, whereas 92% of the participants at WMU indicated that they were Caucasian, and 5% African American/black; a larger proportion of participants (62%) at WMU reported making less than \$10,000 in annual individual income than at CSU (42%); the mean age of CSU participants is 27 ( $SD= 10.47$ ) whereas the mean age of WMU participants is 25 ( $SD=10.35$ ); a higher percentage (16%) of participants from CSU indicated making more than \$50,000 in annual income a year than WMU participants (4%); a larger proportion (21%) of CSU participants reported being uninsured regarding healthcare compared with WMU participants (9%); a larger percentage (61%) of WMU participants indicated health insurance coverage through their parents compared to CSU participants (23%); a larger proportion (40%) of CSU students

reported being employed full-time than WMU participants (14%); participants at WMU indicated that they were unemployed by choice at a higher rate (21%) than CSU participants (9%); and a larger proportion (73%) of WMU participants reported an undergraduate status than did CSU participants (56%)

Differences on household income ( $p=.129$ ), trauma exposure ( $p=.450$ ), and cervical cancer screening adherence ( $p=.810$ ) between the two universities were not found. The demographic differences were accounted for by separately examining the hypotheses for the samples from each university to verify that they match the results of the analyses of the sample as a whole.

Table 3  
*Chi-Square Examination of Demographic Variables between CSU and WMU*

Variables	$\chi^2$	<i>df</i>	<i>p</i>
Pap Attendance	.058	1	.810
Trauma	1.595	2	.450
Race	24.378	4	.000
Age	101.897	40	.000
Individual Income	39.661	5	.000
Household Income	8.52	5	.129
Insurance	60.831	4	.000
Employment	31.423	3	.000
Student Status	36.391	3	.000

*Note:*  $N=329$  for all of the presented variables

### **3.4 Cervical Cancer Screening Attendance**

As shown in Table 4, approximately half (49%) of the participants reported receiving a Pap smear every year, which is more than the USPSTF (2012) recommendation of once every three years. Furthermore, 17% of participants reported never obtaining a Pap smear.



Table 4

*Pap Smear Attendance*

	Frequency	Percent
I get a Pap smear more than once a year.	17	5.2
I get a Pap smear every year.	161	48.9
I get a Pap smear every other year.	38	11.6
I get a Pap smear every 3 years.	30	9.1
I do not get routine Pap smears.	27	8.2
I have never had a Pap smear.	56	17.0

Cervical cancer screening attendance was recoded into two categories: non-routine and routine (see Table 5). Participants that have never received or indicated they do not seek routine Pap smears were categorized as non-routine. Participants who receive a Pap smear at least once every three years were categorized as routine, adhering to the USPSTF (2012) cervical cancer screening recommendation. As indicated in Table 5, around 25% of participants reported non-routine cervical cancer screening adherence.

Table 5

*Routine Pap Smear Attendance*

	Frequency	Percent
Non-Routine	83	25.2
Routine	246	75.7

### 3.5 Trauma Exposure

Approximately 70% of the sample reported experiencing a traumatic event in their lifetime, which is higher than the minimum estimate of roughly half of the general population (Ozer, Best, Lipsey, & Weiss, 2003; Paris, 2000). A total of 478 responses indicating exposure (yes or no) to the eight specific traumatic events assessed by the TSS were reported by the sample. Examining the frequency of trauma exposure revealed that 1,362 traumatic events were reported across the sample. This amount does not include

the open-ended question inquiring for additional terrifying or shocking events that were not covered by the TSS questions due to the subjectivity of the responses provided by the participants.

The participants reported an additional 52 traumatic experiences. Although these events may have been terrifying and shocking to the participant, many may not meet the current conceptualization of a trauma (APA, 2013). For example, divorce and infidelity, although distressing, do not warrant the label “trauma” according to its current conceptualization (APA, 2013). In addition, many of the open-ended traumatic event narratives provided by the participants were not detailed enough or left blank, making coding of the additional 52 events impossible. Therefore, the additional traumatic events were not included in the analysis. Thirty-nine of the participants that reported an additional traumatic event also indicated other specific traumatic events assessed by the TSS, and are therefore accounted for elsewhere. The remaining 13 participants indicated no other trauma exposure besides the terrifying or shocking event they reported for the open-ended section.

Table 6 details the number of participants that indicated experiencing (yes or no) each of the specific traumatic events examined by the TSS. The traumatic events were categorized under one of two categories: interpersonal trauma or noninterpersonal trauma. As indicated by the conceptualization of trauma in this study, interpersonal trauma involves an act personally experienced by the individual by perpetrator intending to inflict harm. As shown in Table 6, sexual assault was the most frequently (22.5%) reported interpersonal trauma, and traumatic death of a close friend or relative was the

most commonly (42%) reported interpersonal trauma and traumatic event overall.

Trauma exposure was used to categorize participants into trauma exposure categories.

Table 6  
*Trauma Exposure by TSS Category*

	Frequency	Percent
<b>Interpersonal Trauma</b>		
Did anyone ever take something from you by force or threat of force, such as in a robbery, mugging, or hold up?	30	9.1
Did anyone ever beat you up or attack you?	46	14.0
Did anyone ever make you have sex by using force or threatening to harm you? This includes any type of unwanted sexual activity.	74	22.5
<b>Noninterpersonal Trauma</b>		
Did a close friend or family member ever die because of an accident, homicide, or suicide?	140	42.6
Did you ever suffer injury or property damage because of fire?	24	7.3
Were you ever in a motor vehicle accident serious enough to cause injury to one or more people?	57	17.3
Have you ever seen someone seriously injured or killed?	69	21.0
Have you ever suffered serious physical injury as a result of a non-motor vehicle related accident?	38	11.6

Table 7 illustrates trauma exposure by the broad categories of trauma.

