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Understanding the Disclosure of Sexual Violence among College Women

By

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Doctor of Philosophy

Behavioral Sciences and Health Education

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Understanding the Disclosure of Sexual Violence among College Women

By

Kathleen Helen Krause

B.A., Williams College, 2006

M.Sc. London School of Hygiene and Tropical Medicine, 2009

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An abstract of
A dissertation submitted to the Faculty of the
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Abstract

Understanding the Disclosure of Sexual Violence among College Women
By Kathleen Helen Krause

Background
Surveying students about sexual violence became a national priority in 2014 when President Obama established a White House Task Force to Protect Students from Sexual Assault, which recommended that U.S. colleges and universities administer Campus Climate Surveys to understand the prevalence of sexual assault on campus.

Purpose
We conducted a grey literature systematic review of Campus Climate Survey reports to compare the measurement of *sexual assault* and the degree to which colleges and universities followed Task Force guidance on how to implement these surveys. We operationalized the concept of "social support" to test the effects of mode (face-to-face interview, FTFI, versus computer-assisted self-interview, CASI) of administration and introductory language (supportive, SL, versus neutral, NL) on disclosure of sexual violence among college women. We investigated which factors would result in the highest rate of sexual violence disclosure, how provision of social support in a measurement environment effects reactions to survey participation, and how social support in everyday life affects disclosure via survey and reactions to survey participation.

Findings
One-third of schools reported on all six Task Force recommended survey topic areas. One-quarter of schools used the Task Force definition of sexual assault. In our factorial experiment, more than one in four women disclosed any sexual violence since coming to college. No significant difference in rates of sexual violence disclosure were observed by either mode of administration or introductory language. Survivors reported higher scores of personal benefits and emotional reactions to participation than those who did not disclose. Campus connectedness has a direct effect on most reactions to survey participation and is negatively associated with disclosure. Disclosure mediates the effect of campus connectedness on emotional reactions to survey participation.

Conclusions
The U.S. needs a national mechanism to systematically identify survey reports and to standardize measures and reporting for Campus Climate Surveys. FTFI and CASI elicited similar rates of sexual violence disclosure, suggesting that colleges and universities can conduct robust assessments via CASI. Nonsignificant findings that FTFI elicited more disclosures warrants further study. Colleges and universities need to foster inclusive campus culture for students while implementing Campus Climate Surveys.

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Table of Contents

List of Figures and Tables

Chapter 1:

Introduction

An unprecedented synergy between public health and higher education in the United States began in 2014 when President Obama established the *White House Task Force to Protect Students from Sexual Assault* to "develop a coordinated Federal response to campus rape and sexual assault" (paragraph 3; Office of the Press Secretary, 2014), heralding campus sexual violence prevention as a national priority. Campus rape and sexual assault are common events; population-based prevalence studies have estimated that approximately 20% of women experience attempted or completed rape while in college (Fisher, Cullen, & Turner, 2000; Kilpatrick, Resnick, Ruggiero, Conoscenti, & McCauley, 2007). *Rape* refers to unwanted penetration that is perpetrated through the threat of force, use of force, or incapacitation (Fisher et al., 2000; Kilpatrick et al., 2007). S*exual assault* refers to unwanted sexual contact that is perpetrated through the same means as rape (Kilpatrick et al., 2007). S*exual violence* encompasses rape and sexual assault, along with any unwanted contact or penetration that is perpetrated through coercion (Breiding et al., 2014).

Rape is associated with a multitude of acute and long-term health consequences. Acute health problems include physical injury (Fisher et al., 2000), genital trauma (Campbell, Lichty, Sturza, & Raja, 2006), HIV acquisition (Smith et al., 2005), sexually transmitted infection (Jenny et al., 1990; Workowski & Berman, 2010), and unwanted pregnancy (Holmes, Resnick, Kilpatrick, & Best, 1996). Mental health consequences include posttraumatic stress disorder (PTSD) (Foa, 1997; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Resick, 1993; Ullman & Brecklin, 2003), suicidal thoughts

(Behnken, Le, Temple, & Berenson, 2010), depression (Ullman & Brecklin, 2003), and anxiety (Stein et al., 2004). Adverse behavioral outcomes include sexual risk taking (Howard & Wang, 2005) and binge-drinking (Howard & Wang, 2005). Women who experience more violent rape or sexual assault are more likely to report poor health, low self-esteem, and perceived negative social reputation than those with less severe assaults (Perilloux, Duntley, & Buss, 2012; Zinzow et al., 2011). Among college women, rape and sexual assault are associated with a lower GPA (Jordan, Combs, & Smith, 2014) and loss of future opportunities, including interrupted or changed education plans and diminished work performance (Potter, Howard, Murphy, & Moynihan, 2018).

Campus sexual violence is a public health issue because of its high prevalence and the range and severity of morbidities associated with the violation of bodily autonomy. Campus sexual violence is an education issue because experiencing sexual violence affects students' fulfillment of their education. The Obama administration enacted strategic federal initiatives that affected policy from both health and education perspectives. In this dissertation, we focus on the specific call to measure campus sexual violence. Before discussing the Obama administration's effort to address campus sexual violence, we review the history of policy that has sought to address sexual violence in the U.S. and abroad.

A Brief History of Policy to Measure Sexual Violence

Researchers have sought to establish appropriate methods to measure sexual violence as long as surveillance has been a priority. The foundation for creating policy to end sexual violence, as one form of violence against women, is rooted in World Conference of the International Women's Year in Mexico City in 1975 (United Nations,

1976), and was codified by the Convention on the Elimination of All Forms of Discrimination against Women (United Nations, 1979), which the United Nations (UN) General Assembly adopted in 1979. In 1993, the UN General Assembly passed the Declaration on the Elimination of Violence against Women, which specifically named violence, including sexual violence, as a threat to the human rights of women (United Nations, 1993). This document also called for research and analysis to create prevention strategies and guidelines. A 1994 World Bank Report explicitly outlined violence against women as a public health problem and detailed the nascent research on the experiences of sexual violence among college-aged women from countries throughout the world (Heise, Pitanguy, & Germain, 1994). Also in 1994, U.S. Congress passed the Violence against Women Act (VAWA). This sweeping legislation mandated state reciprocity and enforcement for domestic violence (encompassing physical and sexual violence) laws, created federal crimes to prosecute domestic violence, stalking, and harassment, permitted women who suffer spousal abuse to seek protective orders, and allowed for immigrant women to seek residency independent of their spouses and stay in the country if they faced violence in their home country, and enforced gun control restrictions among men who were charged with domestic violence (Valente, Hart, Zeya, & Malefyt, 2001). VAWA transformed the landscape for the criminal justice system by funding training grants for police, victim advocates, and judges, creating technical proficiency to understand trauma and offer specialized services for this type of crime (Valente et al., 2001). VAWA funding also created of the Rape Prevention Education program at the Center for Disease Control and Prevention (CDC), which provides technical assistance

and training to state departments of public health to implement programs to prevent rape and other forms of sexual violence (Basile, Smith, Breiding, Black, & Mahendra, 2014).

The World Health Organization published a groundbreaking study in 2005. The *WHO Multi-Country Study on Domestic Violence* garnered attention as the first report to establish comparable prevalence estimates of women's experiences of sexual and physical violence, using uniform question wording across seven countries globally; a mix of high, middle, and low income countries. This study found that between 15 and 71% of women experienced sexual or physical violence from a partner in their lifetime, and that in general, up to two-thirds of women did not tell anyone about their abuse (Garcia-Moreno, Jansen, Ellsberg, Heise, & Watts, 2005). Since then, the study and prevention of sexual violence has remained an international priority. Ending sexual violence and other forms of violence against women is integral to achieving the United Nations Sustainable Development Goal 5; to advance gender equality and women's empowerment through the promotion of girls' education (United Nations, 2015).

In 2011, the U.S. Department of Education released a *Dear Colleague* letter, which named sexual violence as a form of sexual harassment and was therefore unlawful within institutions of higher education (Ali, 2011). Previously, the U.S. Congress passed Title IX in 1972 to prohibit discrimination on the basis of sex, which includes sexual harassment, within educational institutions that receive federal funding (The United States Department of Justice, 2016). Although feminist student movements had drawn attention to the problem of gender discrimination and campus rape throughout generations (Gold & Villari, 2000), millennial student activists catalyzed national attention to the widespread problem of campus sexual violence in the recent past (Clark

& Pino, 2016). The 2011 guidance outlined a number of ways in which colleges and universities should enforce Title IX and provided guidance about implementing robust education prevention. In 2013, the Campus Sexual Violence Elimination Act codified much of this guidance into federal law (United States 112th Congress, 2013). In 2014, as mentioned above, President Obama established the *White House Task Force to Protect Students from Sexual Assault*. Its first report, *Not Alone*, recommended that colleges and universities undertake their own Campus Climate Surveys to measure students' experiences of sexual assault, their attitudes about campus administration, and knowledge of education and support resources for survivors (White House Task Force to Protect Students from Sexual Assault, April 2014). Importantly, Campus Climate Surveys were heralded as a way for schools to generate data on their own campuses to craft prevention strategies, and that they should be repeated with regularity in order to measure trends over time to meet the eventual goal of reducing the prevalence of sexual violence.

The Measurement of Campus Sexual Violence

Research on campus sexual violence in the U.S. garnered national attention in 1987 when the first nationally-representative sample of college women found that 27.5% of them had been raped or experienced attempted rape since age 14 (Koss, Gidycz, & Wisniewski, 1987). In 1995, the Centers for Disease Controls and Prevention (CDC), in partnership with the National Institutes of Justice, created and implemented the first National Violence against Women Survey (Dahlberg & Mercy, 2009). Since then, methodological and ethical principles have been developed for research, including using behaviorally-specific language to ask about experiences of sexual violence (Jaquier, Johnson, & Fisher, 2011; Koss, 1993) protecting the confidentiality of the participant,

and referring participants to resources that can assist survivors of violence with health and justice concerns (World Health Organization, 2001). Other disagreements in measurement persist, such as the best way to ask behaviorally-specific questions (Cook, Gidycz, Koss, & Murphy, 2011; Hamby, Poindexter, & GrayLittle, 1996; Krebs, 2014).

Administering the Campus Climate Survey currently is a voluntary activity, but may become mandatory under Title IX in the future (White House Task Force to Protect Students from Sexual Assault, April 2014). Nevertheless, since 2014, colleges and universities across the country have been implementing Campus Climate Surveys. Despite the Task Force guidance, colleges and universities are free to create their own surveys. To date, there has not been a systematic effort to identify and analyze survey methods, approaches to measuring sexual violence, and findings. There is an urgent need and opportunity to establish methodological best practices for sexual violence measurement among college students. More research is needed to establish ethical practices to facilitate disclosure among survivors and to reduce negative reactions to survey participation. In the following sections, we review key literature about methods of sexual violence measurement as well as the ethical considerations of conducting this research.

Face-to-face interview versus computer-assisted self-interview to facilitate disclosure. To date, most surveys of sexual violence among women in the U.S., including college-aged women, have been conducted by telephone (Breiding et al., 2014; Fisher et al., 2000; Kilpatrick et al., 2007; Koss et al., 1987; Tjaden & Thoennes, 2000; Wolitzky-Taylor et al., 2011) with two major internet-based surveys (Krebs et al., 2011; Krebs, Lindquist, Warner, Fisher, & Martin, 2007). Because telephone interviewing has

been shown to result in more satisficing and less trust or confidentiality than face-to-face interviewing (FTFI) (Holbrook, Green, & Krosnick, 2003), and because the Task Force has recommended the use of internet-based surveys, we are interested in the comparison between computer-assisted self-interview (CASI) and FTFI as the optimal modes for sexual violence disclosure.

In favor of FTFI, one study found that the odds of report of prior-year sexual intimate partner violence among African-American women attending Women, Infants, and Children (WIC) clinics were four times that of those screened by CASI (Fincher et al., 2014). In favor of CASI, a meta-analysis of surveys found that self-administered surveys yielded more disclosures of sensitive behaviors, such as number of sexual partners and illicit drug use, than interviews because respondents were embarrassed to report their actions to an interviewer (Tourangeau & Yan, 2007). Another meta-analysis showed less social desirability bias in CASI vs. FTFI (Richman, Kiesler, Weisband, & Drasgow, 1999). However, both of these meta-analyses of sensitive behaviors did not include experiences of sexual violence. A neutral finding suggests that reporting childhood sexual victimization among college students does not differ when comparing pen and paper self-administration, telephone interviewing, and FTFI (Rosenbaum, Rabenhorst, Reddy, Fleming, & Howells, 2006). Because this research covered various sensitive topics (e.g. number of sexual partners, HIV status) in different populations (e.g. adult men and women, high school adolescents), it may not generalize to sexual violence disclosure in a population of college women. Experimental research comparing the effect of these various modes on sexual violence disclosure within a measurement environment will provide evidence for best practice (Hamby, 2014).

Of note, the global and domestic literature on intimate partner and sexual violence identify that "underreporting of violence…is widely considered to be a much more common threat to validity," (page 2; Ellsberg, Heise, Pena, Agurto, & Winkvist, 2001) than over-reporting, or fabricated reports, which are considered rare (Haj-Yahia, 2000; Hamby et al., 1996; Koss, 1993). The threat to validity of underreporting is corroborated in other studies (Andersson et al., 2009; Jewkes, Watts, Abrahams, Penn-Kekana, & Garcia-Moreno, 2000; M. D. Smith, 1994) and in an ethical and methodological report on researching violence against women from the WHO (World Health Organization, 2001). These findings inform our focus on facilitating disclosure, as well as underscore its importance.

Supportive introductory language. A dearth of studies investigate the effect of supportive introductory language on the disclosure of sensitive behavior (Tourangeau & Yan, 2007). An example of 'forgiving' introductory language is stating "It is natural for people who date to become sexual partners" in the preamble to asking questions related to sexual behavior (Tourangeau & Smith, 1996). This study found that the effect of forgiving introductory language on disclosure was equivocal. However, a different study that used forgiving introductory language resulted in more disclosures of sensitive behaviors among adolescents and young adults compared to adults over the age of 25 years (Peter & Valkenburg, 2011). Interestingly, supportive language has been found to increase disclosure of sexual violence among men but not women (Catania, Binson, Canchola, Pollack, & Hauck, 1996).

There is a history of using supportive introductory language among some, but not all, sexual violence surveys. For example, the World Health Organization used this

language as the introduction to their survey during the informed consent process [bold emphasis mine]:

> **I want to assure you that all of your answers will be kept strictly secret.** I will not keep a record of your name or address. **You have the right to stop the interview at any time, or to skip any questions that you don't want to answer. There are no right or wrong answers. Some of the topics may be difficult to discuss, but many women have found it useful to have the opportunity to talk. Your participation is completely voluntary but your experiences could be very helpful to other women in [country].** Do you have any questions?
>
> As cited on pg. 37, Ellsberg, 2005

The Centers for Disease Control and Prevention's *National Intimate Partner and Sexual Violence Survey* using supportive language to introduce questions about sexual violence:

> Women and men may experience unwanted and uninvited sexual situations by strangers or people they know well, such as a romantic or sexual partner, friend, teacher, coworker, supervisor, or family member. Your answers will help us learn how often these things happen**. Some of the language we use is explicit, but it is important that I ask the questions this way so that you are clear about what I mean. The questions we ask are detailed and some people may find them upsetting. The information you are providing will be kept private. You can skip questions you don't want to answer and you can stop at any time.**

And when asking about incapacitation,

> Sometimes sex happens when a person is unable to consent to it or stop it from happening because they were drunk, high, drugged, or passed out from alcohol, drugs, or medications. This can include times when they voluntarily consumed alcohol or drugs or they were given drugs or alcohol without their knowledge or consent. **Please remember that even if someone uses alcohol or drugs, what happens to them is not their fault.**
>
> As cited on pg. 173, Krebs, 2014

In the Campus Sexual Assault Study, funded by the Bureau of Justice Statistics, introduction the questions about sexual assault does not provide supportive language. It provides instructions about how to answer the question and nothing else.

> This section of the interview asks about nonconsensual or unwanted sexual contact you may have experienced. When you are asked about whether something happened since you began college, please think about what has happened since you entered any college or university. The person with whom you had the unwanted sexual contact could have been a stranger or someone you know, such as a family member or someone you were dating or going out with.
>
> Page A-1, Krebs et al, 2007

And when asking about incapacitation,

> The next set of questions ask about your experiences with unwanted sexual contact while you were unable to provide consent or stop what was happening because you were passed out, drugged, drunk, incapacitated, or asleep. These situations might include times that you voluntarily consumed alcohol or drugs and times that you were given drugs without your knowledge or consent.
>
> Page A-2, Krebs et al, 2007

The Task Force advised schools to provide information on the goals of the Campus Climate Survey and emphasize the confidentiality of student responses on the first page of the Campus Climate Survey but did not provide guidance about how to introduce the sexual violence questions (White House Task Force to Protect Students from Sexual Assault, April 2014). It is unknown whether this language is enough to encourage a supportive environment in which to ask questions about sexual violence.

Reactions to Participation in Surveys about Violence

Reactions to participating in violence research vary widely from positive to negative, but we do not know *what* aspects of the measurement environment influence these reactions, or *how*. There are not many studies that empirically assess reactions to participation in surveys about sexual violence among college students. However, a pattern of both positive and negative reactions to disclosure of trauma via survey is evident in the available literature. One systematic review of surveys among adults, including undergraduate students, on interpersonal violence experienced in throughout the life course also asked about reactions to survey participation (McClinton Appollis, Lund, de Vries, & Mathews, 2015). In the majority (95%) of studies, respondents reported more benefits to survey participation than harms (McClinton Appollis et al., 2015). A second systematic review, which examined studies about trauma (including research where participants disclosed experiences of violence throughout the life course, psychiatric symptoms, exposure to war, terror, accidents, and natural disasters) found that participants do experience low-level distress as a result of participation, particularly participants with pre-existing PTSD (Jaffe, DiLillo, Hoffman, Haikalis, & Dykstra, 2015). However, the review also found that most participants, even those with PTSD, believed that participating in the research was a positive experience and did not regret participating.

Being a survivor could influence satisfaction with survey participation; one study found that female survivors of sexual violence were more likely to report positive reactions to survey participation than women without an abuse history (Edwards, Kearns, Calhoun, & Gidycz, 2009). Other studies of female survivors show that most have a positive reaction to study participation, but under the right conditions: less than 5% of

survivors reported that participating in feminist-informed qualitative interviews was a negative experience, while 76% reported that the interview was primarily a positive experience (Campbell, Adams, Wasco, Ahrens, & Sefl, 2010). In the *WHO Multi-Country Study on Women's Health and Domestic Violence,* local women who were trained in sexual violence interviewing techniques obtained a significantly higher disclosure rate of violence and greater satisfaction among respondents than professional interviewers (Jansen, Watts, Ellsberg, Heise, & Garcia-Moreno, 2004). Therefore, systematically assigning different methodological approaches to measure sexual violence should help illuminate what characteristics of the measurement environment affect respondent satisfaction with survey participation.

