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Intimate Partner Violence and Women with Disabilities: The Relationship Between Experience of Violence, Social Support and Mental Health

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Abstract

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Scholarship suggests that women with disabilities experience intimate partner violence at rates comparable to, if not greater than, their non-disabled counterparts. However, few studies have examined this phenomenon, and no research to date has investigated the relationship between experience of intimate partner violence, social support, and mental health outcomes among women with disabilities. The purpose of this research was to describe the prevalence of intimate partner violence among women with disabilities and compare that to the prevalence among women without disabilities, as well as to examine the association between experience of intimate partner violence and psychological distress among women with disabilities and the moderating role of social support on this relationship. A secondary analysis of a subset of the 2007 BRFSS data was conducted. The responses of 5,188 women who completed both the intimate partner violence and mental health modules were analyzed using bivariate and logistic regression analyses. Of the respondents included in this analysis, 954 women reported some form of disability. The results of this study indicate that women with disabilities are significantly more likely to experience intimate partner violence than their non-disabled counterparts (36.4% vs. 20.3%, respectively). Furthermore, women with disabilities who have experienced intimate partner violence are approximately 2.3 times more likely to suffer from serious psychological distress than those who have not experienced intimate partner violence. Although social support did not moderate this relationship, it was found to have a mediating effect. Because women with disabilities who experience partner abuse are increasingly likely to have poorer mental health outcomes, additional public health resources are needed to address mental health issues within this population, and efforts must be made to strengthen the social support networks that are so vital to their psychological well being.

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I. INTRODUCTION

The World Health Organization (WHO) has identified violence against women, defined as "any act of gender-based violence that results in physical, mental, or sexual harm or suffering to women," as a serious public health problem and a violation of human rights (WHO, 2009). Intimate partner violence, defined by the Centers for Disease Control and Prevention (CDC) as "physical, sexual or psychological harm by a current or former partner or spouse," is one of the most common forms of violence against women (CDC, 2010). The National Violence Against Women (NVAW) survey has estimated that approximately 4.8 million intimate partner sexual and physical assaults are perpetrated against U.S. women annually (Tjaden & Thoennes, 2000). In the United States, a staggering 25% of all women have experienced physical and/or sexual intimate partner violence within their lifetime, and 1.5% of women have experienced physical and/or sexual intimate partner violence within the past 12 months (Tjaden & Thoennes, 2000).

The costs associated with intimate partner violence are tremendous not only for the women who experience partner violence, but also their families, communities, and society at large. According to the CDC, in 2003 the estimated societal cost of intimate partner violence, including direct costs for medical care and indirect costs associated with loss of productivity, exceeded $8.3 billion (CDC, 2010). Neither are the consequences entirely physical or immediate. While the direct outcomes of intimate partner violence include injury and even death-- a third of all female homicide victims in 2005 were killed by an intimate partner (Bureau of Justice

Statistics, 2011)-- abused women often suffer from long-term physical, mental, and behavioral health issues as well (Dutton, Green, Kaltman, Roesch, Zeffiro, & Krause, 2006; Zolotor, Denham, & Weil, 2009).

Women with disabilities are a population particularly vulnerable to intimate partner violence. The Americans with Disabilities Act (ADA) defines disability as "a physical or mental impairment that substantially limits one or more life activities of an individual; a record of such impairment; or being regarded as having such an impairment" (U.S. Department of Justice, 2008). Figures from the 2000 Census indicate that in the United States, more than 25 million females over the age of 5, or nearly 20% of the entire female population, have some form of disability (U.S. Census Bureau, 2000). Research suggests that women with disabilities experience intimate partner violence at rates at least comparable to women without disabilities (Martin et al., 2006; Young, Nosek, Howland, Chanpong, & Rintala, 1997), and there is a growing body of evidence indicating that women with disabilities may in fact experience partner violence at higher rates than their non-disabled counterparts (Barrett, O'Day, Roche, & Carlson, 2009; Brownridge, 2006; Smith, 2008). Furthermore, research has demonstrated that women with disabilities experience abuse for significantly longer periods of time (Young et al., 1997) and have a greater likelihood of experiencing more serious forms of violence than women without disabilities (Martin et al., 2006). Moreover, as abuse may aggravate existing disability related complications, the consequences of intimate partner violence can be especially pernicious for women with disabilities.