Approximately 30% of participants indicated an absence of exposure to the traumatic events specified in the TSS. A similar percentage of participants (30%) reported exposure to at least one of the three interpersonal traumatic events: sexual assault, physical assault, or robbery or mugging. As shown in Table 7, a small percentage (6%) of participants reported having only experienced interpersonal trauma. Almost one-third (64%) of participants indicated that they had experienced at least one of the following noninterpersonal traumatic events: traumatic death of a loved one, physical injury or

property damage due to fire, a MVA, witnessing someone else being seriously injured or killed, or an accident other than a MVA. As depicted in Table 7, approximately 40% of participants reported experiencing only noninterpersonal trauma. Roughly one-fourth (24%) of the participants indicated exposure to both interpersonal and noninterpersonal traumatic events.

Table 7  
*Trauma Exposure by Trauma Type*

	Frequency	Percent
No Trauma	99	30.1
Interpersonal	98	29.8
Interpersonal Only	19	5.8
Noninterpersonal	211	64.1
Noninterpersonal Only	132	40.1
Mixed	79	24.0

The final trauma exposure groups are outlined in Table 8. Since interpersonal trauma has been associated with more severe psychological adjustment (Kelley, Weathers et al. 2009; McCloskey & Walker, 2000; Shakespeare-Finch & Armstrong, 2010) and is the focus of this study, interpersonal trauma was chosen to override noninterpersonal trauma. Therefore, participants that indicated experiencing both interpersonal and noninterpersonal trauma exposure were assigned to the “interpersonal trauma” category, comprising approximately 30% of the sample. Allowing interpersonal trauma to take precedence over noninterpersonal trauma also allowed for more equivalent group sizes, which increases the ability to detect significant findings in the analyses. Participants that reported exposure to only noninterpersonal trauma were assigned to the “noninterpersonal trauma only” category, which contains roughly 40% of the sample. Lastly, participants without a reported history of trauma were assigned to the “no trauma” category. These trauma exposure categories are used in the analyses of the hypotheses.

Table 8

*Trauma Exposure Categories*

	Frequency	Percent
No Trauma	99	30.1
Interpersonal Trauma	98	29.8
Noninterpersonal Trauma Only	132	40.1

Although PTSD severity was originally going to be controlled for in the analysis of cervical cancer screening adherence by using the PSS-SR, PTSD severity was significantly and strongly positively correlated with interpersonal trauma exposure,  $r_{pb}(230) = .449, p = .000$ . Therefore, due to a potential masking of effect, PTSD severity was not controlled for in this study. In addition, excluding trauma exposure over PTSD severity did not make a difference regarding the significance of the results.

### **3.6 Interpersonal Trauma Exposure and Routine Cervical Cancer Screening**

A logistic regression was conducted to examine if interpersonal trauma exposure predicts nonattendance to routine cervical cancer screening. As described previously, routine cervical cancer screening was dichotomized (0= non-routine, 1= routine) and trauma exposure category was entered as categorical (0= no trauma, 1= noninterpersonal trauma only, 2= interpersonal trauma). The “interpersonal trauma” exposure category was used as the reference category.

The analysis was first run without controls. The results from the initial bivariate logistic regression indicate that exposure to interpersonal trauma does not predict nonattendance to routine cervical cancer screening. The model chi-square value shown below in Table 9 refers to the difference between the estimation fit values of the null model (the initial model that does not contain predictors) and the model with trauma

exposure category added as a predictor. The insignificant chi-square difference value ( $\chi^2$  difference=4.46,  $p=.108$ ) shown below indicates that the addition of trauma exposure category as a predictor does not significantly improve the estimation fit when compared with the null model; the null model predicts the classification of cervical cancer screening adherence (routine or non-routine) of the participants as well as when trauma exposure is taken into account.

Table 9  
*Chi-Square Model Fit with Trauma Exposure Category as Sole Predictor*

	Chi-square	df	Sig.
Model	4.460	2	.108

Table 10 provides additional information that supports the finding that interpersonal trauma does not significantly predict non-routine cervical cancer screening attendance. Table 10 contains two pseudo R square measures which examine how much variability in the prediction of the cervical cancer screening attendance is being explained by the trauma exposure category variable in the model: the Cox and Snell R square and the Nagelkerke R square. The higher the pseudo R square value, the better the fit of the model, meaning a pseudo R square value of 1.0 would indicate a perfect fit. The trauma exposure category variable was estimated to explain between 1.3% (Cox & Snell R Square) and 2% (Nagelkerke R Square) of the variance of cervical cancer screening attendance.

Table 10  
*Pseudo R Square Values Trauma Exposure Category as Predictor*

Cox & Snell R Square	Nagelkerke R Square
.013	.020

As shown below in Table 11, trauma exposure category was not found to be a significant predictor of cervical cancer screening attendance,  $Wald(2, 329)=4.34, p=.114$ . The B coefficients for the “no trauma” and “noninterpersonal trauma only” categories represent a comparison between them and the reference group, “interpersonal trauma”. The “interpersonal trauma” exposure category appears to significantly differ from the “no trauma” exposure category in predicting cervical cancer screening attendance,  $B= -.706, p=.037$ . However, due to the insignificance of trauma exposure category predicting cervical cancer screening attendance as a whole, this finding should be considered with caution.

Table 11

*Trauma Exposure Regressed on Cervical Cancer Screening Attendance*

Predictor	B	S.E.	Wald	df	Sig.	Exp(B)
Trauma Exposure Category			4.344	2	.114	
0: No Trauma	-.706	.339	4.335	1	.037	.494
1: Noninterpersonal Only	-.393	.329	1.424	1	.233	.675
Constant	1.492	.261	32.694	1	.000	4.444

*Note.* Interpersonal trauma is category 2, the reference category. The B coefficients for the other categories are in comparison to the reference group.