Survivor Disclosure Behavior and Health

It is well-established empirically that sexual violence disclosure is related to health outcomes. In everyday life, a negative reaction to rape disclosure from a peer is a predictor of greater PTSD in the survivor (Ullman & Filipas, 2001; Ullman & Peter-Hagene, 2014) and is associated with problem drinking (Ullman, Starzynski, Long, Mason, & Long, 2008). Data also suggest that the type of reaction received following a disclosure is associated with re-victimization: survivors who are blamed and receive less informational and emotional support are more likely to experience sexual violence again (Mason, Ullman, Long, Long, & Srarzynski, 2009). Disclosure is not a one-time event, as survivors must newly disclose to each individual with whom they wish to share their experience. It is common for survivors who receive a negative reaction during their first disclosure to stop disclosing (Ahrens, 2006). But the act of disclosure is important: survivors who do not disclose, report higher levels of depression and PTSD compared to

those who do disclose (Ahrens, Stansell, & Jennings, 2010). When survivors receive positive reactions to disclosure, such as receiving informational support, they are not as likely to experience PTSD (Glass, Perrin, Campbell, & Soeken, 2007; Ullman & Peter-Hagene, 2014). When their disclosure is met with support, survivors feel better (Ahrens, Campbell, Ternier-Thames, Wasco, & Sefl, 2007).

Gaps and Limitations of Current Research

Campus Climate Surveys represent a substantial change to the way that colleges and universities approach campus sexual violence and response, yet we know very little about the data that they are producing. Many colleges and universities have made their survey reports publically available on their websites, and a growing body of literature uses Campus Climate Survey data to publish in peer-review journals (de Heer & Jones, 2017; Hoxmeier, 2017; McMahon & Stepleton, 2018); however, no systematic effort has been undertaken to identify reports and synthesize findings. The field of sexual violence research lacks experimental studies that investigate which measurement features facilitate disclosure (Hamby, 2014). The field also lacks experimental studies that investigate how different methodological approaches affect sexual violence disclosure and the resulting impact that these approaches have on survivors' reactions to survey participation.

Aims of this Research

To collect accurate data on sexual violence, we need to ensure that survivors disclose their experiences. About two-thirds of college women who have been assaulted tell someone about their sexual assault (Fisher et al., 2000; Krebs et al., 2007), and 95% of those who disclose do so to a female peer (Orchowski & Gidycz, 2012). However, formal report of sexual violence to administrators or police is low, at 5% to 12% (Fisher,

Daigle, Cullen, & Turner, 2003; Kilpatrick et al., 2007; Koss et al., 1987; Wolitzky-Taylor et al., 2011). These findings suggest that the Campus Climate Survey needs to mimic a supportive environment, characteristic of informal disclosure, to avoid false negatives, nonresponse bias, and negative reactions to survey participation.

The three aims outlined below are linked by the desire to advance the science of Campus Climate Surveys; understand how sexual assault is being measured, and then use best practices and ethical engagement to understand disclosure via survey and reactions to research participation. When it comes to sexual violence measurement,

Aim 1. Conduct a grey literature systematic review of Campus Climate Surveys that were implemented on U.S. college and university campuses in student populations to (1) compare the measurement of *sexual assault* and (2) assess the degree to which colleges and universities followed White House Task Force guidance on how to implement these surveys, evaluating survey methodology and topics included in the survey reports.

Aim 2. Conduct a randomized 2x2 factorial survey experiment, varying mode of administration (FTFI vs. CASI) and introductory language (supportive vs. neutral) to understand factors associated with disclosure among college women. We will test the theoretically-informed hypothesis:

> H_1: Provision of social support in measurement (via FTFI or supportive introductory language) is associated with more disclosures of sexual violence compared to a neutral environment (provided via CASI or neutral language).

Aim 3. Examine how social support in measurement (3a), and in everyday life (3b), affects reactions to survey participation using the data from the factorial survey experiment.

Aim 3a: Examine how social support in measurement affects reactions to survey participation.

H_1: Among survivors, provision of social support in measurement is associated with less negative reactions to survey participation compared to a neutral environment.

H_2: Among survivors, provision of social support in measurement is associated with positive reactions to survey participation compared to a neutral environment.

Aim 3b: Examine how social support in everyday life influences the disclosure of sexual violence and reactions to survey participation using structural equation modeling.

H_1: Social support in everyday life is positively associated with disclosure via survey.

H_2: Social support in everyday life negatively associated with negative reactions to survey participation and positively associated with positive reactions to survey participation.

H_3: Disclosure will mediate the influence of social support in everyday life and reactions to survey participation.

Expected Contribution of the Research Aims

This research will make a timely and novel contribution to the field of sexual violence measurement, informing best practice for data collection in the Campus Climate Surveys. Sexual violence measurement of sexual violence has been highlighted as a methodological challenge within criminological research for the past 15 years, both in the general population (Pepper & Petire, 2000) and on college campuses (Fisher, Daigle, & Cullen, 2010). Experts have called for new methodologies to improve accuracy of measurement (Johnson, Fisher, & Jaquier, 2015).

The survey experiment is the first to operationalize and to test systematically the provision of social support within a measurement environment. The factorial design tests two forms of social support in measurement, either or both of which could be implemented if proven to facilitate disclosure and/or to reduce survivors' negative reactions to survey participation. Given the immediate and long-term mental health benefits associated with a sexual violence disclosure that is met with social support, this proposal offers a significant innovation to sexual violence measurement. Conceptually, this study unites the literature on best practice methodology from research within the U.S. and in low- and middle-income countries (Campbell, Adams, Wasco, Ahrens, & Sefl, 2009; Cook et al., 2011; Fincher et al., 2014; Fisher, 2009; Krebs, 2014; Schuler, Lenzi, & Yount, 2011; World Health Organization, 2001; Yount, Halim, Schuler, & Head, 2013) by testing FTFI as ethical best practice. Testing the proposed theoretically-based hypotheses via experimental design will advance the field of sexual violence measurement by establishing an evidence base founded upon causal inference (Shadish, Cook, & Campbell, 2002).

This dissertation investigates how sexual violence is measured in Campus Climate Surveys. By achieving these three aims, the dissertation should make a unique contribution to understanding how sexual violence has been measured on Campus Climate Surveys and methodological approaches that facilitate disclosure via survey for survivors.

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Chapter 2:

Measuring campus sexual assault and culture: A systematic review of Campus Climate Surveys

The Obama administration made ending sexual assault in higher education a national priority and convened an expert task force in 2014 to provide guidance to achieve this aim. The first report from the *White House Task Force to Protect Students from Sexual Assault* outlined goals for a shared agenda between the federal government and institutes of higher education; the first was to measure the scope of sexual assault on campus. In our study, we applied systematic review methodology to the grey literature of Campus Climate Survey reports. Grey literature includes technical and annual reports, conference abstracts, and generally refers to documents that are not published through peer-reviewed journals or books (Higgins & Green, 2011). We provide an overview and analysis of Campus Climate Survey reports to offer insight into what knowledge we are gaining about campus sexual assault and consider opportunities for improvement.

The Task Force highlighted Campus Climate Surveys as the tool by which colleges and universities could determine the extent of sexual assault on their campuses and serve as the initial step in prevention planning. The Task Force provided colleges and universities with a toolkit for how to conduct a Campus Climate Survey that included advice on survey design and implementation, as well as an example survey (White House Task Force to Protect Students from Sexual Assault, 2014). Campus Climate Surveys measure not only sexual assault prevalence, but also meaningful details about 'climate,' including perceptions of campus leadership, other students' attitudes about sexual assault, and knowledge of sexual misconduct policy and campus resources for prevention and

response. Climate measures provide insight into the context in which sexual assault occurs. These surveys have been implemented within colleges and universities across the country, and shape our knowledge about sexual assault on campus. The survey included six main topic areas: experiences of sexual assault, contextual (follow-up) details about the assault, survivors' experiences with disclosure and reporting, perceptions of campus climate about sexual assault, knowledge of campus policies and resources, and as optional, experiences of intimate partner violence.

The prioritization to study sexual assault on each campus is warranted. During their time in college, 20% of women are sexually assaulted (Fisher et al., 2000; Kilpatrick et al., 2007). This estimate derives from two nationally-representative surveys designed to measure sexual assault among college women, although other studies have found a range of similar estimates (Banyard et al., 2007; Krebs et al., 2011; Krebs et al., 2007; Nasta et al., 2005). Although nationally-representative data for other genders are lacking, one study estimated that 6% of men and 24% of transgender or gender nonconforming individuals experience sexual assault while in college (Cantor et al., 2015). Survivors of sexual assault face many adverse health outcomes, such as posttraumatic stress disorder (Foa, 1997; Kessler et al., 1995; Resick, 1993; Ullman & Brecklin, 2003), suicidality (Behnken et al., 2010), binge-drinking (Howard & Wang, 2005), sexual risk taking (Howard & Wang, 2005), and an increased risk for future sexual assault (Campbell, Sefl, & Ahrens, 2004). Importantly for students, women who are sexually assaulted in college subsequently have poorer academic performances (Jordan et al., 2014).

Sexual Violence Surveillance and Measurement

With sustained implementation, Campus Climate Surveys will function as a campus-level surveillance mechanism for sexual assault. The Centers for Disease Control and Prevention (CDC) (Breiding et al., 2014) and the Bureau of Justice Statistics (BJS) (Krebs et al., 2007; Sinozich & Langton, 2014) conduct surveillance research on sexual assault, representing the disciplines of public health and criminology, respectively. These two disciplines have overlapping yet distinct goals for surveillance. Both systematically collect, analyze, and disseminate data to inform policy. Public health focuses on health-related events and uses surveillance to promote health through the reduction of morbidity and mortality (Basile et al., 2014); whereas, criminology uses surveillance to assist with crime prevention and to secure a fair distribution of justice (Bureau of Justice Statistics, 2017). Extant literature outlines the history and evolution of sexual assault surveillance and measurement in the US (Dahlberg & Mercy, 2009; Jaquier et al., 2011; Johnson et al., 2015; Koss, 1993).

The framing of sexual assault matters because its definition determines what is measured and which corresponding prevention and response mechanisms are implemented. For the purposes of collecting campus sexual assault data, BJS defines *sexual assault* as encompassing both *rape*, the unwanted and nonconsensual penetration achieved through use or threat of force, or incapacitation; and *sexual battery*, defined as unwanted and nonconsensual forced sexual touching, including attempted rape (Krebs, Lindquist, Berzofsky, Shook-Sa, & Peterson, 2016). The CDC defines *sexual violence* as "a sexual act that is committed or attempted by another person without freely given consent of the victim or against someone who is unable to consent or refuse" (page 11; Basile et al., 2014). In the National Intimate Partner and Sexual Violence Survey, the

CDC operationalizes *sexual violence* as *rape*; *attempted rape*; *being made to penetrate someone else*; *sexual coercion,* defined as unwanted penetration committed through verbal pressure; *unwanted sexual contact*, defined as unwanted touching of a sexual nature that does not include penetration; and *non-contact unwanted sexual experiences*, defined as unwanted verbal comments or other non-contact behavior of a sexual nature, which correspond to sexual harassment (Black et al., 2011). Notably, the CDC does not use the term *sexual assault*; however, it does use the term *contact sexual violence* to refer to rape and attempted rape, being made to penetrate, sexual coercion, and unwanted sexual contact (Black et al., 2011). For comparability between the BJS and CDC in this article, we operationalize *contact sexual violence* as the CDC version of '*sexual assault*.'

The Task Force recognized the different approaches used to measure sexual assault, but ultimately used the BJS approach in the survey for reasons that were not outlined (White House Task Force to Protect Students from Sexual Assault, 2014). A helpful way to classify and to compare the Task Force and CDC definitions of sexual assault is to distill these definitions into their main elements. Researchers conceptualize sexual assault through *acts*, which describe what happened in the sexual assault (e.g., penetration, touch) and *tactics*, which describes how the assault happened (e.g., force, incapacitation) (Cook et al., 2011). We mapped the Task Force and CDC definitions of sexual assault onto a matrix of acts and tactics (Figure 1), which demonstrates that the Task Force definition and the CDC definition primarily overlap. Notably, the CDC and Task Force definitions of *rape* are aligned (Black et al., 2011; Krebs et al., 2016). The main differences in the operationalization of sexual assault is that the CDC definition includes *sexual coercion* and *being made to penetrate*, which the Task Force excludes.

Audiences Interested in Sexual Assault Surveillance at the Campus Level

From a practitioner's perspective, the potential to collect campus-specific data about sexual assault prevalence and other details about how students perceive and interface with the campus community presents an unprecedented opportunity to make evidence-based decisions about prevention programming and university policy. The CDC has recognized that using evidence-based approaches to creating prevention programming is essential and highlighted climate surveys as one way for colleges and universities to gather data to assist in their decisions (Dills, Fowler, & Payne, 2016).

Global efforts are increasing to measure and prevent sexual assault and harassment at universities. Notable recent contributions have been made from high-income countries including Australia (Australian Human Rights Commission, 2017), the United Kingdom (Goldhill & Bingham, 2015) and Canada (Senn et al., 2014, 2015). Efforts to establish prevalence and to intervene to prevent sexual assault on campus also is occurring in low- and middle-income countries, such as Jordan (Essald, Jo Clark, Spencer, Dababneh, & Hourani, 2017), Kyrgyzstan (Kim, Karlmova, & Karlorls, 2017), Swaziland (Fielding-Miller et al., 2017) and Vietnam (Yount, 2017). This interest in low and middle income countries coincides with achieving Sustainable Development Goal 5; to advance gender equality and to empower women and girls (United Nations, 2015), primarily through promoting education. Given the global attention devoted to understanding the scope of sexual assault on campus and preventing its occurrence, this review is needed to provide an empirical overview of the state of Campus Climate Surveys. Although the initiative encouraging all colleges and universities to measure sexual assault on campus is unique to the US, the findings, utility, and ability to create

change can serve as one model for other countries to consider as they investigate this issue.

Objective

This paper provides the first systematic review of Campus Climate Surveys and in-depth analysis of survey methods. Our objective was to conduct a systematic review of Campus Climate Surveys about sexual assault that were implemented on US college and university campuses in student populations to (1) compare the measurement of *sexual assault* and (2) assess the degree to which colleges and universities followed White House Task Force guidance on how to implement these surveys, evaluating survey methodology and topics included in the survey reports.

Methods

Before conducting the review, the study team created a review protocol that followed PRISMA guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009). We collected data from reports on Campus Climate Surveys about sexual assault that had been implemented on US college and university campuses (hereafter referred to as 'schools') among students since the Task Force report was released in April 2014 until September 2016.

Search and Study Selection

We identified Campus Climate Survey reports through internet searches. Campus Climate Survey reports commonly have been made publically available on school websites from the office of the provost, president, Title IX, or sexual assault prevention/ response. Therefore, Google search and Bing search were used in the primary strategy to identify reports. Google and Bing both crawl the internet to find the best results for a

specific search, although their optimization strategies differ in keys ways (Dholakiya, 2015), which provided variety by completing the search in each engine. Both Google and Bing use algorithms to produce the most relevant results for a given search and user, such as by factoring in browsing history (Google, 2015; Microsoft, 2016). To enhance replicability, we cleared the cache and cookies of the Firefox web browser before completing each search. In consultation with a research librarian, the Google search string used was: *("campus climate survey" OR "title IX" OR "sexual violence OR "sexual assault") ~survey filetype:pdf 2013..2030 site:edu*. Of note, we set a time limit in Google search (years 2013- 2030) that was more expansive than our eligibility criteria (April 2014 to September 2016) based on advice from the librarian to yield search results that were as inclusive as possible. The searches were completed on September 15th and 18th, 2016 for Google and Bing, respectively.

Two researchers independently screened the titles and snippets of the search results. Duplicates were identified and removed. At screening, we eliminated records that did not fit our time period of interest or were not Campus Climate Survey reports. Examples of records that we excluded were sexual misconduct or Title IX policies, sexual assault prevention program strategic plans or evaluations, surveys that applied only to faculty and staff, and academic articles about sexual assault that were indexed on an *.edu* site. We included university-specific task force reports and letters to students in addition to survey reports for full-text review since these records may have been the primary mechanism by which schools shared their survey results.

At the eligibility assessment stage, we identified additional duplicate records. Some duplicates could be identified only by conducting a full-text review because the

search results often did not display the full URL of a website, and there were instances when the same report was assigned a different title by the two search engines. After removing duplicates, two researchers independently evaluated the full-text records for eligibility. We included records that shared results from the survey and had a sexual assault prevalence or incidence estimate. We included survey reports as well as slide presentations, and letters from a president or dean, as long as the record included results from the survey. We excluded records that were focused on a specific subpopulation, such as a department, and supplementary material to a survey report that did not include results, such as the survey instrument itself, or a letter announcing that the survey results were available. If a summary report and full-length report were identified for the same institution, we included only the full-length report. All Campus Climate Survey reports that were deemed eligible after the full-text review were included in the qualitative synthesis.

Our secondary search strategy included identifying two higher education consortiums whose member institutions had the option to create and implement the same Campus Climate Survey, and whose efforts were publicized in the media (Kingkade, 2015). We contacted consortium member schools whose reports were not identified through our internet search to ask (1) if their school conducted a survey and (2) if they would be willing to share their results. The same eligibility assessment and process applied to records identified through our secondary search strategy. Screening and eligibility assessments were compared and discordant results were resolved by consensus.

Data Collection

We piloted data extraction forms using the first five reports identified through the primary search strategy and developed the data extraction forms through an iterative process. Two researchers independently duplicated data extraction from 12 reports (11% of the total), which included the first five reports that were used to pilot and refine the data extraction forms, plus seven new reports. Discordant results were resolved by consensus. Two researchers separately extracted data from the remaining Campus Climate Survey reports. We collected data about survey implementation and methods, whether the survey covered the topics outlined in the Task Force survey, the specific questions included within each survey topic, and sexual assault measurement.

Measures

The data items included in survey implementation and methods were: semester/year of survey implementation, who was included in the sample (undergraduates only or both undergraduates and graduates), sampling method (census, convenience, probability), sample size, response rate, administration mode (web, telephone, paper and pencil, face to face), number of questions or average time to complete the survey, what incentives were offered (money, gift card, lottery, along with the amount); whether IRB approval was obtained (yes or no; some schools considered the surveys to be institutional research not needing IRB approval), who created the survey (internal group or external consultant/consortium), and whether the survey instrument was included as part of the report. Any information not provided in the survey report was recorded as "not provided."

The six survey topics recommended by the Task Force included *experiences of sexual assault, the context of sexual assault, experiences of other forms of violence,*

disclosure and reporting, campus climate, and *knowledge of policies and resources*. We collected data to answer the question, "did this survey report include questions about [topic area]?" Response options were *yes* or *no*. This aim allowed us to measure which survey topics were included and prioritized by each school in comparison to the Task Force template.

The Task Force survey suggested questions to include within each topic. We sought to catalogue which questions were included within each topic to compare which questions schools prioritized for inclusion. We determined whether a topic was covered based on the presence of a question within its domain. For example, we indicated that a survey report included the topic *campus climate* if it asked students questions about any of the following: perceptions of the school administration's handling of sexual assault, perceptions of other students' attitudes about sexual assault, personal beliefs about rape, individual intentions or past behavior to intervene as a bystander. The presence of these questions in the survey report were recorded as *yes* or *no*. Answering *yes* to any individual question meant that the corresponding survey topic was included in the survey report. Supplementary Table 1 provides a list of the questions included in each topic.

We largely followed the Task Force survey to guide our criteria for whether a survey report included one of the six recommended topic areas. We diverged from the survey to highlight important details about which questions were included in the survey and how this impacted the resulting data set in the survey reports. One example of where we changed our criteria from the Task Force survey is that the Task Force included questions about intimate partner violence as an optional topic. We decided this topic was not optional and renamed it *other forms of violence*. We collected data on whether the

survey reports contained questions about intimate partner or dating violence. We also collected data on whether survey reports contained questions about stalking because institutes of higher education are required to report the occurrences of any of these forms of violence to the federal government in accordance with the Campus Sexual Violence Elimination Act (United States 112th Congress, 2013). We additionally collected data on whether reports included questions about sexual harassment, which has always been a reportable event under Title IX (The United States Department of Justice, 2016). In piloting our data extraction forms, we found that many schools asked about at least one of these forms of violence in addition to sexual assault.

The Task Force asked that schools measure prevalence or incidence of sexual assault among students. In piloting our data extraction forms, we found that there was little uniformity in how schools measured sexual assault. We used the act/tactic conceptualization of sexual assault to facilitate classification and comparison of definitions. Therefore, we broke up sexual assault into three main acts (sexual touching or contact, attempted penetration, and penetration), and four tactics (lack of consent, use or threat of force, incapacitation, and coercion) (Koss et al., 2007; Testa, Vanzile-Tamsen, Livingston, & Koss, 2004). We also included the act *attempted contact/noncontact sexual experience* because *non-contact sexual experience* is included in the CDC definition of sexual violence (Basile et al., 2014) and some schools included these acts in their operationalization of sexual assault. We used the Task Force survey definition of sexual assault as the primary expert definition by which to compare the sexual assault measure provided in each survey report. We used the CDC approach to sexual assault measurement (Basile et al., 2014) as another expert source by which to

compare survey reports. We also allowed for a *tactic* or an *act* to be unspecified. For example, if a report gave an estimate for *sexual penetration* without reference to a tactic, we counted this description in the cell *penetration/not specified*. The *not specified/ not specified* category was used when survey reports used terminology that neither described an act or a tactic. For example, the term "sexual misconduct" does not provide any detail about what acts or tactics are included and would be counted in the *not specified/not specified* cell.

We mapped each survey report's operationalization of sexual assault into a matrix of acts and tactics. This approach yielded results of the most commonly used acts/tactics combinations used to measure sexual assault. We synthesized how sexual assault is measured across all reports rather than comparing each report's unique sexual assault definition. We also recorded whether the survey used a definition of sexual assault that matched either the Task Force definition, or the CDC definition (response options: yes/no). We recorded the time period reference for measuring sexual assault (since coming to campus, past year, ever, or not provided).

The data we extracted were based off of the information provided in the survey report. Schools may have included more questions in the questionnaire than were presented in their report, and potentially, had data that was not presented in their survey report. As mentioned above, we noted whether the questionnaire was included in the survey report; however, we did not extract information from the survey instrument itself and focused only on information presented in the survey report.

We conducted a qualitative review and did not combine results quantitatively with a summary measure or conduct additional analyses. We did not capture data on the

responses provided within the survey reports nor formally assess for risk of bias in the results within or across studies. Rather, we focused on the methods and measures included in the survey reports.

Results

Our search and identification strategies are displayed in Figure 2. In our primary search, we identified 1,022 records. After removing duplicates, we had 988 records. We screened 988 records by reviewing the title and snippet information, and removed those that did not meet our criteria. We then assessed records for eligibility by opening the link and completing a full-text review, retaining 81 survey reports from 76 schools. We identified another 26 eligible, non-duplicative Campus Climate Survey reports from 25 schools through our secondary search strategy. In total, we identified 107 campus climate survey reports from 101 schools. Some schools implemented more than one survey during the time period of interest, therefore we did not find a one-to-one correspondence between the number of reports and the number of schools.

Table 1 summarizes the implementation characteristics of Campus Climate Surveys. The majority of schools conducted their surveys in the Spring semester of 2015 (62%, n= 66) using a census approach (64%, n=69) among undergraduate and graduate students (67%, n= 72) via a web-based survey (63%, n=67). A majority of schools used an external representative to design and implement the survey (57%, n=61). The most common response rate was between 10% and 19% (27% of survey reports, n= 29) with 80% of survey reports garnering less than a 50% response rate (Supplementary Table 2). The most common survey sample size was between 500 and 999 students (21%, n=23). In the survey reports, a majority of schools did not report the number of questions

included in the survey or the average time to complete the survey, whether incentives were offered and what they were, whether IRB approval was obtained, or include a copy of the survey questionnaire in the same document as the report.

We assessed the fidelity with which each report included the six Task Force recommended survey topics (Table 2). A majority of schools included each topic; however, only about one third of schools (35%, n=37) included every recommended topic in their survey report. A prevalence or incidence estimate of sexual assault was an inclusion criteria for this systematic review, and so 100% of reports included the topic *experiences of sexual assault*. The most commonly reported topics were *campus climate* (92%, n=98), *disclosure and reporting* (86%), and *knowledge of policies and resources* (80%, n=86). Just over half of schools asked details about the *context of sexual assault* itself (60%, n=64). Within the topic of *disclosure and reporting*, there were subtopics about disclosure (informally telling family or friends) and reporting (formal report to campus administration or police); most schools included at least one of these subtopics, although not all schools included questions on each subtopic. Similarly, *knowledge of policies and resources* encompassed questions about policy, resources on campus, and receipt of training. Of these subtopics, receipt of training was most commonly asked about.

There was wide variation in how schools defined sexual assault (Table 3). As mentioned above, we analyzed how sexual assault was described in *reports* rather than *instruments*. The most common act/tactic included in a measure of sexual assault was nonconsensual sexual contact (81%), followed by nonconsensual penetration (78%), forced sexual contact (64%), forced penetration (61%), sexual contact achieved through

incapacitation (59%), penetration achieved through incapacitation (57%), and nonconsensual attempted penetration (50%). All other act/tactic combinations were included in less than half of the definitions. The least commonly included tactic was coercion (27%), and the least commonly included acts were being made to penetrate (22%) and attempted contact (21%). Although the most common acts/tactic combinations fall within the expert Task Force definition of sexual assault, only about one fifth of survey reports (22%) included a definition of sexual assault that matched this expert definition. No survey report matched the CDC definition of sexual assault, however the acts and tactics uniquely included in the CDC definition, such as being made to penetrate and coercion, were used. The majority of schools asked about experiences of sexual assault that had occurred since arriving on campus (71%), as opposed to asking about experiences that had ever occurred, or occurred in the prior year.

Discussion

In our systematic review of grey literature, we used two internet search engines and emailed schools within two higher education consortiums to identify Campus Climate Survey reports. The Task Force provided guidance about key issues for schools to consider regarding survey methodology and logistical implementation. The Task Force stated that "surveys not based on science and best practices may not accurately measure the sexual assault problem at a given school" (White House Task Force to Protect Students from Sexual Assault, 2014). Similarly, the World Health Organization cautions that data on sexual assault should not be collected if ethical and methodological integrity following best practices cannot be met (World Health Organization, 2001). With this charge in mind, we ask: are Campus Climate Surveys being implemented with

methodological and ethical rigor, and what can we do as a community to foster best practices and maximal use of this crucial data?

The majority of schools used a census approach to implement the survey and the majority of schools had a low response rate. Use of the census approach may have been a strategic decision to allow all students to participate in the initial offering of a survey of this kind. In fact, the Task Force recognized that implementing Campus Climate Surveys was one way for schools to display their commitment to address sexual assault (White House Task Force to Protect Students from Sexual Assault, April 2014). Recent research has suggested that this sampling approach, which relies on self-selection, may not produce biased sexual assault estimates (Rosenthal & Freyd, 2018). But now that these first-generation surveys have been implemented, schools should consider developing sampling schemes to ensure that the overall student population as well as key sub-populations are adequately represented, such as LGBTQ students, disabled students which are likely to represent a minority group on campus, as well as students of color on predominantly white campuses (de Heer & Jones, 2017). A sampling approach may also help to mitigate survey fatigue, especially if the Campus Climate Surveys are offered more than once during a student's time at university.

The Campus Climate Survey Validation Study (Krebs et al., 2016) provides detailed guidance about instrument development, sampling methods, and implementation characteristics, such as how the amount for incentive, email invitation greeting, and survey name affect participation. Researchers should build on these data and continue to assess other methodological decisions while continuing to meet ethical obligations. For example, two thirds of survey reports used a web-based survey, although most surveys

about sexual assault among women in the US, including college-aged women, have been conducted by telephone (Breiding et al., 2014; Fisher et al., 2000; Kilpatrick et al., 2007; Koss et al., 1987; Tjaden & Thoennes, 2000; Wolitzky-Taylor et al., 2011) with a few studies using a web-based survey (Krebs et al., 2011; Krebs et al., 2007). Although we have data on administration mode and sensitive research topics, limited research compares administration mode specifically on disclosure of sexual violence among college students (McCallum & Peterson, 2017). Future research should consider how the principles of trauma-informed care (McCauley & Casler, 2015; Substance Abuse and Mental Health Services, 2015) can be applied to develop trauma-informed research methods to collect data for Campus Climate Surveys.

Colleges and universities used varying definitions of sexual assault that often did not match the definitions of sexual assault used by the Task Force or the CDC. This issue also plagues the peer-reviewed literature. A recent systematic review of research on the prevalence of campus sexual assault from 2000 to 2015 focused on peer-reviewed literature and did not include results from Campus Climate Surveys; however, a salient finding was that the measurement of sexual assault varied considerably across studies (Fedina, Holmes, & Backes, 2016). Meta-analyses to estimate pooled prevalence estimates of sexual assault will be difficult to conduct until the measurement and reporting of sexual assault is standardized.

The lack of measurement standardization highlights an important issue: what are the goals for sexual assault measurement in Campus Climate Surveys? Using sexual assault measurement approaches that match a public health definition facilitates linking research on health outcomes and evidence-based prevention interventions. Using a

criminal definition of sexual assault alone may be too narrow for primary prevention efforts (R. Campbell & Townsend, 2011; Dekeseredy & Schwartz, 2011). For example, the CDC website lists evidence-based interventions and promising practices that prevent sexual violence perpetration (Centers for Disease Control and Prevention, 2018). These interventions do not focus on preventing rape alone, but also preventing sexual harassment and promoting an understanding of consent and normative ideas about relationships. It would be helpful to have survey data that includes typologies of violence that can match a criminological definition to inform misconduct policies about retributive responses. Given the debate about how to measure sexual assault, it seems prudent to use the most inclusive measurement approach possible. Within this inclusive measurement approach, each type of act/tactic pairing should be precisely measured so that the paradigmatic definition can be used in its contributions to surveillance, policy, and practice.

We found that a majority of schools reported on each survey topic area, but only one third of reports provided data on all topics. Thus, schools appear to have recognized the importance of the topics recommended by the Task Force, but either selected a subset of topics to include in their own survey or to report on publicly. These findings reveal a lack of standardization in survey design and reporting. Not asking about all recommended survey topics also signals a missed opportunity for prevention and response. For example, if a college does not ask about knowledge of campus resources, the institution will be unable to assess whether students know the options available to them in the aftermath of a sexual assault. Similarly, some schools that used the same

survey instrument did not follow the same reporting format, limiting comparability of the findings across campuses despite having used the same instrument.

Limitations

A master list of schools that have completed a Campus Climate Survey does not exist; therefore, we do not know how many schools have completed a Campus Climate Survey. Identification of the appropriate texts is a known challenge for reviews that include grey literature (Benzies, Premji, Hayden, & Serrett, 2006). Indexing within academic search engines facilitates a comprehensive and systematic search for peer-review articles. We modeled our search strategies on traditional systematic review approaches, but grey literature reviews present a challenge at the study identification stage. Corroborating our approach, a brief report about Campus Climate Surveys that searched for publically available reports between 2015 and 2016 found 105 reports. Its total number of reports is similar to our final number (107), although the brief report did not provide details on the methods to search, screen, and identify the reports it included (Moylan, Hatfieldm, & Randall, 2018). While completing data extraction, we discovered two other consortiums that conducted Campus Climate Surveys that were not included in our secondary search strategy. Therefore, although we have taken a systematic approach to identifying Campus Climate Survey reports, our review may not be representative of all Campus Climate Survey reports.

Research Implications

Campus Climate Surveys provide colleges and universities with detailed data about sexual assault on their own campus, but these surveys have not been used to their full potential. The Task Force report suggests that a single survey would emerge for all

colleges and universities to implement (White House Task Force to Protect Students from Sexual Assault, April 2014). However, in this initial round of surveying, wide variation exists in what schools measured and reported on. A recent inventory of select Campus Climate Survey instruments also catalogued the variation of these instruments (Wood, Sulley, Kammer-Kerwick, Follingstad, & Busch-Armendariz, 2017).

If a core set of standard questions are included in each Campus Climate Survey, these surveys can create a national, publically available surveillance mechanism for tracking campus sexual assault. The core questions would ensure comparable data, and allow colleges and universities to focus questions on key areas within each topic to avoid survey fatigue of participants. The utility of this database is substantial. We propose that a core set of questions, and reporting standards on these items, be developed covering the six Task Force topics. Other researchers have concluded that grey literature could be improved by following established reporting standards (Hopewell, McDonald, Clarke, & Egger, 2004). Of course, following established reporting standards to share results of empirical studies is common practice within the peer-reviewed literature, with the TREND (Des Jarlais, Lyles, Crepaz, & Grp, 2004), CONSORT (Moher, Schulz, Altman, & Grp, 2001) and STROBE guidelines (von Elm et al., 2014). The standardization of Campus Climate Survey measures could also match the outcome measures for intervention research. For example, Campus Climate Surveys could use the same measures about knowledge of policy as interventions that have been designed to educate students about a school's sexual misconduct policy (Potter et al., 2016).A national database from Campus Climate Surveys would allow researchers to combine results from individual students with campus-level factors to inform multilevel prevention strategies

and national policy. A national database with multilevel data would facilitate comparisons among schools implementing different prevention strategies to quickly highlight which interventions are the most successful, and potentially, why. Some researchers already have focused on school administration's approach to campus sexual assault (Amar, Strout, Simpson, Cardiello, & Beckford, 2014; Karjane, Fisher, & Cullen, 2002) and this work can guide the development of campus-level measures. Structural characteristics at the campus, state, or regional level also could be identified that would illustrate how campus and policy-level factors affect individual student experiences of campus sexual assault.

Most studies on campus sexual assault have focused on predominantly white campuses and on heterosexual women (Fedina et al., 2016). By combining Campus Climate Survey reports, the national database would allow researchers to conduct studies of subpopulations where data are sparse, and who may be at greater risk for assault, such as LGBTQ students, students of color, and students with disabilities.

Policy Implications

We recommend that a group of policy makers, students, school administrators, practitioners, and researchers propose core questions to include in surveys, consider the pertinent motivations for measuring sexual assault and suggest a standardized measure, establish reporting standards for sharing Campus Climate Survey results, and suggest creative ways to incentivize schools to adhere to them. This group could decide where and how to manage the database, how to anonymize schools who participate in the national surveillance database, and review applications and grant access to scholars who wish to analyze these data.

A similar mandatory reporting mechanism already exists. The Clery Act requires schools to send their data to a national, publically available database with campus safety and security information (U.S. Department of Education, 2018). A limitation of the Clery database is that its data represent violent crimes reported to school officials, and we know that such reporting is rare (Ahrens et al., 2007; Fisher et al., 2000), which underrepresents the true prevalence of campus sexual assault. The advantage of creating a Campus Climate Survey database is that we would have a more accurate national prevalence estimate of campus sexual assault with data collected from each campus and reported on a regular interval. Our suggestion to create a national, multilevel database on campus sexual assault also could apply internationally. Without a standardized set of measures, reporting practices, and data, the US is missing an opportunity to have a national, evidence-based dialogue about sexual assault and to develop a unified prevention and response strategy to end it.

By leveraging Campus Climate Surveys to guide surveillance on the campus and national level, we can better realize the important work set up by the Task Force and institutes of higher education to achieve the national goal of ending sexual assault on campus.

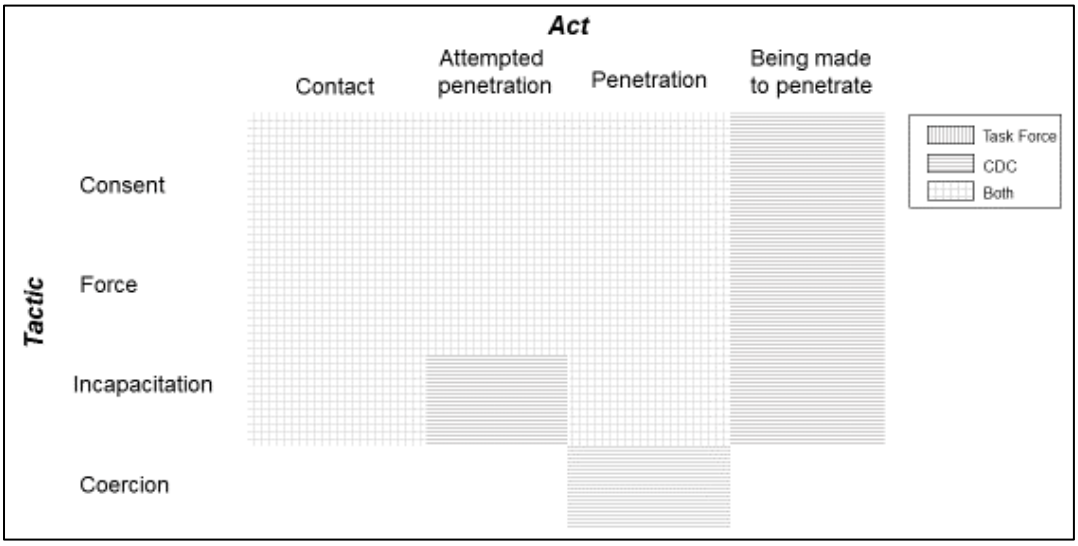

Figure 1. Acts and tactics included in the operationalization of *sexual assault* by Task Force and CDC

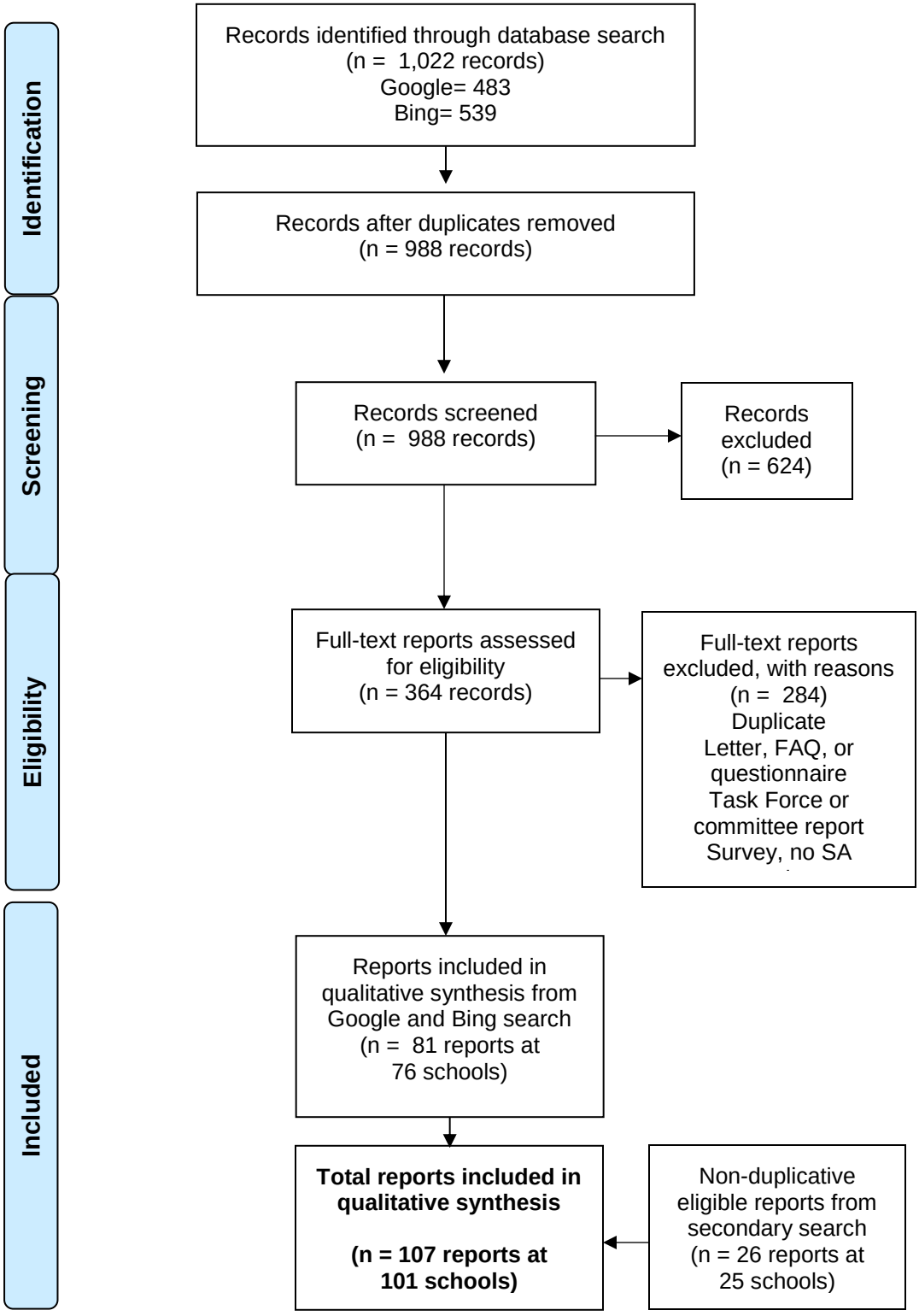

Figure 2. Flow Diagram for the Systematic Review of Campus Climate Surveys, 2014- 2016