When demographic variables (race, annual individual income, annual household income, health insurance, and employment status) and trauma exposure frequency were controlled for by being entered into the logistic regression model first, the insignificance of the relation between trauma exposure category and routine cervical cancer screening increased. The model containing the controls was significant ( $p=.000$ ). However, as shown in Table 12, when trauma exposure category was additionally added into the equation with the controls, the overall model yielded insignificance ( $\chi^2$  difference=4.09,  $p=.130$ ).

Table 12

*Chi-Square Model Fit for Overall Model: Control Variables plus Trauma Exposure*

	Chi-square	df	Sig.
Model	4.088	2	.130

The pseudo R-Square values estimate that the overall model containing the controls and trauma exposure category explains between a 19% (Cox & Snell R Square) and 29% (Nagelkerke R Square) of the variability in cervical cancer screening attendance. The controls alone explained between an estimated 18% (Cox & Snell R Square) and 27% (Nagelkerke R Square) of the variance in cervical cancer screening adherence, reflecting the previously mentioned 1% to 2% estimation of explained variance by the trauma exposure category variable alone.

Table 13

*Pseudo R Square Values: Control Variables plus Trauma Exposure Category*

Cox & Snell R Square	Nagelkerke R Square
.194	.287

Table 14 shows the basic logistic regression results for the overall model containing controls and trauma exposure category. As indicated, the trauma exposure category variable as a whole continues to contribute an insignificant amount toward prediction of cervical cancer screening attendance,  $Wald(2, 329)=3.86, p=.145$ . However, the “no trauma” exposure category continues to differ significantly at the from the “interpersonal trauma” exposure category in association with cervical cancer screening attendance,  $B=-1.33, p=.049$ . Again, due to the insignificance of trauma as a whole, this finding should be considered with caution. The addition of the trauma



exposure category variable continues to insignificantly contribute to the prediction of cervical cancer screening adherence of the participants when accounting for controls.

Table 14  
*Controls and Trauma Exposure Regressed on Cervical Cancer Screening Attendance*

Predictor	B	S.E.	Wald	Df	Sig.	Exp(B)
<b>Controls</b>						
Individual Income			10.106	5	.072	
Household Income			4.901	5	.428	
Insurance			7.725	4	.102	
Race			.665	4	.456	
Employment			7.627	3	.054	
Trauma Frequency	-.319	.180	3.129	1	.077	.727
<b>Trauma Exposure Category</b>						
0: No Trauma	-1.327	.676	3.858	1	.049	.265
1: Noninterpersonal Only	-.753	.478	2.475	1	.116	.471
Constant	2.843	40894.423	.000	1	1.000	17.172

*Note.* Interpersonal trauma is category 2, the reference category. The B coefficients for the other categories are in comparison to the reference group

An additional Forward: Wald entry method of the controls and trauma exposure category revealed similar results, including the removal of the trauma exposure category variable in the predictive regression model, as well as all of the controls besides annual individual income and health insurance coverage. Furthermore, examination of separate logistic regression analyses for both CSU and WMU did not reveal a significant difference between the universities; both the CSU,  $Wald(2, 120)=1.804, p=.406$ , and WMU,  $Wald(2, 209)=1.519, p=.468$ , samples of participants yielded insignificant predictive contributions of cervical cancer screening attendance by trauma exposure category. Overall, trauma type was not found to be related to cervical cancer screening attendance, signifying that interpersonal trauma exposure was not associated with

nonattendance to routine cervical cancer screening within the sample of participants in this study.

Cross tabulations and chi-square analyses were performed for each of the specific traumatic events from the TSS to examine if the “interpersonal trauma” and “noninterpersonal trauma only” categories were excessively broad. Cervical cancer screening nonattendance was not significantly different for any of the traumatic events assessed for in this study, including those falling under the “interpersonal trauma” category (sexual assault, physical assault, and robbery or mugging) (all  $\chi^2 = p > .05$ ). In this study, specific traumatic events did not appear to be associated with screening adherence.

### **3.7 PSBQ**

Table 15 outlines the means and standard deviations of the participants’ responses to the items on the PSBQ relating to interpersonal experience with the Pap smear provider. The items were rated on a scale of 1 to 5, 1 equivalent to “strongly disagree”, and 5 corresponding with “strongly agree”. The majority of participants indicated disagreement with the items relating to distrust of healthcare providers in general (84%), distrust of unknown healthcare providers (68%), and feeling violated during a Pap smear (74%). Many of the participants (40%) reported disagreement with feeling violated when the provider does not provide an explanation of the Pap smear procedure, although a similar percent (37%) indicated agreement with the statement. Approximately half (47%) of the sample was in disagreement with the item relating to feeling on edge during a Pap smear, whereas a similar percent (44.6%) reported feeling on edge when a provider rushes through the exam. Concerning gender preference, approximately half (53%) of

the participants indicated a preference for a female Pap smear provider. The differences on the spectrum of agreement for the statements relating to distrust of healthcare providers, violation during the exam, and feeling on edge during the screening suggest that these items may be examining different constructs. Therefore, each item was examined separately, instead of forming each pair of questions into an overall score.