Table 1. Campus Climate Survey Implementation Characteristics in the Systematic Review of Campus Climate Surveys, 2014- 2016 (n= 107)

Characteristics	Modal response	%	n
Semester and year	Spring 2015	62%	66
Sample	Undergraduate and graduate	67%	72
Sampling method	Census	64%	69
Response rate*	10- 19%	27%	29
Sample size*	500- 999 students	21%	23
Administration mode	Web	63%	67
Number of questions or Time to complete	Not provided	62%	66
Incentive offered	Not provided	57%	61
IRB approval	Not provided	64%	69
Survey creator	External	57%	61
Instrument included	No	71%	76

Note: *Not provided* is a response option for all categories aside from Instrument included * n= 108 because one report described two surveys

Table 2. Topics Covered in Campus Climate Survey report, based on Task Force Recommendations, in the Systematic Review of Campus Climate Surveys, 2014- 2016

Topic area	**% Included**	**n**
Experiences of SA	100%	107
Campus climate	92%	98
Disclosure and reporting	86%	92
Disclosure	82%	88
Reporting	82%	88
Other forms of Violence	80%	86
Harassment	73%	78
IPV	47%	50
Stalking	46%	49
Knowledge of policies and resources	80%	86
Policies	50%	53
Resources	59%	63
Receipt of training	64%	68
Likelihood to report	10%	11
Context of SA	60%	64
All topic areas included	*35%*	*37*

Note: SA= sexual assault.

Table 3. Operationalization of Sexual Assault in the Systematic Review of Campus Climate Surveys, 2014- 2016

	Act						
Tactic	Attempted contact or noncontact	Contact	Attempted Penetration	Penetration	Being made to penetrate	Not specified	*Total*
No consent	17%	81%	50%	77%	19%	2%	*88%*
Use or threat of force	11%	64%	34%	60%	14%	6%	*72%*
Incapacitation	1%	59%	6%	57%	12%	7%	*69%*
Coercion	3%	23%	4%	20%	8%	3%	*25%*
Not specified	21%	4%	4%	7%	2%	20%	*25%*
Total	*21%*	*90%*	*54%*	*87%*	*22%*	*25%*	

Supplementary material

Supplementary Table 1. Data Collected on the Topics Covered by Survey Reports in the Systematic Review of Campus Climate Surveys, 2014- 2016

Task Force recommended topic	**Qualifying questions**
Experiences of SA	Map SA operationalization onto acts/ tactics matrix
	Does SA operationalization match White House Task Force definition?
	Does SA operationalization match CDC definition?
	Did time period measure *since coming to campus* or *in the past year*?
Context of SA	Perpetrator gender
	Perpetrator relationship to survivor
	Perpetrator affiliation to school
	Location of SA
Other forms of Violence	Sexual harassment
	Stalking
	IPV/ dating violence
Disclosure and reporting of SA	
Disclosure	Told friend or family member about SA
	Reactions from others to survivor's disclosure
	Barriers to disclosure
Reporting	Told Title IX Coordinator/ school representative about SA
	Told an advocate/ counselor about SA
	Told police about SA
	Use of university formal procedures
	Satisfaction with formal procedures
Campus climate	General perceptions of campus climate
	Perceptions of administration in relation to SA
	Perceptions of other students in relation to SA
	Rape myth acceptance
	Bystander intention to intervene
	Bystander intervention behavior
Knowledge of policies and resources	
Policies	Self-reported and assessed knowledge of campus sexual misconduct policy
	Self-reported and assessed knowledge of if sexual misconduct policy exists
Resources	Self-reported and assessed knowledge of Title IX coordinator
	Self-reported and assessed knowledge of advocate/ counselor
	Self-reported and assessed knowledge of how to make a formal report
Receipt of training	Self-report receipt of training on policy, Title IX procedures, or SA prevention
Likelihood to report	If would report if experienced SA

Notes: SA= sexual assault. Aside from the topic *Experiences of SA*, questions were phrased as "Was there a question about _____?" Response options: Yes or No. A survey topic was considered to be included in the survey report if at least one question within a topic was answered with "yes."

Supplementary Table 2. Campus Climate Survey Report Implementation Characteristics with All Response Options in the Systematic Review of Campus Climate Surveys, 2014- 2016 (n= 107)

Characteristics	Response	%	n
Semester and year	Spring 2014	4%	4
	Fall 2014	9%	10
	Spring 2015	62%	66
	Fall 2015	3%	3
	Spring 2016	4%	4
	Not provided^	12%	13
Sample	Undergraduate	20%	21
	Undergraduate and graduate	67%	72
	Not provided	13%	14
Sampling method	Census	64%	69
	Convenience	1%	1
	Probability[1]	7%	8
	Not provided	25%	27
Response rate*	Less than 10%	6%	7
	10- 19%	27%	29
	20-29%	23%	25
	30-39%	15%	16
	40- 49%	8%	9
	50-59%	5%	5
	60% and above	2%	2
	Not provided	14%	15
Sample size*	less than 500	17%	18
	500-999	21%	23
	1000-1499	9%	10
	1500-1999	6%	7
	2000-2499	8%	9
	25000-2999	3%	3
	3000-3499	4%	4
	3500-3999	5%	5
	4000 -4499	6%	6
	4500-4999	5%	5
	5000 or above	10%	11
	Not provided	6%	7
Administration mode	Web	63%	67

	Telephone	0%	0
	Paper and pen[2]	0%	0
	Face-to-face	0%	0
	Not provided	34%	36
Number of questions or Time to complete	Not provided†	62%	66
Incentive offered	Yes	42%	45
	No	1%	1
	Not provided	57%	61
IRB approval	Yes	34%	36
	No	2%	2
	Not provided	64%	69
Survey creator	Internal	29%	31
	External[3]	57%	61
	Not provided	8%	9
Instrument included	Yes	29%	31
	No	71%	76

Note: * n= 108 because one report described implementing two surveys with different sample sizes and response rates. ^An additional 3 reports provided year only. †Wrote-in options accordingly. [1]2 reports split the sample and sampled one-half of students via probability methods and one-half via census approach. [2]4 survey reports used both web and paper and pen options based on student preference. [3]6 survey reports outlined schools using both internal and external resources to create and implement the survey.

Supplementary Table 3A. Questions Covered in Campus Climate Survey Report Topic *Campus Climate*, in the Systematic Review of Campus Climate Surveys, 2014- 2016

	Campus Climate						
Response options	Perception: Admin	Perception: Students	Perception: General	Rape Myth Acceptance	Bystander Intentions	Bystander Behavior	*Topic included*
Yes	74%	61%	77%	18%	13%	43%	*92%*
No	26%	39%	23%	82%	87%	57%	*8%*
Total	100%	100%	100%	100%	100%	100%	*100%*

Supplementary Table 3B. Questions Covered in Campus Climate Survey Report Topic *Disclosure and Reporting*, in the Systematic Review of Campus Climate Surveys, 2014- 2016

	Disclosure and Reporting										
	Disclosure								***Reporting***		
Response options	If disclosed	Told friend/ family	Reactions	Barriers	*Topic included*	Title IX	Advocate	Police	Formal procedure	Satisfaction with report	*Topic included*
Yes	78%	72%	5%	67%	*82%*	48%	45%	38%	62%	22%	*82%*
No	22%	28%	95%	33%	*18%*	52%	55%	62%	38%	78%	*18%*
Total	100%	100%	100%	100%	*100%*	100%	100%	100%	100%	100%	*100%*

Supplementary Table 3C. Questions Covered in Campus Climate Survey Report Topic *Knowledge of Policies and Resources*, in the Systematic Review of Campus Climate Surveys, 2014- 2016

	Survey topic: Knowledge of policies and resources											
	Policy					***Resources***					***Other***	
Response options	Self-report (SR)	Assessed (A)	*Topic included*	SR: Title IX	A: Title IX	SR: Advocate	A: Advocate	SR: How report	A: How report	*Topic included*	SR: Receipt of training	Likelihood to report
Yes	49%	2%	*50%*	18%	1%	25%	1%	50%	0%	*59%*	64%	10%
No	51%	98%	*50%*	82%	99%	75%	99%	50%	100%	*41%*	36%	90%
Total	100%	100%	*100%*	100%	100%	100%	100%	100%	100%	*100%*	100%	100%

Supplementary Table 3D. Questions Covered in Campus Climate Survey Report Topic *Context of SA*, in the Systematic Review of Campus Climate Surveys, 2014- 2016

	Survey topic: Context of SA				
Response options	Perp Gender	Perp Relationship	Perp Affiliation	Location of SA	*Topic included?*
Yes	36%	47%	51%	52%	*60%*
No	64%	53%	49%	48%	*40%*
Total	100%	100%	100%	100%	*100%*

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Chapter 3:

Disclosure of campus sexual violence among college women: A survey experiment to provide social support in measurement

Measuring sexual violence via Campus Climate Survey (CCS) on college campuses became a national priority in 2014, when the Obama administration formed the *White House Task Force to Protect Students from Sexual Assault*. The Task Force, an expert group of practitioners and researchers, made recommendations to help colleges and universities track, prevent, and respond to campus sexual violence (White House Task Force to Protect Students from Sexual Assault, April 2014). Since 2014, over 100 college and universities have conducted their own CCS about sexual violence (Krause, Sales, Haardoerfer, Windle, & Yount, 2018), and the Department of Justice and Centers for Disease Control and Prevention have released reports to guide colleges and universities in the development and implementation of CCS (Krebs et al., 2016) and sexual violence prevention strategies (Dills et al., 2016).

Approximately 20% of women experience attempted or completed rape while in college (Fisher et al., 2000; Kilpatrick et al., 2007). *Rape* and *sexual assault* refer to unwanted penetration and sexual contact, respectively, that is perpetrated through the threat or use of force (Fisher et al., 2000), or incapacitation (Kilpatrick et al., 2007). Herein, we use the term *sexual violence*, which encompasses rape and sexual assault, along with any unwanted contact or penetration that is perpetrated through coercion (Breiding et al., 2014). Despite the pervasive nature of sexual violence on college campuses, up to one third of college women who disclose sexual violence do not tell anyone about their experience (Fisher et al., 2000; Krebs et al., 2007). Between 88% and

95% of women do not disclose their experience to campus officials or police (Fisher et al., 2003; Kilpatrick et al., 2007). Women often do not disclose to others out of fears of not being believed, reprisal from an attacker, potential stigma associated with having experienced violence, or the event not being serious enough to report (Fisher et al., 2000; Kilpatrick et al., 2007). Accurate measurement of sexual violence necessitates that individuals who have experienced violence disclose via survey and researchers must address these barriers to disclosure in their methodological approach.

Of the approximately two thirds of college women who disclose their violent experience to someone, 90%-95% tell a female peer (Fisher et al., 2003; Orchowski & Gidycz, 2012). We posited that mimicking the environment when disclosure is most likely to occur would best facilitate disclosure. In fact, violence researchers have developed specific practices to facilitate disclosure and provide support to participants.

The primary aim of this study was to harmonize recommended practices for assessing sexual violence from international and domestic literature by evaluating the effect of mode of administration on disclosure. International violence researchers (Andersson et al., 2009; Jewkes et al., 2000) and the World Health Organization(Garcia-Moreno et al., 2005; World Health Organization, 2001) recommend that violence surveys be administered to women via face-to-face interview (FTFI); whereas, the Task Force encouraged colleges and universities to administer CCS to students via web-based survey, using the method of computer-assisted self-interview (CASI) (White House Task Force to Protect Students from Sexual Assault, 2014). This recommendation is notable because surveys about sexual violence among women in the United States, including college-aged women, historically have been conducted by telephone interview (Breiding

et al., 2014; Fisher et al., 2000; Kilpatrick et al., 2007). More recently, violence researchers have used internet-based surveys (Krebs et al., 2007) and, in accordance with Task Force guidance, the majority of colleges and universities implemented CCS using web-based CASI methods (Krause et al., 2018). Domestically, CASI has elicited higher rates of disclosure for some sensitive behaviors, such as drug use and sexual behavior (Tourangeau & Yan, 2007), and has elicited less social desirability bias than FTFI (Richman et al., 1999); however, these studies did not ask participants to disclose experiences of sexual violence. International and domestic violence researchers favor different methods for assessing women about sexual violence, and these approaches have yet to be reconciled in research on campus sexual violence.

The secondary aim of this study was to evaluate the effect of introductory language on disclosure of sexual violence. Using behaviorally-specific language to ask questions about sexual violence is the gold standard approach in international and domestic survey researchers (Ellsberg & Heise, 2005; Fisher et al., 2000; Kilpatrick et al., 2007; World Health Organization, 2001), although evidence is sparse on the effect of the language used to introduce these questions (Yount et al., 2013). Behaviorally specific language uses precise, descriptive language to ask about violent experiences (i.e. "Have you ever been physically forced to have vaginal sex when you didn't want to?") rather than using the term *rape* (i.e., "Have you ever been raped?"). The Task Force provided a sample CCS, which included a preamble to the survey that explains the importance of the data being collected and the potentially triggering nature of the questions about sexual violence; however, the Task Force did not provide a specific recommendation about how to introduce the questions on sexual violence (White House Task Force to Protect

Students from Sexual Assault, 2014). International violence researchers have recognized the salience of introducing questions about violence and suggest using statements that emphasize the commonality of violence in an effort to destigmatize the experience (Ellsberg & Heise, 2005). Domestic violence researchers use introductory language as well (Krebs, 2014), but few studies assess whether introductory language can facilitate disclosure on sensitive topics (Tourangeau & Yan, 2007), and most results have been equivocal (Tourangeau & Smith, 1996), although one study found that adolescents made more disclosures about viewing pornographic material on a survey that used supportive introductory language (Peter & Valkenburg, 2011). These findings indicate the need to evaluate the effect of introductory language on disclosure, specifically in a survey about sexual violence among college women.

Objective

We designed a 2x2 factorial survey experiment to test two forms of "social support" and evaluate their impact on disclosure of sexual violence. The first factor was the mode of survey administration. We deemed FTFI as the condition where "social support" (with adequate training of interviewers) could be provided and CASI as the neutral condition. The second factor examined the language we use to introduce questions about sexual violence, either supportive language (SL) or neutral language (NL). The Principal Investigator developed SL with a Student Advisory Board comprised of undergraduate women in the design phase of the study; the language reflected what students saw as supportive and was similar to the expert guidance about how to create empathy and safety for participants (Campbell et al., 2009; Ellsberg & Heise, 2005; Jansen et al., 2004). We hypothesized that the provision of social support (via FTFI or

SL) would predict a higher rate of sexual violence disclosure compared to the neutral condition (CASI or NL, respectively). This pilot study is the first to investigate the impact of social support on sexual violence disclosure rates among college women via these two methodological factors.

Methods

Design

The 2x2 factorial study design is depicted in Figure 1. We used block randomization, with blocks of eight, to enroll participants into one of four groups. Randomization was stratified by the three survey administrators (the Principal Investigator and two graduate research assistants). The Principal Investigator provided a 20-hour training on the study protocol to the research assistants, and all three individuals received a 20-hour training on trauma-informed care from staff within the university's sexual violence advocacy and prevention program. This study had approval from the university's IRB and a Certificate of Confidentiality from the National Institutes of Health.

Sample

We surveyed students from one large Southeastern university between October 2017 and December 2017. Eligible participants were first- or second-year undergraduate students who self-identified as women and were 18 years or older. We recruited students via email, on-campus flyers, and advertising at undergraduate events.

Procedure

Interested students met in-person with a survey administrator in a private room on campus. After eligibility was confirmed through a screening questionnaire, the survey

administrator read the informed consent form aloud as the participant followed along. The participant was able to ask questions at any point. After agreeing to participate, the participant and survey administrator signed the consent form. The participant then filled out a short questionnaire about the consent form and the survey administrator reviewed all answers to ensure comprehension. The survey administrator provided eligible participants with a $10 Amazon gift card as compensation for their time.

After completing the screening, informed consent, and remuneration process, the survey administrator randomized the participant to one of four groups. In the CASI condition, the survey administrator gave the tablet to the participant after randomization and stepped out of the room so that the participant could complete the survey in private. In the FTFI condition, the survey administrator began reading the survey introduction to the participant after randomization. Participants in the SL condition were provided with the supportive language before receiving the standard instructions on how to answer the questions about unwanted sexual experiences. Participants in the NL condition received only the standard instructions. After survey completion, the survey administrator debriefed with each participant and provided information about mental health and sexual violence resources on and off campus. We collected and managed data using the REDCap system (Harris et al., 2009).

Questionnaire. All questionnaires began with an introduction to the survey which matched the preamble used in the Task Force's sample CCS. The questionnaire asked all participants these modules: demographics, people in their life, stressful life experiences, campus connectedness, unwanted sexual experiences, personality traits, and reactions to participating in the survey . Participants who disclosed an unwanted sexual experience

via survey were asked follow up questions about whether they disclosed to anyone, and if so, to whom they disclosed, how long after the event occurred they disclosed, and the reactions they received to their disclosure. Participants could skip any question or stop the survey at any time.

Measures. The primary outcome was the *disclosure of any sexual violence since coming to college* (yes/no). We used the Sexual Experiences Survey-Revised (Koss et al., 2007), which recently was validated for both FTFI and CASI administration modes (Johnson, Murphy, & Gidycz, 2017). Participants were asked about whether they had experienced unwanted sexual acts since coming to college, including touching, attempted and completed oral, vaginal, and anal penetration. With each act, participants were asked about five types of tactics that perpetrators may have used to perpetrate the unwanted sexual act, ranging from 'telling lies' to 'using force.' Participants who answered "yes" to any unwanted sexual act/tactic pairing were coded as "yes" for *disclosure of any sexual violence since coming to college.*

The exposure of interest was the randomized experimental group. We categorized participants by social support factor (FTFI vs. CASI and SL vs. NL) and by group assignment, using the interaction between experimental factors (FTFI/SL, FTFI/NL, CASI/SL, CASI/NL).

Demographic measures included race (American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, White, other, prefer not to respond, unknown; participants selected all that applied and Multiracial was created when participants selected more than one identity), Hispanic or Latina ethnicity (yes/no), international student status (yes/no), and sexual orientation (asexual, bi- or

pansexual, heterosexual, lesbian, other, prefer not to respond; participants selected all that applied and the category "more than one identity" was created when participants selected more than one identity).

Our covariates were included to measure social support in everyday life, as well as control for items that would be related to disclosure. Measures relating to social support were the Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988) and campus connectedness (Resnick et al., 1997). Social support from a special person, family, and or friends as well as school connectedness affect health outcomes (Viner et al., 2012) and are positively related to disclosure (Orchowski & Gidycz, 2012).

Control measures included the PTSD symptoms checklist (Foa, Cashman, Jaycox, & Perry, 1997), because survivors of violence are more likely to experience PTSD (Kilpatrick et al., 2007), and the Marlow-Crowne Social Desirability scale (Reynolds, 1982). We controlled for social desirability bias in part because researchers worry about underreporting of sexual violence (Haj-Yahia, 2000), and in part because some researchers argue that CASI is less susceptible to desirability bias than FTFI (Tourangeau & Yan, 2007).

Analyses

We conducted a power analysis prior to study start (Wittes, 2002). Assumptions were an 18% disclosure rate of rape and sexual assault (Littleton, Grills, & Drum, 2014; Orchowski, Untied, & Gidycz, 2013) in the FTFI condition with a medium effect size (d=.5) (Cohen, 1988). We based our effect size estimate on a study of intimate partner violence screening in the United States, which approached a large effect size difference

(study *d*=.7; with a large effect size *d*=.8)(Cohen, 1988) in disclosures using FTFI and CASI modes (Fincher et al., 2014). We aimed to have 80% power to detect a medium effect size between the FTFI and CASI conditions using a two-sided Type I error rate of 0.05. We aimed to enroll 356 women.

We conducted univariate analyses to understand the characteristics and distribution of each variable and to measure the frequency of the types of sexual violence disclosed within our sample. We assessed the effectiveness of randomization by comparing the characteristics of participants across experimental factors and group assignment. We used chi-square tests to assess the differences in the frequency of disclosure of any sexual violence by experimental factor and group. We conducted bivariate analyses to understand the relationship of each variable with the outcome of any sexual violence disclosure, using chi-square or Fisher's exact test for categorical data and Kruskal-Wallis test for non-normally distributed continuous data.

We used maximum likelihood logistic regression models to estimate the odds of disclosure of any sexual violence by factor and group. Unadjusted and adjusted odds ratios of disclosing sexual violence are presented. In adjusted models, we added any measured variables that were associated with the outcome or differed by factor or group, respectively, at the $\alpha < 0.1$ level. All participants completed the survey and no data were missing on the outcome variable. Six participants missed responses for one question each and two participants missed responses for two questions each. We imputed the corresponding mean for scale items or modal value for categorical items for 10 missing responses (one for Hispanic or Latina ethnicity, one for an item about social support from a friend, five items about campus connectedness, and three items about social desirability

bias). We used list wise deletion in our regression models and compared results of these models to the models that used imputed values. We obtained similar results and present the results using the imputed data. We report significance at the $p < 0.1$ level. All analyses were conducted using SAS software (SAS Institute, 2013) version 9.4.

Results

A total of 202 eligible undergraduate women enrolled into the study. Overall, the sample was 45.5% White, 32.2% Asian, 8.9% Multiracial, 8.4% Black or African-American, and the remaining 5% identified as "other" or preferred not to respond. A minority of participants identified as Hispanic or Latina (14.9%) and as international students (11.9%). The majority of participants identified as heterosexual (85.5%).

Demographic characteristics of the sample generally were similar across factors (Table 1). Black or African-American women were over-represented in the FTFI condition (12.4% versus 4.1%). Some covariate measures differed by factor. Participants in the FTFI condition, compared to CASI, reported higher levels of social support from friends, campus connectedness, and PTSD symptoms arousal.

Identifying as Asian and having a higher campus connectedness score was associated with lower rates of disclosure while identifying as bi- or pansexual, and having a higher overall PTSD symptoms score was associated with higher rates of disclosure (Supplementary Table 1).

The prevalence of disclosure of any sexual violence was 26.2%, while the experience of sexual assault, attempted rape, or rape was 19.3% (Table 2). There were no significant differences in the number of disclosures by either factor, aside from attempted

penetration, which was more likely to be reported in the CASI (14.4%) as compared to the FTFI condition (4.8%).

The rates of disclosure were similar across experimental conditions and the differences equated to a small effect size (Table 3). Participants in the FTFI condition, compared to CASI, had higher unadjusted and adjusted odds of disclosure, although these findings were not statistically significant (p=0.64 and p=0.34, respectively). SL, in comparison to NL, was associated with a lower unadjusted and adjusted odds of disclosure, but this finding was not statistically significant (p=0.15 and p=0.38, respectively). We found similar rates of disclosure in the models that captured the interaction between the two conditions. Compared to the CASI/NL condition, FTFI/NL had higher unadjusted and adjusted odds of disclosure; however, these results were not statistically significant (p=0.35 and p=0.31, respectively).

Discussion

This study is the first to test experimentally the effects of FTFI and CASI modes and introductory language on sexual violence disclosure in a sample of college women. The prevalence of sexual violence disclosure in our sample corresponds to prevalence estimates within the campus sexual violence literature. Approximately one-quarter of participants (26.2%) disclosed experiencing any sexual violence since coming to college, which matches prevalence estimates from a study among first-year (31.3%) and second-year college women (26.8%) using the same instrument (SES-R) and a similar time frame (Humphrey & White, 2000). We found the prevalence of experiencing any sexual assault, attempted, or completed rape since coming to college to be 19.3%, which aligns with nationally-representative survey estimates that approximately one in five college women

experience sexual assault, attempted or completed rape while in school (Fisher et al., 2000; Kilpatrick et al., 2007; Krebs et al., 2007).

We found no significant differences in the rate of sexual violence disclosure by the mode of administration or introductory language assigned. Additionally, there were no significant differences in disclosure by group when we tested for an interaction effect between the two experimental conditions. Our hypothesis was not supported; however, finding that there may be no difference in sexual violence disclosure rates using FTFI or CASI is a meaningful contribution to the field. The prevailing wisdom of domestic survey researchers has been that CASI is the best way to elicit disclosure about sensitive topics, so finding that each mode elicited an equivalent number of disclosures challenges that assumption. A recent systematic review of intimate partner violence screening in clinical settings also found no difference in disclosure rates when comparing FTFI to computer or written questionnaires (O'Doherty et al., 2015). Previous research supports that disclosure may not differ by mode for adolescents; one study among college students found that disclosure of sexual behavior did not differ when comparing pen and paper self-administration, telephone interviewing, and FTFI (Rosenbaum et al., 2006). A study examining high school adolescents report of alcohol and illicit drug use, delinquency, and victimization history suggested that ensuring privacy, rather than mode, may be the most salient factor affecting disclosure (Beebe, Harrison, McRae, Anderson, & Fulkerson, 1998).

The nonsignificant pattern that FTFI elicited more disclosures in unadjusted and adjusted models warrants further study in a larger experimental design. Both international and domestic violence researchers have argued that using well-trained interviewers

enhances validity in sexual violence measurement (Andersson et al., 2009; Campbell et al., 2009; Ellsberg & Heise, 2005; Haj-Yahia, 2000; Jansen et al., 2004; World Health Organization, 2001). There is support for the idea that FTFI may facilitate disclosure in the United States. A study that compared intimate partner violence FTFI and CASI screening modes among women attending Women, Infant, and Children clinics found that the odds of disclosure among Black or African American women were four times higher in the FTFI condition (Fincher et al., 2014), and that FTFI elicited higher disclosure rates for a variety of questions about reproductive health and drug use (Frazier & Yount, 2017). In another study, adolescents in middle and high school made more disclosures about dating abuse when nurses prompted face-to-face discussions about unhealthy relationships during routine school health visits (Raible et al., 2017).

Use of SL had a lower odds of disclosure compared with NL, although this finding was not significant. A study that tested the effect of supportive introductory language among a community sample of adults found that supportive language increased sexual violence disclosure among men but not women (Catania et al., 1996). We developed the SL with undergraduate women and it contained similar messages to the extant literature (Catania et al., 1996; M. Ellsberg & Heise, 2005; Peter & Valkenburg, 2011; Tourangeau & Yan, 2007); however, we believe that the language we crafted may have suppressed disclosure. Our SL may have violated the principle of using nonjudgmental language. Even though we intended to convey a supportive message (i.e., "You are not to blame if you've experienced any of the events described below"), we still used the word “blame,” which could have been stigmatizing. The effect of introductory language on sexual violence disclosure needs to be further tested and evaluated. We

conclude that although it is important on an interpersonal and community level to promote messages that do not blame the victim, it may not be helpful to share these messages preemptively when one is attempting to facilitate disclosure at the individual level.

Limitations

There were several limitations to our findings. Although we tested FTFI and CASI, all participants received initial face-to-face interaction because the study visits occurred in person. We made the decision to meet in person because we were concerned about attrition and selection bias in the FTFI condition if the participants in the CASI condition could take the survey in their dorm room or on their mobile phone. We enrolled 9.3% of the eligible population in our sample, which is low; however, the modal response rate for CCS is 10-19% (Krause et al., 2018). Despite our low response rate, our findings corresponded to national prevalence estimates of sexual violence disclosure. Using an experimental design that emphasizes internal validity (Shadish et al., 2002), our findings may not generalize to the larger population of college women. We enrolled 202 women and did not reach our goal number of 356. Even if we did reach our goal enrollment number, we would still not have been powered to assess the small effect size differences found between the experimental conditions. As a pilot study, it may be best to view our findings as hypothesis-generating that inspires new research within the field of campus sexual violence research. A larger experiment to investigate the effect of mode of administration on disclosure would need to include multiple sites to ensure a sufficient number of participants to meet adequate power assumptions.

Implications

Measuring sexual violence at the campus level is a national priority (White House Task Force to Protect Students from Sexual Assault, April 2014). CCS data must capture the scope of campus sexual violence to craft effective prevention and response strategies. Facilitating disclosure via survey enhances measurement validity by preventing underreporting. We found no differences in disclosure using FTFI or CASI methods, which suggests that colleges and universities are able to conduct robust assessment of campus sexual violence via self-administered web-based survey, which is cost-effective.

It is paramount that researchers and practitioners have data derived from evidence-based survey practices to guide decisions about the best methods to use in CCS. However, it must be recognized that the field of sexual violence research lacks experimental studies that investigate which methodological approaches facilitate disclosure (Hamby, 2014). Given the national effort to measure sexual violence on each campus, we should consider methodological practices drawn from international and domestic research and empirically assess which are best suited to facilitate disclosure among college students.

Figure 1. A randomized 2x2 factorial design to facilitate disclosure of sexual violence

	Mode of survey administration		
Introductory language		*Face-to-face interview (FTFI)*	*Computer-assisted self-interview (CASI)*
	Supportive (SL)	Group 1	Group 2
	Neutral (NL)	Group 3	Group 4

Table 1. Participant summary demographics and by factor, N=202 college women

	Overall	Mode of administration			Introductory language		
		FTFI	CASI		SL	NL	
	n=202	n=105	n=97		n=101	n=101	
	% or M (SD)	% or M (SD)	% or M (SD)	*p*	% or M (SD)	% or M (SD)	*p*
Demographics, %							
Race				0.11 ^			0.88 ^
Asian	32.2	30.5	34.0	0.59	32.7	31.7	0.88
Black or African American	8.4	12.4	4.1	0.04 *^	7.9	8.9	0.80
White	45.5	41.9	49.5	0.28	47.5	43.6	0.57
Multiracial	8.9	7.6	10.3	0.50	8.9	8.9	1.00
Other	4.5	6.7	2.1	0.17 ^	3.0	5.9	0.50 ^
Prefer not to respond	0.5	1.0	0	1.00 ^	0	1.0	1.00 ^
Hispanic/Latina ethnicity	14.9	16.2	13.4		10.9	18.8	0.11
International student	11.9	12.4	11.3		13.9	9.9	0.38
Sexual orientation				0.69 ^			1.00 ^
Asexual	3.5	3.8	3.1	1.00 ^	4.0	3.0	1.00 ^
Bi/Pansexual	7.4	8.6	6.2	0.80	6.9	7.9	0.80
Lesbian	1.0	1.9	0.0	0.50 ^	1.0	1.0	1.00 ^
Heterosexual	85.6	83.8	87.6	0.44	85.2	86.1	0.84
Other	1.5	1.9	1.0	1.00 ^	2.0	1.0	1.00 ^
More than one identity	0.5	0	1.0	0.48 ^	0	1.0	1.00 ^
Prefer not to respond	0.5	0	1.0	0.48 ^	1.0	0	1.00 ^
Interviewer				0.95			0.96
1	30.2	30.5	29.9	0.93	30.7	29.7	0.88
2	51.5	50.5	52.6	0.77	50.5	52.5	0.78
3	18.3	19.1	17.5	0.78	18.8	17.8	0.86
Covariate measures, M(SD)							
Social support							
Perceived Social Support:	6.0 (0.81)	6.1 (0.66)	5.9 (0.94)	0.17	5.9 (0.95)		
Special person	6.2 (0.90)	6.3 (0.72)	6.0 (1.04)	0.05 †	6.0 (1.01)		
Friends	6.0 (0.85)	6.1 (0.76)	5.9 (0.94)	0.14	5.9 (0.97)		
Family support	5.8 (1.19)	5.9 (1.00)	5.7 (1.37)	0.83	5.6 (1.28)		
Campus connectedness:	3.2 (0.40)	3.3 (0.39)	3.1 (0.39)	0.01 **	3.2 (0.39)		
Control variables							
Posttraumatic Diagnostics	14.5 (11.34)	14.1 (10.74)	14.9 (12.00)	0.85	12.8 (10.46)		
Reexperience	4.2 (4.15)	4.0 (4.01)	4.5 (4.29)	0.41	3.4 (3.59)		
Avoidance	5.7 (5.00)	5.2 (4.52)	6.2 (5.45)	0.22	5.2 (4.92)		
Arousal	4.6 (3.85)	4.9 (3.70)	4.2 (4.00)	0.05 †	4.2 (3.55)		
Social desirability bias:	6.6 (2.50)	6.5 (2.43)	6.7 (2.58)	0.54	6.4 (2.53)	6.8 (2.46)	0.32
Self-deception	2.3 (1.39)	2.4 (1.40)	2.3 (1.39)	0.77	2.3 (1.31)	2.4 (1.46)	0.64
Impression	4.3 (1.63)	4.2 (1.55)	4.4 (1.71)	0.21	4.2 (1.71)	4.4 (1.54)	0.36

Notes: Demographics analyzed with chi-square test unles otherwise noted; covariate measures analyzed with Kruskal-Wallis test. *Multiracial* includes a combination of any of the race categories listed in addition to American Indian or Alaska Native, Native Hawaiin or Other Pacific Islander, and unknown race. Introductory language factor only has demographic and social desirability bias results displayed because this condition was introduced after asking about social support, campus connectedness, and PTSD symptoms.
^= Fisher's exact test †$p<0.1$ *$p<0.05$ **$p<0.01$ ***$p<0.001$

Table 2. Participants who disclosed any sexual violence, and sexual assault, attempted or completed rape overall and by factor, using a chi-square test, N=202 college women

	Total		Mode of administration					Introductory language				
			FTFI		CASI		*p*		SL		NL		*p*
	n=202		n=105		n=97				n=101		n=101		
	N	(%)	N	(%)	N	(%)			N	(%)	N	(%)	
Disclosure of violent experience													
Any sexual violence	53	(26.2)	29	(27.6)	24	(24.7)	0.64		22	(21.8)	31	(30.7)	0.15
Any sexual assault, attempted or completed rape	39	(19.3)	17	(16.2)	22	(22.7)	0.24		17	(16.8)	22	(21.8)	0.37
Sexual assault	34	(16.8)	15	(14.3)	19	(19.6)	0.31		14	(13.9)	20	(19.8)	0.26
Attempted rape	18	(8.9)	5	(4.8)	13	(14.4)	0.03	*	6	(5.9)	12	(11.9)	0.14
Completed rape	16	(7.9)	10	(9.5)	6	(6.2)	0.38		6	(5.9)	10	(9.9)	0.30

Sexual violence includes sexual assault, attempted rape, and completed rape as well as unwanted sexual contact, unwanted attempted penetration, and unwanted completed penetration that was perpetrated through coercion.

Sexual assault includes unwanted sexual contact that was perpetrated through incapacitation (alcohol or drug-facilitated), threatening force, or use of force

Attempted rape includes unwanted attempted penetration that was perpetrated through incapacitation (alcohol or drug-facilitated), threatening force, or use of force

Completed rape includes unwanted completed penetration that was perpetrated through incapacitation (alcohol or drug-facilitated), threatening force, or use of force

*$p<0.05$

Table 3. Unadjusted and adjusted odds ratios and 95% confidence intervals of any disclosure of sexual violence from logistic regression models, N=202 college women

	OR	95% CI	*p*	aOR	95% CI	*p*
Social support factor						
FTFI (ref: CASI)	1.16	(0.62 , 2.18)	0.64	1.42	(0.69 , 2.91)	0.34
SL (ref: NL)	0.63	(0.33 , 1.19)	0.15	0.73	(0.37 , 1.46)	0.38
Group (ref: CASI/NL)						
FTFI/SL	0.72	(0.29 , 1.78)	0.71	1.08	(0.40 , 2.95)	0.74
FTFI/NL	1.02	(0.44 , 2.39)	0.35	1.32	(0.50 , 3.45)	0.31
CASI/SL	0.56	(0.22 , 1.42)	0.22	0.64	(0.23 , 1.81)	0.20

Note: aOR models adjusted for variables that significantly differed by factor or group, as appropriate, and variables that were significantly related to disclosure in bivariate associations where $p<0.1$

Supplementary material

Supplementary Table 1. Bivariate associations between demographics and covariate measures and disclosure of sexual violence, N=202 college women

	Disclosed		Did not disclose			
	% or M	**(SD)**	**% or M**	**(SD)**	***p***	
Demographics, %						
Race					*0.31*	
Asian	16.9		83.1		0.04	*
Black or African American	23.5		76.5		1.00	^
White	31.5		68.5		0.12	
Multiracial	33.3		66.7		0.47	
Other	33.3		66.7		0.70	^
Prefer not to respond	0		100		1.00	^
Hispanic or Latina ethnicity	36.7		63.3		0.18	
International student	16.7		83.3		0.33	
Sexual orientation					*0.23*	
Asexual	25.0		75.0		1.00	^
Bi/Pansexual	50.0		50.0		0.02	*
Lesbian	0		100		1.00	^
Heterosexual	25.4		74.6		0.53	
Other	0		100		0.57	^
More than one identity	100		0		0.26	^
Prefer not to respond	0		100		1.00	^
Interviewer					*0.78*	
1	29.5		70.5		0.49	
2	25.0		75.0		0.68	
3	24.3		75.7		0.77	
Covariate measures, M(SD)						
Social support						
Perceived Social Support	6.0	(0.65)	6.0	(0.86)	0.62	
Special person	6.2	(0.69)	6.1	(0.96)	0.86	
Friends	6.1	(0.70)	6.0	(0.90)	0.76	
Family support	5.7	(1.20)	5.8	(1.19)	0.59	
Campus connectedness	3.1	(0.43)	3.3	(0.38)	0.08	†
Control variables						
PTSD Symptoms checklist	20.1	(13.13)	12.4	(9.90)	<.001	***
Re-experience	6.3	(4.84)	3.5	(3.60)	<.001	***
Avoidance	7.8	(5.60)	4.9	(4.60)	<.001	***
Arousal	6.0	(4.30)	4.1	(3.57)	0.01	**
Social desirability bias	6.7	(2.36)	6.6	(2.60)	0.96	
Self-deception	2.4	(1.41)	2.3	(1.39)	0.78	
Impression	4.3	(1.52)	4.3	(1.67)	0.80	

Notes: Demographic information analyzed with a chi-square test unless otherwise noted; covariate measures analyzes with Kruskal-Wallis test. *Multiracial* includes a combination of any of the race categories listed in addition to American Indian or Alaska Native, Native Hawaiin or Other Pacific Islander, and unknown race. Overall *p*-value for categorical variables presented in italics. ^= Fisher's exact test used.
†$p<0.1$ *$p<0.05$ **$p<0.01$ ***$p<0.001$

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Chapter 4:

The relationship between social support, sexual violence disclosure, and reactions to survey participation among college women

Since 2014, colleges and universities have been surveying students about experiences of sexual violence via Campus Climate Surveys, following guidance from a federal task force charged with creating prevention strategies to address campus sexual violence (White House Task Force to Protect Students from Sexual Assault, 2014). Colleges and universities are using these surveys to assess the extent of sexual violence on their campuses and to inform prevention programming and response efforts. Given that colleges and universities will periodically implement Campus Climate Surveys among students for the foreseeable future, researchers must consider the ethics of engaging students to disclose their experiences of violence via survey and consider the methodological factors that affect reactions to survey participation.