Table 15

*Mean and Standard Deviations of the Interpersonal Experience PSBQ Items*

PSBQ Item	Mean	SD
Trust		
I do not trust healthcare providers.	1.7751	.91291
I do not trust healthcare providers unless I know them.	2.1793	1.106
Feelings of Violation		
I feel like I am being violated when the provider performs the female exam.	1.9757	1.139
I feel like I am being violated when the provider does not explain to me what they are doing during the exam.	2.8723	1.235
Feeling on Edge		
When the provider performs the female exam it makes me feel on edge.	2.7173	1.279
When the provider rushes through the exam it makes me feel on edge.	3.0638	1.271
Gender Preference		
I only want to see female providers.	3.4164	1.337

### **3.8 Trauma Type and Interpersonal Experiences during the Pap Smear Procedure**

Initial correlations were conducted to examine if trauma exposure was related to any of the interpersonal experience PSBQ items. None of the items relating to interpersonal experience on the PSBQ were correlated with trauma exposure. However, further advanced analyses were conducted to assess for any potential differences between the trauma exposure categories and the interpersonal experience PSBQ items.

A multivariate GLM was conducted to examine if interpersonal trauma predicted the interpersonal attitudes toward the cervical cancer screening procedure as measured by the seven-item interpersonal experience factor of PSBQ. As previously described, trauma was entered as a categorical variable (0= no trauma, 1= noninterpersonal trauma only, 2= interpersonal trauma). The items from the PSBQ are rated on a 5 point scale. The PSBQ items used for this analysis do not violate the assumption of the equality of variance/covariance matrices (Box's  $M=72.59$ ,  $p=.094$ ), multicollinearity (the Variance Inflation Factor (VIF) for each item is less than 10), or linearity. Independence of observations is assumed, although this assumption cannot be statistically examined. Due to issues with normality for each of the items, the results should be considered with caution.

The results from the multivariate GLM revealed that interpersonal trauma exposure did not predict distrust toward the healthcare provider, feeling on edge during the screening, feeling violated during the procedure, or preference of a female provider for the Pap smear. As shown below in Table 16, four different multivariate significance tests (Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root) indicate that interpersonal trauma exposure does not significantly predict the PSBQ variables relating to interpersonal experience as a whole in this study.

Table 16  
*Multivariate Tests of Significance Regarding Trauma Exposure Category and Interpersonal Experience PSBQ Items*

Effect		Value	F	Hypothesis df	Error df	Sig.
Trauma	Pillai's Trace	.041	.954	14	642	.500
Exposure	Wilks' Lambda	.960		14	640	.502
Category	Hotelling's Trace	.042	.951	14	638	.503
	Roy's Largest Root	.029		7	321	.234

As shown below in Table 17, the trauma exposure category variable does not have a main effect on the dependent variables from the PSBQ as a whole. In addition, when using a Bonferroni correction ( $p < .007$ ), none of the individual items assessed for from the PSBQ are predicted by the trauma exposure category variable. However, it is important to mention the effect that trauma exposure may have on the item “I feel like I am being violated when the provider does not explain to me what they are doing during the exam”,  $F(2, 329) = 3.83, p = .023$ , although it is not significant under the Bonferroni correction. Further LSD post-hoc analysis reveals a significant mean difference of .43,  $p = .009$ , between the “interpersonal trauma” and “noninterpersonal trauma only” categories, indicating that interpersonal trauma exposure lead to a higher level of feelings of violation during cervical cancer screening when the provider does not explain the procedure. Due to the insignificance under the Bonferroni correction, this finding should be considered with caution. Significant differences between the “no trauma” category and the “interpersonal trauma” and “noninterpersonal trauma only” categories were not found.

Table 17  
*Tests of Between-Subjects Effects of Trauma Exposure Category on Interpersonal Experience PSBQ Items*

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Trauma Exposure Category	I do not trust healthcare providers.	1.772	2	.886	1.064	.346
	I do not trust healthcare providers unless I know them.	3.068	2	1.534	1.259	.285
	I feel like I am being violated when the provider performs the female exam.	.773	2	.386	.296	.744

I feel like I am being violated when the provider does not explain to me what they are doing during the exam.	11.483	2	5.742	3.827	.023
When the provider performs the female exam it makes me feel on edge.	1.070	2	.535	.326	.722
When the provider rushes through the exam it makes me feel on edge.	1.687	2	.843	.521	.595
I only want to see female providers.	2.360	2	1.180	.659	.518

Additional separate multivariate GLM models were conducted for CSU and WMU. The universities did not differ regarding the insignificance of interpersonal trauma on the prediction of the interpersonal attitudes toward cervical cancer screening assessed by the PSBQ (all  $F=p>.007$ ). However, these further analyses revealed that the effect of interpersonal trauma exposure on the item “I feel like I am being violated when the provider does not explain to me what they are doing during the exam” was practically significant for the WMU group of participants under the Bonferroni correction,  $F(2, 209)=4.99, p=.008$ , and insignificant for the CSU sample,  $F(2, 120)=2.49, p=.373$ . Running a LSD post hoc analysis for the WMU sample revealed that the mean difference between the “interpersonal trauma” and “noninterpersonal trauma only” categories for feelings of violation when the provider does not provide an explanation on the procedure is .64,  $p=.002$ , indicating that interpersonal trauma exposure lead to a higher level of feelings of violation during the exam without explanation. However, this finding should be considered with caution due to its potential insignificance.

An additional logistic regression was conducted to attempt to account for the violation of normality. The “interpersonal trauma” exposure category was examined against the “noninterpersonal trauma only” and “no trauma” categories combined. The results indicate that the model of predictors is not significant ( $\chi^2$  model difference=7.62,  $p=.367$ ) and that none of the individual interpersonal experience PSBQ items serve as significant predictors of interpersonal trauma exposure (all  $B= p>.05$ ).

Lastly, to examine if the demographic variables examined in this study contributed to responses, bivariate correlations were evaluated. The demographic variables did not correlate highly with the interpersonal items from the PSBQ (all  $r=p<.15$ ). Due to the overall lack of correlation between the demographic variable and PSBQ items examined in this study, additional analyses accounting for demographic variables were not conducted.