In this study, we sought to understand how the relationship between disclosure and reactions to survey participation is associated with the social support participants have from the people in their lives and the campus community. We systematically assigned different methods to measure sexual violence via survey to illuminate what characteristics of the assessment affect participants' reactions to survey participation. Our study was informed by two areas of research that consider the ethical implications of conducting violence research—empirical assessments of the benefits and harms of participation in trauma research and feminist research that has established methodological best practices.

Reactions to Participation in Surveys on Traumatic Experiences

Investigating the effects of participation in research about trauma, including experiences of violence, is an important line of inquiry. It is essential to empirically assess the benefits and harms that participants experience in studies on violence to establish an evidence base for researchers and ethics review committees to make informed decisions (Newman, Walker, & Gefland, 1999). The extant literature demonstrates that participants generally rate their experiences participating in trauma research as positive (Edwards et al., 2017; Newman et al., 1999), and participants who are asked questions about stressful experiences find more personal benefits to participation than participants who are not asked these questions (Cook, Swartout, Goodnight, Hipp, & Bellis, 2015). When participants do experience distress in research about trauma, the magnitude is low (Langhinrichsen-Rohling, Arata, O'Brien, Bowers, & Klibert, 2006) and participants do not regret their participation (Burke Draucker, 1999; Jaffe et al., 2015; Newman et al., 1999). A systematic review of surveys on violent experiences found that, in 95% of studies, participants, including undergraduate students, reported more benefits than harms (McClinton Appollis et al., 2015). Prior research also has found that although survivors, as compared to non-survivors, report more distress or a greater emotional response as a result of research participation, they also report more personal benefits (Decker, Naugle, Carter-Visscher, Bell, & Seifert, 2011; Edwards et al., 2009). Survivors have indicated that they benefit from participating in trauma research because they acquired a greater understanding of their experiences (Edwards et al., 2017), and were even more likely to seek healthcare services because of the insight gained as a research participant (Kirkner, Relyea, & Ullman, 2017).

Feminist Research Methods to Study Violence

Acknowledging the benefits and harms of trauma research generally with the specific ethical and safety challenges of violence research, feminist violence researchers have championed the idea that ethics must guide interactions with participants as a central matter of humanitarian and scholarly integrity (Campbell & Dienemann, 2001; Ellsberg & Heise, 2002; Jewkes et al., 2000; World Health Organization, 2001). Feminist principles, largely seen as best practices, have been established not only to meet the unique ethical obligations that come with asking women about experiences of violence, but also to collect the most high-quality, reliable data. Some best practices include conducting face-to-face interviews in safe, private spaces; giving women time to share their stories, providing multiple opportunities for disclosure within the context of survey administration, and providing referrals to resources at the end of the survey (Jewkes et al., 2000; World Health Organization, 2001).

In the World Health Organization's (WHO) *Multi-Country Study on Women's Health and Domestic Violence,* researchers conducted a small comparative study about data collection: in some areas, the WHO trained local women on gender-based violence and interviewing techniques following the aforementioned feminist principles to administer surveys. In other areas, professional interviewers who had experience in data collection but were not trained in gender-based violence or working with survivors of trauma administered the surveys. WHO-trained researchers obtained a significantly higher rate of disclosure of violence and greater satisfaction with participation among participants than the professional interviewers (Jansen et al., 2004). Other studies have provided evidence (Andersson et al., 2009) or argued (Jewkes et al., 2000; Smith, 1994) that feminist research methods, with a focus on interviewer training and face-to-face

interviews, enhance the quality of survey data and the participant's experience. A qualitative study where researchers conducted interviews among women survivors found that the majority of participants (80%) interviewed with feminist interviewing techniques found it primarily a positive experience, 19.6% reported both positive and negative participation experiences and 0.4% reported only negative reactions to participation (Campbell et al., 2010). Studies have shown that survivors find disclosure in research to be a positive experience because interviewers provide an empathetic, nonjudgmental space to share their experience (Campbell et al., 2010; Jansen et al., 2004).

Disclosure and Health

In everyday life, outside of the research environment, reactions to disclosure affect survivors' emotional and mental health. When survivors receive positive reactions to disclosure, they benefit; for example, being given support about where to get help following disclosure is associated with reduced post-traumatic stress disorder (PTSD) (Glass et al., 2007; Ullman & Peter-Hagene, 2014). Also, over 50% of survivors feel better when their disclosure is met with support (Ahrens et al., 2007). Even the act of disclosure is important: survivors who have not told anyone about their experience, compared to those who have, report higher levels of depression and PTSD (Ahrens et al., 2010). Because disclosure affects a survivor's future decisions to disclose and subsequent well-being, it is important to consider the social support a survivor receives in their everyday life and in the context of a sexual violence survey.

Purpose

Given the importance of sexual violence disclosure and the ethical obligations to investigate participant reactions to Campus Climate Surveys, we designed this study to

evaluate what methodological factors effect reactions to survey participation and explore how social support affects both sexual violence disclosure and reactions to survey participation.

We examined three hypotheses. First, we hypothesized that administering surveys to participants about sexual violence under conditions that were supportive (use of face-to face interview and supportive introductory language) would be associated with higher levels of personal satisfaction, personal benefits, and global evaluation of the survey participation experience, and negatively associated with perceived drawbacks and emotional reactions to survey participation. Second, this hypothesis also would apply to a subgroup analysis among survivors. Third, social support from a special person, family, friends, and campus connectedness would directly influence disclosure and reactions to survey participation, and disclosure via survey would mediate the relationship between social support in everyday life and reactions to survey participation (Figure 1).

Methods

Study Design

We created a 2x2 factorial survey experiment to understand the mechanisms that influence disclosure of sexual violence via survey and reactions to survey participation. The first factor was the mode of administration: we randomly assigned half of the participants to receive the survey via face-to-face interview (FTFI), and half to self-administer the survey via a tablet (computer-assisted self-interview, or CASI). The second factor was the language used to introduce the questions about sexual violence: half of participants received supportive language, which included phrases such as "Remember, these experiences are common, you are not to blame if you've experienced

any of the events described below…" before being provided with instructions for how to answer the questions about sexual violence. The other half of participants received neutral introductory language, which included only instructions about how to answer the questions. We conceptualized FTFI and supportive introductory language as factors that provided "social support" in measurement, while CASI and neutral language would be the neutral factors. The first aim associated with this study design was to assess sexual violence disclosure rates by experimental factor, and these results have been discussed elsewhere (Krause et al., 2018). The present article addresses the secondary aims.

Participants

Between October and December 2017, we recruited 202 first and second year undergraduate students on a Southeastern university campus to participate in our study. Eligible participants were at least 18 years of age or older and identified as women. We recruited students to participate via email, sharing information about the study with various student groups, tabling at student events, and posting flyers around campus. Our sample self-identified as 46% White, 32% Asian, 9% Multiracial, and 8.4% Black or African American, and 5% identifying as "other" or preferred not to respond. About 15% identified as Hispanic or Latina and 12% were international students. A majority of participants identified as heterosexual (85%) with about 8% identifying as bisexual, pansexual, or lesbian (Krause et al., 2018).

Survey Questionnaire

We designed a survey questionnaire with seven topic areas that we administered to participants in the following order; (1) demographics, (2) perceived social support, (3) PTSD symptoms, (4) campus connectedness, (5) experiences of sexual violence, (6)

social desirability bias, and (7) reactions to survey participation. Participants who indicated that they had experienced sexual violence were asked a series of follow-up questions about whether and to whom they disclosed their experiences, how long after the violence occurred they disclosed, and the reactions they received to their disclosure. Participants in the FTFI condition received response cards for each set of questions to aid them in providing an answer. We describe the measures for each section in turn, focusing only on the questions that we asked all participants.

Perceived social support. The *Multidimensional Scale of Perceived Social Support* (Zimet et al., 1988) measures the social support a participant receives in everyday life from a special person, friends, and family members. The 12-item scale has three subscales with four items each. A typical item is "I can count on my friends when things go wrong." Responses rate on a 7-point Likert scale ranging from *very strongly disagree* to *very strongly agree.* This instrument has been used among adolescents in a community setting (Canty-Mitchell & Zimet, 2000), college students (Clara, Cox, Enns, Murray, & Torgrudc, 2003), and women survivors (Hunter, Robison, & Jason, 2012). Cronbach's alpha was .92 (overall; .91 for *special person* .92 for *friends* and .92 for *family* subscales).

PTSD symptoms. The *Posttraumatic Diagnostic Scale* measures PTSD symptoms related to the re-experience, avoidance, and arousal of trauma in the past month (Foa et al., 1997). As an example, participants were asked to indicate how much in the past month they had been bothered by "feeling very upset when something reminded you of a stressful experience from the past?" Responses range from *Not at all, A little bit, Moderately, Quite a bit,* and *Extremely*. We did not assess for several other criteria that

clinicians use to diagnose PTSD as it was not an objective of the study. This scale has demonstrated good psychometric properties in clinical samples (Winters et al., 2014) and has been used with women survivors (Griffin, Uhlmansiek, Resick, & Mechanic, 2004) and college students (Moser, Hajcak, Simons, & Foa, 2007). Cronbach's alpha was .91 (overall; .87 for *re-experience*, .82 for *avoidance*, and .75 for *arousal* subscales).

Campus connectedness. We used the *campus connectedness* measure from the Campus Climate Survey sample survey, which is similar to the *school connectedness* measure on the National Longitudinal Study of Adolescent Health (Resnick et al., 1997) and previously has been used in adolescent populations (Bonny, Britto, Klostermann, & Slap, 1999; Whitlock, 2006). Campus connectedness is a unidimensional scale with nine items that asks questions such as "I feel like I am a part of this university." Responses rate on a 4-point Likert scale ranging from *strongly disagree* to *strongly agree*. Cronbach's alpha was 0.84 in this sample.

Experiences of sexual violence. We used the *Sexual Experiences Survey-Revised* (Koss et al., 2007) to ask about unwanted sexual experiences since coming to college. *SES-R* asks about seven kinds of unwanted sexual acts, including touching and oral, anal, and vaginal attempted penetration and penetration. *SES-R* also asks what tactics the perpetrators used, ranging from coercive behavior, e.g., "threatening to tell lies about you" to force, e.g., "holding you down with their body weight." An example statement would be "Since coming to college, someone had oral sex with me or made me have oral sex with them without my consent by threatening to physically harm me or someone close to me." Participants responded *yes* or *no* to each question. We created a binary variable for disclosure status whereby participants who responded *yes* to at least one

question about sexual violence were coded to 1, while participants who responded *no* to all questions were coded to 0. We refer to the participants who disclosed as survivors. *SES-R* has been validated among college women (Humphrey & White, 2000). African-American adolescent women (Cecil & Matson, 2006), and women survivors (Moreau, Boucher, Hebert, & Lemelin, 2015). It also was found to be valid and reliable in a sample of college women administered either FTFI or via CASI (Johnson et al., 2017).

Social desirability bias. We used the *Marlowe-Crowne Social Desirability Scale-Short form* (Reynolds, 1982) to measure the degree to which the presence of an interviewer may have elicited socially desirable responses (Tourangeau & Yan, 2007). A typical item in this instrument is "No matter who I'm talking to, I'm always a good listener." Response options were *true* or *false*. Researchers have used this instrument among adolescents (Beretvas, Meyers, & Leite, 2002) and in a study about sexual violence among college women (Orchowski et al., 2013). The reliability of this scale with binary indicators was 0.93 in this sample.

Reactions to survey participation. The *Reactions to Research Participation Questionnaire* (Newman & Willard, 2001) consists of five component scales without an overall common factor. Questions ask about personal satisfaction with participation (three items), personal benefits from participation (four items), and global evaluation of participating in the research (four items), perceived drawbacks to participation (five items) and emotional reactions to participation (four items). An example from the perceived drawbacks section was, "I found the questions too personal." Responses rate on a 5-point Likert scale ranging from *strongly disagree* to *strongly agree.* We included the items that the authors suggested to incorporate as new items from the original article

(Newman & Willard, 2001), aside from an item about understanding the informed consent form because we used a quiz to assess comprehension. The final two items in the perceived drawbacks subscale were reverse coded for analyses to match the direction of the other items. Researchers have used the *Reactions to Research Participation Questionnaire* among undergraduate students in a study about violence (Cook et al., 2015) and among trauma survivors and those who support them (Scotti et al., 2012; Widom & Czaja, 2005). Cronbach's alpha was .70 for *personal satisfaction*, .81 for *personal benefits*, .87 for *global evaluation*, .84 for *perceived drawbacks* and .82 for *emotional reactions* scales in this sample.

Procedures

We received IRB approval and a Certificate of Confidentiality from the NIH for this study. Before study start, the survey administrators received training in trauma-informed care from the university sexual violence advocacy and prevention staff, as well protocol-specific training, following feminist praxis for violence research (Andersson et al., 2009; Campbell et al., 2009; Jansen et al., 2004). Once recruitment began, interested students emailed the Principal Investigator to schedule a time to screen and potentially participate in the study. Upon meeting, the survey administrator screened the participant for eligibility, received informed consent as well as administered a short quiz to ensure comprehension, and provided the participant with a $10 gift card as compensation for their time. The survey administrator randomized the participant using REDCap (Harris et al., 2009) and the participant completed the appropriate survey, either FTFI or CASI. At the end of each survey, the interviewer debriefed with the participant by providing them

with resources on mental health and sexual violence resources both on and off campus. We collected data using REDCap between October and December 2017.

Analysis

We performed univariate analyses by assessing the frequencies, means/ standard deviations for categorical and continuous data, respectively. We computed Cronbach's alpha to assess the reliability of each scale. The exception was the social desirability scale; because its indicators are binary, we assessed for reliability using the methods outlined by Raykov et al (2010) in Mplus. We assessed differences in reactions to survey participation by disclosure status using Kruskal-Wallis tests for non-normal distributions. For our first aim, we investigated whether domains of social support in everyday life, campus connectedness, and control variables (demographics, PTSD symptoms, social desirability bias) were equally distributed by experimental factor. We assessed whether any of these variables were associated with reactions to survey participation using Kruskal-Wallis tests for non-normal distributions. We used linear regression models to estimate the relationship between social support (FTFI versus CASI and supportive versus neutral language) and reactions to research participation with one model for each reaction. We estimated unadjusted and adjusted models. Any variable that was not equally distributed by experimental factor or was associated with reactions to survey participation at the $p< 0.1$ level were included in adjusted models. We followed this modeling process for the entire sample, and then repeated these analyses among the subgroup of survivors. Six records had a missing response to one item, and two records that had a missing response to two items. We imputed missing responses to the mean or modal value for 1 response about Hispanic or Latina ethnicity and the mean value for the

following items: 1 response for an item about social support from a friend, 5 responses for items about campus connectedness, and 3 responses for items about social desirability bias. We performed a sensitivity analysis using list wise deletion of records with missing responses and found no major differences compared to the models using imputed data. We present the results using the imputed data. We used SAS software version 9.4 (SAS Institute, 2013) to perform data cleaning, univariate and bivariate analyses, and linear regression modeling.

We used Mplus software version 7.4 (Muthén & Muthén, 1998- 2015) to perform structural equation modeling. With 202 participants, we had an adequate sample size to perform the analysis (Kline, 2011). We first conducted CFA for our exogenous latent variables: social support from a special person, friends, and family member, campus connectedness, and our endogenous latent variables: personal satisfaction, personal benefits, global evaluation, perceived drawbacks, and emotional reactions. All of the established structures fit well aside from the perceived drawbacks subscale. Modification indices suggested that the final two items on the perceived drawbacks scale were collinear. Both were cited as items that could be used in future versions of the *Reactions to Research Participation Questionnaire* but were not assessed by the original authors (Newman & Willard, 2001). We decided to eliminate the final item because these items are similarly worded (Supplementary Table 1), and during FTFI, some participants told study staff that they thought the final item was redundant. We treated all latent variables and observed items as categorical and used mean- and variance-adjusted weighted least squares (WLSMV) estimation. We used modification indices to improve model fit for each CFA, adding in indicator covariance from the same factor. For each latent variable,

the majority of standardized factor loadings were above 0.70, and each indicator variable loaded on the factor with $p< .001$. We used established indicators to assess model fit with χ^2 (a lower value is better), CFI≥ .95, TLI≥ .95, and RMSEA≤ .06 (Hu & Bentler, 1999). Weighted Root Mean Square Residual (WRMR) is an experimental fit index Mplus provides for categorical data when using WLMSV estimation; WRMR values < 1.0 generally indicate good model fit (DiStefano, Liu, Jiang, & Shi, 2017). After completing CFA for each latent variable, we constructed our measurement model that had satisfactory fit of $\chi^2(729)= 1084.30$, CFI= .97, TLI= .96, RMSEA= .05 and WRMR=1.02.

After fitting the measurement model, we estimated the full structural equation model (Figure 1) to assess the relationship between social support in everyday life (included support from a special person, friends, family, and campus connectedness; all latent variables), to disclosure of sexual violence via survey (observed variable), and reactions to survey participation (personal satisfaction, personal benefits, global evaluation, perceived drawbacks, emotional reactions; all latent variables). We did not use control variables in the structural equation model. We treated our indicators for the latent variables as ordinal categorical and therefore used the WLSMV estimation method, a robust estimator used when sample size is small and it is the estimation method Mplus uses to analyze ordinal categorical variables (Kline, 2011); our analysis meets both of these criteria. We report significance at the $p< 0.1$ level. We present the standardized coefficients in our model and unstandardized results in the supplementary material.

Results

About 26% of our sample disclosed experiencing any sexual violence since coming to college (Table 1). Among all participants, reported personal satisfaction and global evaluation were high and perceived drawbacks were low; these scores did not significantly differ by disclosure status. Survivors, as compared to participants who did not disclose, reported significantly higher personal benefits related to research participation. Survivors also reported significantly higher emotional reactions to research participation than non-survivors, although the mean score of 2.4 among survivors on a scale from 1= *Strongly disagree* to 5= *Strongly agree* indicates that, on average, survivors disagreed that the research raised an emotional response.