## **CHAPTER IV**

### **DISCUSSION**

#### **4.1 Findings**

The hypotheses of this study were disconfirmed. In this study, cervical cancer screening nonattendance was not found to be associated with interpersonal trauma, meaning that exposure to an interpersonal trauma was not found to be a significant barrier to cervical cancer screening attendance. This finding is inconsistent with the literature that has found a connection between types of interpersonal trauma and nonattendance to routine cervical cancer screening (Cadman et al, 2012; Farley et al., 2002; Gandhi et al., 2010; Leeners et al., 2007; Loxton et al., 2008; Olesen et al., 2012; Weitlauf et al., 2008; Weitlauf et al. 2010). This study aimed to categorize trauma type as broad categories, which may have led to the insignificant results. Trauma type may need to be conceptualized as specific events rather than general, broad categories when examining the relationship between trauma and cervical cancer screening attendance.

The relationship between physical assault and cervical cancer screening attendance alone has not been researched thoroughly. However, one preliminary study did find that physical assault was not related to cervical cancer screening attendance



(Farley et al., 2002). IPV has received more attention regarding its relationship with cervical cancer screening attendance, and has yielded mixed results (Gandhi et al., 2010; Lemon et al., 2002; Loxton et al., 2008; Hathaway et al., 2000). The most significant relationship between trauma and cervical cancer screening nonattendance that the literature reports is related to sexual assault, specifically childhood sexual abuse (Farley et al., 2002; Leeners et al., 2007; Olesen et al., 2012). Overall, it is possible that childhood sexual abuse is the specific trauma type that is a barrier to nonattendance to cervical cancer screening. However, the relationship between trauma and cervical cancer screening attendance appears to be more complex, with negative experiences during the procedure after a traumatic event has occurred possibly being a contributing factor.

In addition, in this study, interpersonal trauma exposure was not found to be associated with distrust toward the Pap smear provider, feeling on edge during the screening, feeling violated during the procedure, or preference of a female Pap smear provider. Since there is a limited number of studies on interpersonal trauma and items on the PSBQ, the results from these hypotheses should be perceived as preliminary. These results are inconsistent with studies that have examined the relationship between interpersonal trauma exposure and high levels of discomfort associated with cervical cancer screening (Cadman et al., 2012; Farley, 2002; Hilden et al. 2003; Leeners et al., 2007; Olesen et al., 2012; Robohm & Buttenheim, 1996; Smith & Smith, 1999; Weitlauf et al., 2008; Weitlauf et al., 2010). Additionally, the finding that distrust of the healthcare provider is not related to interpersonal trauma is inconsistent with the general literature on trust and trauma (Cadman et al., 2012; Robohm & Buttenheim, 1996). However, the literature specifically on interpersonal traumatic experiences and trust

during the cervical cancer screening procedure is scarce. Future studies should examine interpersonal trauma exposure and previous cervical cancer screening experience in relation to the interpersonal items on the PSBQ and to the measure in general, as well as assess the potential link between interpersonal trauma and distrust during the procedure.

The data in this study does not reflect chronology. Women who participated in this study that have experienced an interpersonal trauma may have experienced the traumatic event subsequent to their last cervical cancer screening. If this is true for any of the women who participated in the study, their perception of the procedure may change after their next cervical cancer screening due to the possible development of psychological maladjustment or PTSD. In addition, if women experience reminders of their trauma during subsequent Pap smears, they may be less likely to return to routine screenings in the future. The impact of interpersonal trauma on cervical cancer screening might be reflected through gradual effects. Overall, future nonattendance to cervical cancer screening cannot be predicted by the data collected for this study.

Although the hypotheses of this study were not supported, it is important to mention that approximately one-fourth of the women who partook in this study indicate that they do not receive routine cervical cancer screening, which is similar to the 27% estimate from the NCHS (2013). This statistic reveals the reality of the issue at hand: cervical cancer can be prevented or treated, yet a significant number of women do not receive the recommended screenings. Barriers to cervical cancer screening need to be discovered in order to develop methods of promoting and increasing attendance to the procedure.

## 4.2 Strengths

The ability to control for some of the proposed barriers to cervical cancer screening is an advantage of this study, especially the more objective, socioeconomic variables of income, employment, and insurance, and the demographic variable of race. Although the hypothesis relating to interpersonal trauma serving as a contributing factor of cervical cancer screening nonattendance was insignificant, the results indicate the importance of annual individual income and insurance coverage for this sample, adding to the support of these socioeconomic variables as barriers to screening.

Collecting the data in a survey format allowed women to share private and sensitive information anonymously. Performing interviews on these topics may have allowed for more clarification and elaboration, but might have also led to women withholding personal information on Pap smear attendance and experience, trauma history, and demographic information. In addition, the cost and time effectiveness of the online survey format allows for a faster and private collection of data, over a shorter time period.

Lastly, the data was collected using standardized measures with overall good reliability and validity, analyzed using standard statistical techniques. The results give insight to a unique, overall young-adult, college educated sample which differs from many of the studies examining the relation between trauma and cervical cancer screening adherence. The findings from this study generate a discussion of the potential protective factors toward obtaining routine cervical cancer screening that may exist in this mainly college student population, including positive coping and life skills due to education level, resiliency, and outside support assisting in the promotion of higher education.

### **4.3 Limitations and Suggestions**

Many limitations of this study exist. An exhaustive list of barriers to cervical cancer screening has not been formulated. Therefore, the analysis of screening for this study do not control for every conceivable barrier. Additionally, every presumed barrier to cervical cancer screening is not accounted for in this study, including access to medical care, depression, obesity, and low levels of physical functioning (Ackerson & Gretebeck, 2007; ACS, 2006; CDC, 2006; Olesen, 2012; Sambamoorthi & McAlpine, 2003). In addition to being barriers to cervical cancer screening, many of these factors may also affect the probability trauma exposure. Since the survey does not account for all of the barriers to cervical cancer screening and factors that are associated with likelihood of trauma exposure, the interpretation of the results should be considered with caution.

Another limitation of this study involves the cross-sectional nature of the data collection without follow-up. Cross-sectional data limits the extent of analysis and interpretation since it only captures one point in time. Although the initial hypotheses did not yield significant results, the current literature suggests that trauma exposure may lead to elements of anxiety and discomfort during the cervical cancer screening procedure, and negative experience during a Pap smear may lead to nonattendance to routine screenings in the future (Ackerson et al., 2008; Ackerson, 2012; Huber et al., 2008; Oscarsson et al., 2008). The proper method needed to examine the probability of attending future cervical cancer screenings after undergoing a negative exam is a longitudinal study that tracks these variables. Future studies should consider the notion that a negative Pap smear experience following or caused by exposure to an interpersonal trauma may lead to later nonattendance.

In addition to the cross-sectional method to data collection, the technique implemented was a survey located on the internet. Even though all students and employees have access to university computers, women who may have considered participating might have not felt comfortable completing a survey on the often perceived sensitive, private topics of cervical cancer screening and trauma history in public. Women that did not want to participate in this survey in public computer labs and campuses may not own personal computers. Utilizing multiple modalities of data collection such as providing hard-copies to potential participants that do not own personal computers may have increased participation and external validity. Furthermore, using the internet for data collection may have contributed the missing data of the original sample possibly due to internet malfunctions or accidental closing of the webpage location of the survey.

Although self-report surveys have a level of objectivity, as well as time and cost advantages, they are not without fault. The self-report survey used in this study may not have captured cervical cancer screening experience, trauma exposure, assessment of PTSD diagnosis, and beliefs pertaining to screening, since surveys limit elaboration of responses and clarification of misunderstood survey items. For example, the TSS only assesses for eight specific traumatic events and allows for one subjective explanation of additional experiences. Due to the self-report nature of the survey, the participants were not able to receive an understanding of what is considered as a traumatic experience, and the researcher is unable to probe for further explanation of the reported experience. Additionally, the PSBQ items were nonnormal, due to a possible restriction of elaboration. Future studies examining these variables may consider adding an interview

portion to the data collection process to allow for elaboration and clarification of responses, although it is noted that this might not be in the participants' best interest or cost and time efficient.

An additional limitation of this study is a lack of generalizability. The sample of participants in this study is comprised of mostly Caucasian college students. In addition, approximately half of the participants reported that they work part-time and currently covered by their parent's health insurance. Expectedly, a little over half the participant reported an individual income of less than \$10,000.00 a year. Since this study utilized a sample of mostly college students, it is understandable why a proportionally large number of participants are working part-time, generating a small income, and continue to be covered by their parent's health insurance. However, since the demographics of this sample do not match the general populations', the results to this study possess limited generalizability. In addition, many race and ethnic populations are underrepresented in this study, especially Hispanic, Asian, and other unlisted races and ethnicities, and do not match the racial and ethnic composition of the general population (Humes, Jones, & Ramirez, 2011). Evidently, the results from this study do not apply to clinical populations of trauma survivors, a population with limited research on cervical cancer screening attendance. Furthermore, it is important to note that the amount of trauma exposure identified by the sample in this study is slightly higher than the minimum of 50% suggested of the general population, which may suggest that women who have experienced a trauma were more likely to hold interest in partaking in this study (Ozer, Best, Lipsey, & Weiss, 2003; Paris, 2000). Lastly, the sample size of participants in this

study is relatively small, which may have contributed to the lack of significance of the examined hypotheses.

Data collection from two universities may be beneficial in attempting to capture a more representative and large sample of participants. However, this can be a disadvantage, although significant differences did not exist between the two universities regarding the outcome of the analyses. The two universities differ, even though they are both large, urban universities. A majority of CSU students are commuters, and WMU possess more students residing on campus. Additionally, CSU and WMU are located in different states. Differences in perspectives and worldviews between the two universities may exist. Furthermore, differences existed on demographic information between the CSU and WMU, although there were not differences in household income, trauma exposure, and cervical cancer screening adherence. These differences may have had a masked effect on the data.

Prior studies may have obtained a more representative sample of participants of the general population, causing the findings from the current study to be skewed toward a college student population. Furthermore, study designs and statistical techniques chosen to examine the hypotheses differ across studies. In addition, the noted limitations in methodological techniques and assessment approaches used in this study may have led to results that differ from the current literature that supports interpersonal trauma as a barrier to cervical cancer screening.

#### **4.4 Future Direction of Research**

Future studies attempting to examine the impact of trauma on cervical cancer screening adherence should move toward replication of prior studies and strive for

representative samples corresponding to the general population. Additionally, future studies should consider examining target populations that are thought to be less likely to attend routine cervical cancer screenings (see Ackerson & Gretebeck, 2007 and ACS, 2006). The results from various studies are hard to equate due to the different goals and measures used to assess the association between trauma and cervical cancer screening attendance. Consistency of assessment instruments of future studies might help build significant support for or against interpersonal trauma as a barrier to cervical cancer screening. Furthermore, it is important to address potential mediating factors that may exist between trauma and cervical cancer screening adherence.