Linear Regression Models

Our unadjusted models indicate that among all participants, FTFI was associated with greater personal benefits and supportive language was associated with greater perceived drawbacks. In adjusted models, supportive language was associated with a .108 point greater difference in the perceived drawbacks score, which is a small practical effect. Among survivors only, FTFI and supportive language were significantly associated with perceived drawbacks to participation in unadjusted and adjusted models. In adjusted models, FTFI and supportive language were associated with differences in the perceived drawbacks score that were small in magnitude (.287 and .210 point greater differences, respectively). Notably, bivariate analyses show that survivors and non-survivors both disagreed, on average, that that there were drawbacks to participation (mean score for both groups was 1.7 on a scale from 1= *Strongly disagree* to 5= *Strongly agree*) (Supplementary Table 1). Every survivor "agreed" or "strongly agreed" that they would participate in the study again in future, or participate again if given the chance,

while the range of responses from non-survivors indicated that some participants disagreed with these statements (Supplementary Table 1).

Structural Equation Model

Our full structural equation model had good model fit, $\chi^2(761)= 1135.94$, CFI= .97, TLI= .96, RMSEA= .05 and WRMR= 1.03. The various reactions to research participation were associated with one another as expected and all but one pair of component scales had medium- (d = .3) or large- (d = .5) sized associations (Cohen, 1988). Social support from a special person was negatively associated with perceived drawbacks, support from friends was positively associated with perceived drawbacks, and support from family was negatively associated with emotional reactions to survey participation. Campus connectedness had a large, positive association with personal satisfaction to survey participation. Campus connectedness was positively associated with global evaluation, and negatively associated with perceived drawbacks and emotional reactions. Disclosure had a small, positive association with personal benefits and a medium-sized, positive association with emotional reactions. Disclosure mediated the effect of campus connectedness on emotional reactions; the indirect effect of campus connectedness on emotions was –0.06 (0.03) (Supplementary Table 3).

Discussion

About one quarter of women in our sample disclosed experiencing sexual violence since coming to college; this estimate corroborates those of other studies that have used the SES-R to measure the prevalence of sexual violence among college women during a similar timeframe (Humphrey & White, 2000; Johnson et al., 2017). We found that survivors reported higher scores for personal benefits compared to non-survivors. All

participants disagreed that participating in the survey made them feel emotional, but survivors reported weaker levels of disagreement compared to non-survivors. Previous research has also found that survivors report more emotional reactions to survey participation and personal benefits to participation compared to non-survivors (Edwards et al., 2009).

Descriptive analyses indicated that survivors disagreed that there were drawbacks to participation; however, FTFI had a small, positive association with perceived drawbacks among survivors. The small magnitude of the association between FTFI and perceived drawbacks among survivors could preclude drawing any substantive conclusions from this finding. On one hand, finding that FTFI was associated with perceived drawbacks is contrary to research on feminist methods to study violence, which has shown that participants benefit from FTFI because this method creates a supportive environment (Ellsberg et al., 2001; Jansen et al., 2004; Jewkes et al., 2000; World Health Organization, 2001). Prior research has documented that women survivors volunteered to participate in FTFI about their experiences of sexual violence to support the advancement of this research, achieve personal catharsis, and receive other personal benefits (Campbell & Adams, 2009; Campbell et al., 2010). Our finding also contradicts research among college students, which found that those given questions about sexual violence, as compared to those not asked these questions, reported fewer perceived drawbacks to research participation (Cook et al., 2015). Additionally, disclosure of a stressful experience via FTFI as compared to a computer interface has been associated with lower physiological stress response among college women (Iacovelli & Johnson, 2012). On the other hand, our finding could suggest that college students, as "digital natives" (Prensky,

2001) who have used computers and technology since childhood, may be exhibiting a preference for sharing personal information through technology.

The finding that supportive language was associated with perceived drawbacks among participants, although small in magnitude, indicates the phrasing had the opposite effect of the one intended. Our language followed expert recommendations because we emphasized commonality of experience and reminded participants that they could skip questions (Campbell et al., 2009; Ellsberg & Heise, 2005; Jansen et al., 2004).We also stated that participants were not to blame if they had an unwanted sexual experience and we hypothesize that participants may have negatively responded to the word "blame." This effect of the supportive language requires further investigation (for a fuller discussion, see Krause et al., 2018).

Structural equation modeling revealed the salient influence that campus connectedness has on reactions to survey participation. Campus connectedness had a direct effect on four of the five reactions to survey participation, and was the only form of support related to personal satisfaction, global evaluation, and emotional reactions. Disclosure via survey also had an important role as the singular influence associated with personal benefits to participation. The mediated pathway of campus connectedness to emotional reactions to survey participation indicates that disclosure attenuates the protective effect that campus connectedness has on emotional reactions to survey participation, although the magnitude of this effect is small. This finding suggests that high levels of campus connectedness can lessen the emotional response to survey participation among survivors. Although prior research shows that campus or school connectedness is positively associated to health (Viner et al., 2012), our findings on the

association of campus connectedness with reactions to research participation are novel. We conclude that reactions to participating in surveys about campus sexual violence and campus life generally correspond to how students perceive the support they receive from peers, faculty, and staff.

Limitations

We conducted our study with a small sample of undergraduate women on one university campus; therefore, our findings may not generalize to other samples of college women and college students of different genders. Our data are cross-sectional, and the experience of sexual violence and disclosure pre-survey could have affected perceived social support and feelings of campus connectedness. However, the directionality presented in our structural equation model follows the order of how participants were asked questions in our survey. Although our sample was large enough to conduct structural equation modeling, we did not have adequate sample size to stratify analyses by race, sexual, or gender identity. Our inability to explore how identity and campus connectedness affects comfort with disclosure via survey and reactions to survey participation is a limitation, as it is especially important to use an intersectional lens in all studies of campus sexual violence (Harris & Linder, 2017). It is possible that we did not find the hypothesized associations between FTFI and reactions to survey participation because something was lacking with our interviewer training. However, we included the key components used in other research (Campbell et al., 2009): survey administrators received 40 hours of training on gender-based violence, trauma-informed care, how to receive a disclosure, safety planning, and the protocol, with additional reviews and opportunities for practice right before study start. We administered surveys in accordance

with feminist principles (World Health Organization, 2001) by meeting in a private space on campus, emphasized the autonomy of the participant in the informed consent process and in the survey by reminding participants that they could skip any question or stop the survey at any time, and provided a post-survey debrief with all participants along with referrals to resources.

Implications

The effect of various methodological approaches to measure sexual violence on reactions to survey participation warrants further study. In our study, campus connectedness had a direct relationship with participants' reactions to taking part in a Campus Climate Survey. Higher levels of campus connectedness might help lessen the emotional reactions to survey participation among survivors. The practical implication of this finding suggests that the more a school can promote connectedness among students, the less emotional survivors will feel when participating in Campus Climate Surveys. Future research should examine the harms and benefits of the methods used to implement Campus Climate Surveys, with special attention given to survivors and other groups who hold a minority identity on campus (students of color, LGBTQ students, and students with disabilities). Colleges and universities need to work to foster inclusive campus culture for all students, especially among survivors and while implementing Campus Climate Surveys.

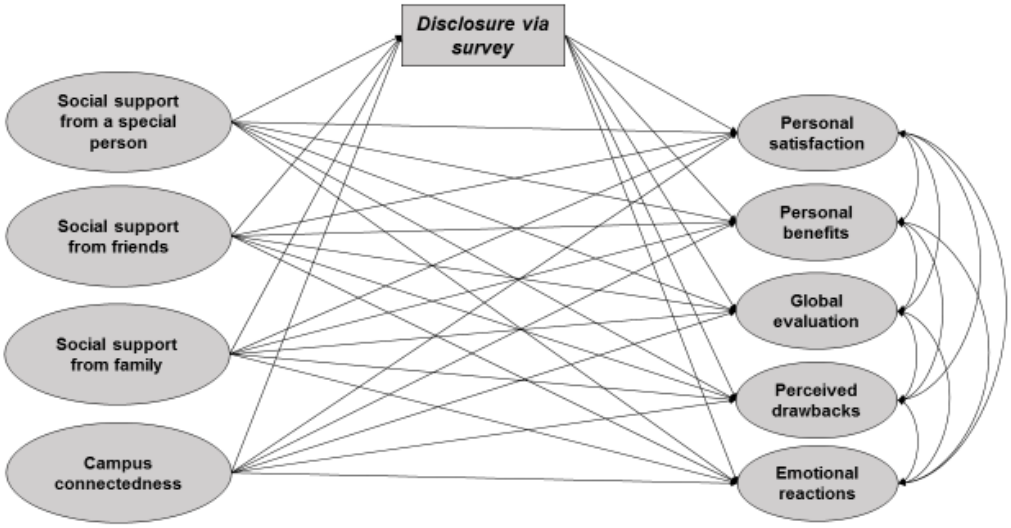

Figure 1. A conceptual model of the relationship between social support, sexual violence disclosure, and reactions to survey participation

Table 1. A comparison of participants who did and did not disclose sexual violence and reactions to survey participation, N=202 college women

	Total	**Disclosed sexual violence**		
		Yes	**No**	
	n=202	**n=53**	**n=149**	
	M (SD)	**M (SD)**	**M (SD)**	***p***
Reactions to survey participation				
Personal satisfaction	4.6 (0.42)	4.6 (0.39)	4.6 (0.43)	1.00
Personal benefits	3.8 (0.65)	3.9 (0.62)	3.7 (0.65)	0.07 †
Global evaluation	4.7 (0.41)	4.7 (0.36)	4.6 (0.42)	0.44
Perceived drawbacks	1.7 (0.46)	1.7 (0.40)	1.7 (0.47)	0.38
Emotional reactions	2.1 (0.82)	2.4 (0.90)	1.9 (0.75)	<0.001 ***

†$p < 0.1$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 2. Unadjusted and adjusted linear regression models of reactions to survey participation by factor, N=202 college women and N=53 survivors

	FTFI vs. CASI				Supportive vs. Neutral language			
	unadjusted		adjusted		unadjusted		adjusted	
	b (SE)	*p*	b (SE)	*p*	b (SE)	*p*	b (SE)	*p*
Reactions to survey participation								
All participants								
Personal satisfaction	0.158 (0.06)	0.01 **	0.070 (0.06)	0.22	-0.046 (0.06)	0.43	-0.016 (0.05)	0.77
Personal benefits	0.049 (0.09)	0.59	-0.016 (0.10)	0.86	-0.111 (0.09)	0.22	-0.081 (0.09)	0.37
Global evaluation	0.084 (0.06)	0.14	-0.006 (0.06)	0.91	-0.092 (0.06)	0.11	-0.058 (0.05)	0.29
Perceived drawbacks	0.038 (0.06)	0.56	0.107 (0.07)	0.11	0.134 (0.06)	0.04 *	0.108 (0.06)	0.08 †
Emotional reactions	-0.086 (0.12)	0.46	-0.015 (0.10)	0.89	-0.002 (0.12)	0.98	0.098 (0.10)	0.34
Survivors only								
Personal satisfaction	0.178 (0.11)	0.10	-0.042 (0.09)	0.66	-0.167 (0.11)	0.13	-0.110 (0.09)	0.21
Personal benefits	-0.077 (0.17)	0.66	-0.095 (0.18)	0.60	-0.286 (0.17)	0.10	-0.257 (0.16)	0.11
Global evaluation	-0.010 (0.10)	0.92	-0.148 (0.11)	0.18	-0.075 (0.10)	0.47	-0.050 (0.10)	0.62
Perceived drawbacks	0.188 (0.11)	0.09 †	0.287 (0.12)	0.02 *	0.204 (0.11)	0.07 †	0.210 (0.10)	0.05 *
Emotional reactions	-0.366 (0.24)	0.14	-0.110 (0.22)	0.62	-0.318 (0.25)	0.21	-0.149 (0.21)	0.48

Notes: Models adjusted for variables that were associated with the outcome of any disclosure and any variables that were not equally distributed by randomization at the 0.1 level. † $p < 0.1$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

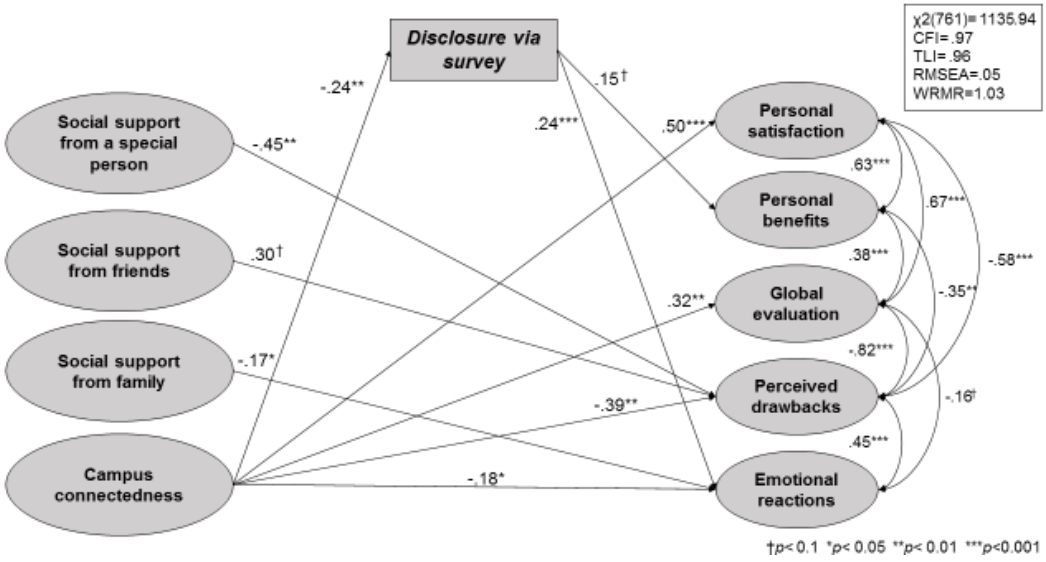

Figure 2. Final model of the relationship between social support, sexual violence disclosure, and reactions to survey participation, standardized pathway and covariance coefficients

Supplementary material

Supplementary Table 1. Reactions to research participation by disclosure status, N= 202 college women

	Total			Disclosed sexual violence						
				Yes			No			
	N=202			N=53			N=149			
Item	**M (SD)**	**Min**	**Max**	**M (SD)**	**Min**	**Max**	**M (SD)**	**Min**	**Max**	***p***
Personal satisfaction	**4.6 (0.42)**	**3.3**	**5.0**	**4.6 (0.39)**	**3.7**	**5.0**	**4.6 (0.43)**	**3.3**	**5.0**	**1.00**
I liked the idea that I contributed to science.	4.6 (0.54)	3.0	5.0	4.6 (0.54)	3.0	5.0	4.6 (0.55)	3.0	5.0	0.85
I was glad to be asked to participate.	4.5 (0.58)	3.0	5.0	4.5 (0.61)	3.0	5.0	4.5 (0.58)	3.0	5.0	0.98
I felt I could stop participating at any time.	4.7 (0.45)	3.0	5.0	4.8 (0.42)	4.0	5.0	4.7 (0.46)	3.0	5.0	0.53
Personal benefits	**3.8 (0.65)**	**2.3**	**5.0**	**3.9 (0.62)**	**2.5**	**5.0**	**3.7 (0.65)**	**2.3**	**5.0**	**0.07 †**
I gained insight about my experiences through research participation.	3.8 (0.89)	1.0	5.0	3.9 (0.93)	2.0	5.0	3.8 (0.88)	1.0	5.0	0.24
I gained something positive from participating.	3.9 (0.70)	2.0	5.0	4.0 (0.71)	2.0	5.0	3.9 (0.70)	2.0	5.0	0.20
I found participating beneficial to me.	3.8 (0.78)	2.0	5.0	3.8 (0.77)	2.0	5.0	3.8 (0.79)	2.0	5.0	0.45
I found participating personally meaningful.	3.6 (0.85)	1.0	5.0	3.8 (0.77)	2.0	5.0	3.6 (0.87)	1.0	5.0	0.02 *
Global evaluation	**4.7 (0.41)**	**3.5**	**5.0**	**4.7 (0.36)**	**4.0**	**5.0**	**4.6 (0.42)**	**3.5**	**5.0**	**0.44**
I think this research is for a good cause.	4.6 (0.52)	3.0	5.0	4.7 (0.46)	4.0	5.0	4.6 (0.54)	3.0	5.0	0.13
I believe that this study's results will be useful to others.	4.5 (0.53)	3.0	5.0	4.5 (0.50)	4.0	5.0	4.5 (0.54)	3.0	5.0	0.99
I was treated with respect and dignity.	4.8 (0.40)	4.0	5.0	4.8 (0.36)	4.0	5.0	4.8 (0.41)	4.0	5.0	0.32
I trust that my replies will be kept private.	4.7 (0.47)	4.0	5.0	4.7 (0.45)	4.0	5.0	4.7 (0.47)	4.0	5.0	0.48
Perceived drawbacks	**1.7 (0.46)**	**1.0**	**2.8**	**1.7 (0.40)**	**1.0**	**2.3**	**1.7 (0.47)**	**1.0**	**2.8**	**0.38**
The study procedures took too long.	1.7 (0.59)	1.0	4.0	1.8 (0.56)	1.0	3.0	1.7 (0.60)	1.0	4.0	0.26
Participating was inconvenient for me.	1.6 (0.63)	1.0	4.0	1.7 (0.61)	1.0	4.0	1.6 (0.64)	1.0	4.0	0.33
I found participating boring.	1.8 (0.64)	1.0	4.0	1.8 (0.58)	1.0	4.0	1.8 (0.66)	1.0	3.0	0.61
I found the questions too personal.	1.8 (0.67)	1.0	4.0	1.9 (0.59)	1.0	3.0	1.8 (0.70)	1.0	4.0	0.25
Knowing what I know now, I would participate in this study again if given the opportunity.	4.4 (0.57)	2.0	5.0	4.4 (0.50)	4.0	5.0	4.5 (0.60)	2.0	5.0	0.43
Had I known in advance what participating would be like I still would have agreed to participate.	4.5 (0.55)	2.0	5.0	4.5 (0.50)	4.0	5.0	4.5 (0.57)	2.0	5.0	0.96
Emotional reactions	**2.1 (0.82)**	**1.0**	**5.0**	**2.4 (0.90)**	**1.0**	**5.0**	**1.9 (0.75)**	**1.0**	**5.0**	**<0.001 *****
The research raised emotional issues for me that I had not expected.	2.3 (1.15)	1.0	5.0	2.8 (1.25)	1.0	5.0	2.1 (1.05)	1.0	5.0	<0.001 ***
I experienced intense emotions during the research session.	1.8 (0.83)	1.0	5.0	2.0 (0.97)	1.0	5.0	1.7 (0.76)	1.0	5.0	0.02 **
I was emotional during the research session.	1.8 (0.88)	1.0	5.0	2.1 (1.01)	1.0	5.0	1.7 (0.82)	1.0	5.0	0.02 **
The research made me think about things I didn't want to think about.	2.4 (1.16)	1.0	5.0	2.8 (1.14)	1.0	5.0	2.2 (1.14)	1.0	5.0	0.001 **

†$p < 0.1$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Supplementary Table 2. Factor loadings for measurement model, N=202 college women