Future studies may benefit from focusing on specific traumatic events versus the broad trauma types analyzed in this study. Specific interpersonal traumatic events may be more related to Pap smear adherence than others. For example, childhood sexual abuse may be a specific traumatic barrier to cervical cancer screening based on the current literature, whereas sexual assault in adulthood has generated mixed findings (Farley et al., 2002; Leeners et al., 2007; Olesen et al., 2012). Specific events such as rape through vaginal penetration, unwanted sexual fondling, and physical assault by a known perpetrator may give insight into which events are most likely to lead to cervical cancer screening nonattendance.

In addition, as previously mentioned, the chronological trajectory of trauma exposure, cervical cancer screening discomfort, and adherence to the procedure needs to be examined through longitudinal design. There may be multiple pathways leading to nonattendance to cervical cancer screening, including combinations of negative experiences during the procedure paired with later trauma exposure leading to future



nonattendance, and trauma exposure combined with later negative experiences during the screening resulting in nonattendance. Examining the various barrier pathways to cervical cancer screening that may include specific traumatic events is essential in future studies assessing the relationship between screening attendance and trauma.

#### **4.5 Implications**

Although preventable, cervical cancer remains a significant cause of death for women in the United States and worldwide (CDC, 2013). In order to promote and increase cervical cancer screening attendance, identifying a comprehensive model of the factors that serve as barriers to women's attendance to cervical cancer screening is essential. Although this study yielded insignificant results to the initial hypotheses, previous studies demonstrate that trauma exposure, especially sexual assault, may have more of a relationship with negative cervical experiences during the cervical cancer screening procedure than on attendance, which may indirectly lead to future nonattendance to routine screening. (Cadman et al., 2012; Farley, 2002; Hilden et al. 2003; Leeners et al., 2007; Olesen et al., 2012; Robohm & Bottenheim, 1996; Smith & Smith, 1999; Weitlauf et al., 2008; Weitlauf et al., 2010). Although the data concerning interpersonal trauma as a barrier to adherence to routine cervical cancer screening is mixed, it appears that the positive association between interpersonal trauma and negative experiences during screening is well supported, especially relating to sexual assault. Therefore, it is imperative for healthcare providers to be aware of the potential impact interpersonal trauma can have on a woman's perception and reaction to the cervical cancer screening procedure.

Due to evidence accumulating toward numerous barriers to cervical cancer screening and the role negative screening experience and interpersonal trauma exposure may have on the sensitive procedure, it is important to remember that the literature has identified lack of sensitivity, effective communication, and transmission of information about the procedure from the healthcare provider performing the Pap smear to be issues relating to provider distrust and possibly future screening nonattendance (Ackerson, 2012; Cadman et al., 2012; Robohm & Buttenheim, 1996). The creation of a healthy, trusting healthcare provider and patient alliances, involving sensitivity, communication during the procedure, and providing information about the purpose and the progression of procedure may lead to a positive screening experience and future screening attendance (Ackerson, 2012; Cadman et al., 2012; Robohm & Buttenheim, 1996). Healthcare providers should ask patients about their trauma histories, especially sexual assault, and its impact on cervical cancer screening adherence and psychological well-being, as well as assess for a patient's level of comfort while performing the Pap smear. Moreover, addressing the barriers to cervical cancer screening individually with women, transmitting information to the general public about the importance of screening, educating providers, and implementing programs to help increase screening attendance may help to prevent or treat cervical cancer screening ultimately saving the lives of women.

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## APPENDIX

## APPENDIX A

### **Traumatic Stress Schedule** (Norris, 1990)

Directions: We are interested in learning about any traumatic events you may have experienced during your lifetime.

1) Did anyone ever take something from you by force or threat of force, such as in a robbery, mugging, or hold up?

- How many times has this happened to you?
- How old were you the first time this happened?
- On a scale from 1 (Not at all) to 7 (Extremely), to what extent did you fear for your life during this event?
- To what extent were you physically injured during the event?
- To what extent were you distressed by the event?

2) Did anyone ever beat you up or attack you?

- How many times has this happened to you?
- How old were you the first time this happened?
- On a scale from 1 (Not at all) to 7 (Extremely), to what extent did you fear for your life during this event?
- To what extent were you physically injured during the event?
- To what extent were you distressed by the event?
- Who did this to you?
- If you selected "Family Member" in the previous question, please describe their relationship to you.

3) Did anyone ever make you have sex by using force or threatening to harm you? This includes any type of unwanted sexual activity.

- How many times has this happened to you?
- How old were you the first time this happened?
- On a scale from 1 to 7, to what extent did you fear for your life during this event?
- To what extent were you physically injured during the event?
- To what extent were you distressed by the event?
- Who did this to you?
- If you selected "Family Member" in the previous question, please describe their relationship to you.

4) Did a close friend or family member ever die because of an accident, homicide, or suicide?

- How many times has this happened to you?
- How old were you the first time this happened?
- On a scale from 1 to 7, to what extent did you fear for your life during this event?
- To what extent were you physically injured during the event?
- To what extent were you distressed by the event?

- 5) Did you ever suffer injury or property damage because of fire?
- How many times has this happened to you?
  - How old were you the first time this happened?
  - On a scale from 1 to 7, to what extent did you fear for your life during this event?
  - To what extent were you physically injured during the event?
  - To what extent were you distressed by the event?
- 6) Were you ever in a motor vehicle accident serious enough to cause injury to one or more people?
- How many times has this happened to you?
  - How old were you the first time this happened?
  - On a scale from 1 to 7, to what extent did you fear for your life during this event?
  - To what extent were you physically injured during the event?
  - To what extent were you distressed by the event?
- 7) Have you ever seen someone seriously injured or killed?
- How many times has this happened to you?
  - How old were you the first time this happened?
  - On a scale from 1 to 7, to what extent did you fear for your life during this event?
  - To what extent were you physically injured during the event?
  - To what extent were you distressed by the event?
- 8) Have you ever suffered serious physical injury as a result of a non-motor vehicle related accident?
- How many times has this happened to you?
  - How old were you the first time this happened?
  - On a scale from 1 to 7, to what extent did you fear for your life during this event?
  - To what extent were you physically injured during the event?
  - To what extent were you distressed by the event?
- 9) Did you ever have some other terrifying or shocking experience that is not covered above?
- If so, please describe briefly what happened:
  - How many times has this happened to you?
  - How old were you the first time this happened?
  - On a scale from 1 to 7, to what extent did you fear for your life during this event?
  - To what extent were you physically injured during the event?
  - To what extent were you distressed by the event?

## APPENDIX B

### **Posttraumatic Stress Disorder Symptom Scale- Self Report Version (PSS-SR)** (Foa et al., 1993)

Directions: Please answer the following questions according to what has happened during the past 2 weeks using the 0-3 scale below.

0 = Not at all

1 = Once per week / a little bit / once in a while

2 = 2 to 4 times per week / somewhat / half the time

3 = 5 or more times per week / very much / always

1. In the past 2 weeks, have you had upsetting thoughts or images about the trauma that came into your head when you didn't want them to?
2. In the past 2 weeks, have you been having bad dreams or nightmares about the trauma?
3. In the past 2 weeks, have you had the experience of reliving the trauma, acting or feeling as if it were happening again?
4. In the past 2 weeks, have you been very **EMOTIONALLY** upset when reminded of the trauma (includes becoming very scared, angry, sad, etc.)?
5. In the past 2 weeks, have you been having **PHYSICAL** reactions (for example, break out in a sweat, heart beats fast) when reminded of the trauma?
6. In the past 2 weeks, have you been trying not to think about or have feelings associated with the trauma?
7. In the past 2 weeks, have you been making efforts to avoid activities, situations, or places that remind you of the trauma?
8. In the past 2 weeks, are there any important parts about the trauma that you still cannot remember?
9. In the past 2 weeks, have you found that you are not interested in things you used to enjoy doing?
10. In the past 2 weeks, have you felt distant or cut off from others around you?
11. In the past 2 weeks, have you felt emotionally numb (for example, feel sad but can't cry, unable to have loving feelings)?
12. In the past 2 weeks, have you felt that any future plans or hopes have changed because of the trauma (for example, will have no career, marriage, children, or long life)?  
**DO NOT INCLUDE MOVING.**
13. In the past 2 weeks, have you been having problems falling or staying asleep?
14. In the past 2 weeks, have you been more irritable or having outburst of anger?
15. In the past 2 weeks, have you been having more difficulty concentrating (for example, drift in and out of conversations, lose track of story on television, difficulty in remembering what you have read)?
16. In the past 2 weeks, have you been overly alert (for example, checking to see who is around you, uncomfortable with your back to a door, etc.)?
17. In the past 2 weeks, have you been jumpier, more easily startled (for example, when someone walks up behind you)?

## APPENDIX C

### **Pap Smear Beliefs Questionnaire (PSBQ)** (Ackerson, 2014)

Directions: We are very interested in what women think about health-related behaviors. We are especially interested in what women think about the gynecological exam (including a Pap smear and pelvic) and cervical cancer. Please read and answer each of the following questions, responding with the answer that best describes your thoughts or feelings.

Strongly Disagree (1)

Disagree (2)

Neutral (3)

Agree (4)

Strongly Agree (5)

1. Having a Pap smear will help me find abnormal cervical cells early.
2. If cervical cancer cells are found early through a Pap smear, my treatment for cervical cancer may not be as bad.
3. Having a Pap smear is the best way for me to find early abnormal cervical cell changes.
4. Having a Pap smear will decrease my chances of dying from cervical cancer.
5. I am afraid to have a Pap smear because I don't understand what will be done.
6. Having a Pap smear is too embarrassing.
7. Having a Pap smear takes too much time.
8. I cannot remember to schedule a Pap smear.
9. I have other problems more important than getting a Pap smear.
10. I am too old to need a routine Pap smear.
11. I am not at risk for cervical cancer because it does not run in my family.
12. If I take good care of my health by exercising and eating right, I am not at risk for cervical cancer.
13. I am not at risk for cervical cancer because I use protection when I have sex.
14. When I am lying on the exam table, I remember bad things that happened to me.
15. I do not trust health care providers.
16. I do not trust health care providers unless I know them.
17. I only want to see female providers.
18. I feel like I am being violated when the provider performs the female exam.
19. I feel like I am being violated when the provider does not explain to me what they are doing during the exam.
20. When the provider performs the female exam it makes me feel on edge.
21. When the provider rushes through the exam it makes me feel on edge.
22. If I get a Pap smear and nothing is found, I do not worry as much about cervical cancer.
23. Having a Pap smear will tell me if I have sexually transmitted diseases.
24. Having a Pap smear evaluates my health.
25. I am afraid to have a Pap smear because I might find out something is wrong.



26. I don't know how to go about getting a Pap smear.
27. People doing Pap smears are rude.
28. It is likely that I will get cervical cancer.
29. My chances of getting cervical cancer in the next few years are great.
30. I feel I will get cervical cancer sometime during my life.
31. My provider asks me personal questions that I don't want to think about.

## APPENDIX D

### Abbreviation Key

Abbreviation	Meaning
PTSD	Posttraumatic stress disorder
MVA	Motor vehicle accident
SUD	Sudden loss of a loved one
TSS	Traumatic Stress Schedule
PSS-SR	Posttraumatic Stress Disorder Symptom Scale- Self Report Version
PSBQ	Pap Smear Beliefs Questionnaire