Parameter	Unstandardized coefficients	SE	*p*	Standardized coefficients	SE	*p*
Special person						
Special person 1	1.000	0.000	999.000	0.898	0.019	<0.001 ***
Special person 2	1.076	0.029	<0.001 ***	0.967	0.014	<0.001 ***
Special person 3	0.949	0.035	<0.001 ***	0.853	0.026	<0.001 ***
Special person 4	0.979	0.030	<0.001 ***	0.879	0.024	<0.001 ***
Friend						
Friend 1	1.000	0.000	999.000 ***	0.867	0.027	<0.001 ***
Friend 2	1.034	0.029	<0.001 ***	0.896	0.023	<0.001 ***
Friend 3	1.098	0.043	<0.001 ***	0.951	0.020	<0.001 ***
Friend 4	0.962	0.042	<0.001 ***	0.834	0.027	<0.001 ***
Family						
Family 1	1.000	0.000	999.000 ***	0.930	0.021	<0.001 ***
Family 2	0.940	0.031	<0.001 ***	0.875	0.020	<0.001 ***
Family 3	0.965	0.029	<0.001 ***	0.898	0.021	<0.001 ***
Family 4	0.920	0.032	<0.001 ***	0.856	0.027	<0.001 ***
Campus						
Campus 1	1.000	0.000	999.000 ***	0.683	0.061	<0.001 ***
Campus 2	1.214	0.122	<0.001 ***	0.829	0.044	<0.001 ***
Campus 3	1.090	0.109	<0.001 ***	0.744	0.042	<0.001 ***
Campus 4	1.099	0.115	<0.001 ***	0.750	0.043	<0.001 ***
Campus 5	0.968	0.125	<0.001 ***	0.661	0.070	<0.001 ***
Campus 6	1.061	0.118	<0.001 ***	0.724	0.063	<0.001 ***
Campus 7	0.986	0.130	<0.001 ***	0.673	0.066	<0.001 ***
Campus 8	1.013	0.138	<0.001 ***	0.691	0.053	<0.001 ***
Campus 9	0.905	0.108	<0.001 ***	0.618	0.059	<0.001 ***
Personal satisfaction						
Personal satisfaction 1	1.000	0.000	999.000 ***	0.849	0.041	<0.001 ***
Personal satisfaction 2	1.071	0.073	<0.001 ***	0.909	0.033	<0.001 ***
Personal satisfaction 3	0.745	0.082	<0.001 ***	0.632	0.060	<0.001 ***
Personal benefits						
Personal benefits 1	1.000	0.000	999.000 ***	0.755	0.046	<0.001 ***
Personal benefits 2	1.054	0.118	<0.001 ***	0.795	0.060	<0.001 ***
Personal benefits 3	0.975	0.121	<0.001 ***	0.736	0.067	<0.001 ***
Personal benefits 4	0.982	0.092	<0.001 ***	0.741	0.052	<0.001 ***
Global evaluation						
Global evaluation 1	1.000	0.000	999.000 ***	0.795	0.042	<0.001 ***
Global evaluation 2	1.113	0.058	<0.001 ***	0.885	0.036	<0.001 ***
Global evaluation 3	1.191	0.067	<0.001 ***	0.948	0.024	<0.001 ***
Global evaluation 4	1.228	0.078	<0.001 ***	0.977	0.025	<0.001 ***
Perceived drawbacks						
Perceived drawbacks 1	1.000	0.000	999.000 ***	0.499	0.067	<0.001 ***
Perceived drawbacks 2	1.280	0.166	<0.001 ***	0.638	0.055	<0.001 ***
Perceived drawbacks 3	1.220	0.162	<0.001 ***	0.608	0.066	<0.001 ***
Perceived drawbacks 4	0.952	0.157	<0.001 ***	0.475	0.063	<0.001 ***
Perceived drawbacks 5	1.763	0.283	<0.001 ***	0.879	0.055	<0.001 ***
Emotional reactions						
Emotional reactions 1	1.000	0.000	999.000 ***	0.710	0.082	<0.001 ***
Emotional reactions 2	1.328	0.094	<0.001 ***	0.943	0.127	<0.001 ***
Emotional reactions 3	1.295	0.085	<0.001 ***	0.920	0.096	<0.001 ***
Emotional reactions 4	0.919	0.097	<0.001 ***	0.652	0.131	<0.001 ***

†$p < 0.1$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Supplementary Table 3. Path coefficients, parameter estimates, and R-squared values for the structural equation model, N=202 college women

Parameter	Unstandardized coefficients	SE	*p*	Standardized coefficients	SE	*p*
Direct effects						
Special person→Personal satisfaction	0.168	0.121	0.165	0.178	0.127	0.162
Friend→Personal satisfaction	-0.115	0.128	0.370	-0.117	0.131	0.370
Family→Personal satisfaction	0.032	0.087	0.714	0.035	0.096	0.714
Campus→Personal satisfaction	0.626	0.115	<0.001 ***	0.504	0.082	<0.001 ***
Special person→Personal benefits	0.101	0.111	0.363	0.120	0.132	0.362
Friend→Personal benefits	-0.150	0.125	0.231	-0.172	0.143	0.229
Family→Personal benefits	0.079	0.072	0.268	0.098	0.088	0.266
Campus→Personal benefits	0.160	0.111	0.151	0.144	0.100	0.150
Special person→Global evaluation	0.155	0.129	0.227	0.176	0.144	0.224
Friend→Global evaluation	0.024	0.138	0.861	0.026	0.150	0.861
Family→Global evaluation	0.019	0.088	0.834	0.022	0.104	0.834
Campus→Global evaluation	0.372	0.127	0.003 **	0.319	0.107	0.003 **
Special person→Perceived drawbacks	-0.247	0.090	0.006 **	-0.446	0.149	0.003 **
Friend→Perceived drawbacks	0.170	0.098	0.083 †	0.295	0.164	0.072 †
Family→Perceived drawbacks	0.069	0.049	0.157	0.128	0.090	0.154
Campus→Perceived drawbacks	-0.284	0.092	0.002 **	-0.389	0.112	0.001 **
Special person→Emotional reactions	0.044	0.099	0.659	0.055	0.125	0.659
Friend→Emotional reactions	-0.116	0.110	0.290	-0.142	0.134	0.291
Family→Emotional reactions	-0.132	0.061	0.032 *	-0.173	0.080	0.031 *
Campus→Emotional reactions	-0.188	0.093	0.042 *	-0.181	0.086	0.035 *
Special person→Disclosure	-0.036	0.070	0.610	-0.073	0.142	0.610
Friend→Disclosure	0.110	0.069	0.112	0.217	0.135	0.107
Family→Disclosure	0.003	0.046	0.948	0.006	0.098	0.948
Campus→Disclosure	-0.156	0.053	0.003 **	-0.242	0.078	0.002 **
Disclosure→Personal satisfaction	0.182	0.148	0.220	0.094	0.077	0.220
Disclosure→Personal benefits	0.263	0.136	0.053 †	0.153	0.078	0.050 †
Disclosure→Global evaluation	0.246	0.15	0.100	0.136	0.083	0.101
Disclosure→Perceived drawbacks	0.016	0.111	0.883	0.014	0.098	0.883
Disclosure→Emotional reactions	0.390	0.113	0.001 **	0.241	0.068	<0.001 ***
Indirect effects						
Campus→Disclosure → Emotional reactions	-0.061	0.028	0.030 *	-0.059	0.026	0.027 *
Disturbance variances	Estimate	SE		Estimate	SE	
Personal satisfaction	0.516	0.062		0.717	0.064	
Personal benefits	0.540	0.069		0.947	0.038	
Global evaluation	0.505	0.069		0.798	0.066	
Perceived drawbacks	0.195	0.054		0.785	0.081	
Emotional reactions	0.406	0.056		0.806	0.052	
Disclosure	0.184	0.015		0.950	0.032	
Equation-level goodness of fit	R-square					
Personal satisfaction	0.283					
Personal benefits	0.053					
Global evaluation	0.202					
Perceived drawbacks	0.215					
Emotional reactions	0.194					
Disclosure	0.050					

†$p < 0.1$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

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Chapter 5:

Summary and Conclusion

The federal guidance released to encourage colleges and universities to implement Campus Climate Surveys has the potential the change to landscape of campus sexual violence as it has been studied for the past 30 years in terms of measurement, prevention, and response (Fisher et al., 2000; Kilpatrick et al., 2007; Koss et al., 1987; Krebs et al., 2011; Krebs et al., 2007; Tjaden & Thoennes, 2000). Campus Climate Surveys, in practice, create an opportunity for each school to confront sexual violence as a problem on its own campus. Implementing Campus Climate Surveys, at a minimum, signals that a college or university acknowledges that sexual violence needs to be addressed (White House Task Force to Protect Students from Sexual Assault, April 2014). At best, Campus Climate Surveys will be used to collect data that guide prevention and focused response, funding, and strategies.

The effort to establish best practices for measuring sexual violence among undergraduate populations will persist as more colleges and universities in the United States and globally seek to routinize surveillance. This dissertation continued the tradition of scholarly inquiry into sexual violence measurement. Given the importance of data collection to inform prevention efforts and of disclosure for both validity and the health of participants, the focus on measurement has sought to address three main questions: first, how have most colleges and universities measured "sexual assault"; second, does provision of social support via CCS administration methods facilitate disclosure; and third, how is social support in CCS measurement associated with reactions to CCS participation and how does social support in everyday life influence reactions to survey

participation, especially among survivors? In our investigation of methodological approaches to measurement, we operationalized the idea of social support in measurement as a way to facilitate disclosure, informed by feminist research methods.

Evaluation of the Dissertation Research

Scientific contributions. Chapter 2 provided the first systematic review of Campus Climate Surveys and offers an in-depth analysis of how colleges and universities have measured *sexual assault*. This review necessarily searched the grey literature to understand how this massive survey initiative is being implemented. With insight into the methods of these surveys, we can consider strengths and areas for improvement as the measurement of sexual assault on college campuses become a normative institutional practice. Our main findings were threefold:

1. There is no systematic way to identify which colleges and universities have administered Campus Climate Surveys (no sampling frame and no centralized database with reports or results).
2. There is large variation in the measurement of sexual assault and most schools do not use a definition of sexual assault that matches expert recommendations.
3. By not knowing the totality of schools that are administering surveys and by not using the same measure for sexual assault, there is a missed opportunity to create national knowledge about campus sexual assault using multilevel regional and institution-level characteristics.

Chapter 3 analyzed data from the first study designed to evaluate the modal effects and introductory language on a survey about sexual assault in a sample of college women. We implemented a 2x2 factorial survey experiment where we compared mode of

administration (FTFI vs. CASI) and introductory language (supportive vs. neutral), conceptualizing the FTFI and supportive language conditions as providing social support to participants in the survey environment. We hypothesized that participants in the conditions with social support would disclose experiences of sexual violence at higher rates. Our main conclusions were:

1. There were no major differences in the rate of disclosure by mode or introductory language.
2. FTFI and CASI modes should be tested in a larger experimental trial.
3. More evaluation and testing are needed to develop supportive introductory language.

Chapter 4 analyzed data from the survey experiment to understand reactions to survey participation. We hypothesized that assignment to the socially supportive conditions would be positively associated with positive reactions to survey participation and negatively associated with negative reactions. We also used structural equation modeling to explore the relationship between social support in everyday life, disclosure via survey, and reactions to survey participation. Documenting reactions to survey participation in trauma research to generate data on the balance of benefits and harms of participation is important. Also, we can begin to understand which survey methods are associated with greater benefits and to fewer harms. We investigated reactions to survey participation among all participants and the subsample of survivors. Our main conclusions were:

1. Survivors, compared to participants who did not disclose, found greater personal benefits and greater emotional reactions to survey participation.

2. There were no differences in personal satisfaction, personal benefits, global evaluation, and emotional reactions based on the mode or introductory language used among all participants or survivors. Among all participants, FTFI was associated with higher perceived drawbacks. Among survivors, FTFI and supportive introductory language were associated with higher perceived drawbacks to participation.
3. Campus connectedness had a direct positive association with personal satisfaction and global evaluation, and a direct negative association with perceived drawbacks and emotional reaction to survey participation. Disclosure was associated with persona benefits to participation and also mediated the pathway between campus connectedness and emotional reactions. Disclosing sexual violence via survey attenuates the protective effect that campus connectedness has on emotional reactions to survey participation, suggesting that higher levels of campus connectedness can help buffer the emotional response to survey participation among survivors.

Strengths. A major strength of this dissertation project is its unified focus on Campus Climate Surveys. The decision for colleges and universities to survey students about sexual violence experiences on a regular basis represents a significant change for public health and criminological surveillance, institutional research, and student survivors. This new practice warrants scientific review and evaluation. In this dissertation, we examined the current methods schools are using to implement Campus Climate Surveys and empirically evaluated survey methods to measure sexual violence to investigate their effect on measurement validity and participant reaction to survey participation. The

strength of Chapter 2 is that we applied a rigorous systematic review methodology to the grey literature and provided empirically-based recommendations about establishing standardized measures and reporting. We also highlighted the potential of a national database about campus sexual assault for institutions and policy makers to consider while we, as a nation, devote substantial resources to surveying our students while also outlining steps that would have to be taken to encourage colleges and universities to participate in such a database. Chapters 3 and 4 united the international and domestic violence research methods and sought to answer questions about best practices. Operationalizing FTFI and supportive introductory language as forms of social support on a survey designed to ask about sexual violence, among college women, was unique. We evaluated these methods using a survey experiment, allowing causal inference (Shadish et al., 2002), a standard not often used in the debates over sexual violence measurement methods (Hamby, 2014). We also aimed to investigate what measurement methods and social factors (e.g. social support) were associated with greater benefits and fewer harms in survey research about trauma. It is a strength that we prioritized ethical engagement of survivors, and all participants, as an area of inquiry. Our goal was to make a unique contribution to the evidence base about current practice of sexual violence measurement in Campus Climate Surveys and to consider new ways to conceptualize and test sexual violence measurement methods that would facilitate disclosure.

Limitations. The limitations of Chapter 2 were that it was not possible to identify all schools that had Campus Climate Survey reports. We were limited in our ability to draw concrete conclusions in our survey experiment because of the small sample size. Given the small sample size of the survey experiment, the results in Chapter 3 may be

better perceived as an opportunity for hypothesis generation and exploration rather than as providing an "answer" to the research question. The small sample size also limited the exploratory hypotheses using structural equation modeling in Chapter 4, where it would be important to understand pathways that influence social support and reactions to survey participation particularly for survivors. The cross-sectional nature of the data also made the directionality of the relationships in Chapter 4 more difficult to disentangle.

Implications for research, policy, and practice

Campus Climate Surveys appeal to researchers, policymakers, and practitioners who work in campus sexual violence prevention and response. Ideally, researchers, policy makers, sexual violence advocates, and Title IX professionals would engage in regular, iterative dialogue on the campus and national level to improve survey methodology, use survey results to prevent violence on campus, and create policy that motivates schools to enact best practices. The aim to reduce, and ultimately, to prevent sexual violence on college and university campuses represents a shared goal for public health and education officials. Preventing sexual violence protects the right of all students to learn without threat or occurrence of sex discrimination.

Future research. Future research to document the practices of Campus Climate Survey research, as well as its findings, is needed. It will be easier to conduct meta-analyses and multilevel analyses when schools use the same measure for sexual assault, and especially if schools submit their data to be kept in an anonymous database. This database would allow for researchers to uncover characteristics of schools or other policy-level decisions that may impact sexual violence prevalence, student knowledge and attitudes about sexual assault, and receipt of training. The survey experiment leads to

a new research with two key aims: (1) to establish guiding principles with which to conduct Campus Climate Surveys with the goal to facilitate disclosure as a matter of measurement validity. Finally, this research should also use methods to make judgements about benefits and harms in the research. We need longitudinal research to understand how disclosure affects social support and campus connectedness, and to understand the long-term benefits and harms in asking students to participate in such surveys.

Implications for policy. To make the most of Campus Climate Surveys, policymakers and researchers should find a way to create and manage a database to which colleges and universities can anonymously provide their data to allow for multilevel modeling which could examine student-, institution- and state- level factors. This database would allow for researchers and practitioners to begin to address prevention beyond the individual student level. A barrier to this proposed initiative will be to determine how to incentivize schools to participate; although, we have one model with the Clery Act, legislation which requires colleges and universities to publically report crimes that occur on campus (Clery Act, 1990). Policymakers should form partnerships with researchers and practitioners to assess survey methods that emphasize both data quality and participant well-being. Data about benefits and harms to research participation can be used to educate IRB and other review committees in order to create policies that assist in facilitating the conduct of violence research among students.

Implications for practice. Campus life administrators, advocates, violence prevention professionals, and researchers recently have advocated for colleges to enact a trauma-informed approach within sexual violence prevention and response services (McCauley & Casler, 2015; National Sexual Violence Resource Center and National

Sexual Assault Coalition Resource Sharing Project, 2013). Practitioners and researchers should partner to create trauma-informed research methodology for studying sexual violence on campus. Using a trauma-informed framework would align research methodology with national policy objectives to address trauma (National Prevention Council, 2011; Substance Abuse and Mental Health Services, 2015). A trauma-informed framework is used increasingly within medical and advocacy systems for survivors (Burton & Carlyle, 2015; Cleary & Hungerford, 2015; Wilson, Fauci, & Goodman, 2015) and could extend into survey research. A holistic commitment to the trauma-informed framework on campus provides students with a consistent experience where the guiding principles from prevention and response services extend to the research setting. A trauma-informed framework unites two separate approaches within the literature that aim to reduce survivor distress and should be integrated: feminist methodological best practices for studying intimate partner and sexual violence (Btoush & Campbell, 2009; Campbell et al., 2009, 2010; Ellsberg & Heise, 2002; Ellsberg et al., 2001; Jansen et al., 2004; World Health Organization, 2001) and ethics research that assesses distress related to participation in studies of traumatic experiences (McClinton Appollis et al., 2015; Newman & Kaloupek, 2009; Newman, Walker, & Gefland, 1999; Newman & Willard, 2001). Finally, a trauma-informed research methodology would provide investigators with guidelines for how to conduct studies of sexual violence on campus that improves the research experience for survivors and, consequently, would achieve better measurement of sexual violence.

Conclusion

Researchers should be striving constantly to improve how they measure sexual violence to improve participant experience and maximize data quality. Improving practices through empirical research is critical to informing the evidence base. Data on methodological practices need to be collected to guide the future for prevention and response while prioritizing the benefits and minimizing the harms of the all students, and especially survivors. In the practice of implementing Campus Climate Surveys on campus, researchers and practitioners should be integrating trauma-informed practices into the surveillance mechanism for measuring sexual violence among students.

Furthermore, it may be worthwhile to return to the idea of the survey "interview as intervention" (Ellsberg & Heise, 2002b). Because we know that the prevalence of sexual violence is high, but the percentage of formal reports is low, Campus Climate Surveys present an opportunity to identify survivors and link them to care. Surveys are an important chance for colleges and universities to connect with students who otherwise may not feel connected to the campus community.

Importantly, we found that FTFI and CASI elicit similar rates of sexual violence disclosure. One advantage is that CASI is a cost-effective way to survey students. However, CASI also removes the feminist lens from sexual assault measurement. Feminist approaches to sexual violence measurement focus on the importance of disclosure. Creating conditions that facilitate disclosure of sexual violence is rooted in advocacy efforts developed by women and feminists throughout generations. FTFI is a way to bear witness to disclosure, provide support, and facilitate linkages to resources. Campus sexual violence research, first and foremost, has ethical obligations to the survivors who have experienced violence. The future research agenda for campus sexual

assault should seek more ways to integrate feminist methodology into measurement, not divorce from it. We can move the field of campus sexual violence forward by conducting novel studies to determine evidence-based methods for best practice. We also can advance campus sexual violence research by returning to the feminist practice upon which this research was founded.

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