In recognition of the significant costs associated with intimate partner violence and the extent of its influence, public health researchers have devoted substantial attention to this issue. Numerous large-scale surveys, such as the National Family Violence Survey (NFVS), the National Violence Against Women Survey (NWAW), and the National Crime Victimization Survey (NCVS), have established the frequency at which partner violence occurs and have helped to increase awareness of the scope of the problem (Field & Caetano, 2005). These studies have also been important in demonstrating the disparities in intimate partner violence across racial and ethnic groups and the influence of sociodemographic factors, such as income, employment, and education level, on risk for abuse (Field & Caetano, 2005). Other research has focused on both the immediate and persistent health effects associated with intimate partner violence, and these studies have established that intimate partner violence has significant repercussions for women's physical and mental health and well being (e.g. Dutton et al., 2006; Zolotor, Denham & Weil, 2009). Further, studies have found that women who experience intimate partner violence are more likely to engage in a number of risk behaviors that further compromise their health (Plichta, 2004).

While emerging research suggests that women with disabilities are at increased risk for partner abuse, scant attention has been paid to this issue within the larger field of intimate partner violence research. Early studies examining this relationship found that partner violence figures largely into the experiences of women with disabilities and highlighted the need for further investigation of intimate partner violence within this population (Nosek, Foley, Hughes, & Howland, 2001; Young et

al., 1997). Several scholars have focused their efforts on better establishing prevalence of intimate partner violence among women with disabilities, and their findings indicate that women with disabilities experience partner abuse more frequently, for longer periods of time, and in more serious forms than women without disabilities (Barrett et al., 2009; Brownridge, 2006; Brownridge, Ristock & Hiebert-Murphy, 2009; Smith, 2008; Snith & Strauser, 2008). However, likely due to a lack of consistency in measures, these estimates vary widely across studies, which further complicates our understanding of this issue. Moreover, there is dearth of research exploring the association between experience of intimate partner violence and other health outcomes among women with disabilities. Although research has linked interpersonal violence to depression and social isolation (Nosek, Hughes, Taylor, & Taylor, 2006), no studies have looked specifically at these factors in relation to intimate partner violence among women with disabilities.

It is, however, well established that among all women, experience of intimate partner violence significantly predicts poorer mental health functioning. Golding's (1999) analysis of more than 40 studies investigating the relationship between intimate partner violence and mental health found that females with a history of abuse were 3 to 5 times more likely to exhibit symptoms of depression, suicidality, and post-traumatic stress disorder (PTSD). Greater severity of intimate partner violence, multiple experiences of victimization, recency of violence, and continued violence over long periods of time have all been associated with increased severity of mental health symptoms (Bonomi, Anderson, Rivara, & Thompson, 2007; Dutton et al., 2006; Golding, 1999; Mechanic, Weaver, & Resick, 2008). Importantly, research

suggests that social support may mute or in some cases fully protect against the damanging effects of intimate partner violence on mental health (Carlson, McNutt, Choi, & Rose, 2002; Coker, Smith, Thompson, McKeown, Bethea, & Davis, 2002; Mburia-Mwalili, Clements-Nolle, Lee, Shadley, & Yang, 2010; Meadows, Kaslow, Thompson, & Jurkovic, 2005). Though the exact pathways through which social support modifies this relationship are not fully understood (Beeble, Bybee, Sullivan, & Adams, 2009), a growing body of evidence suggests that social support plays an important role in mitigating many of the adverse mental health outcomes associated with intimate partner violence.

This is consistent with Cohen's (1985) stress-buffer model of social support, which theorizes that social support acts as a moderator, or buffer, for individuals experiencing stress. As illustrated in figure 1, this theory posits that social support may play a role at several points in the chain linking experience of stress to physical and psychiatric disease (Cohen, Underwood, & Gottlieb, 2000). In the immediate aftermath of a stressful event, available social support may stregthen an individual's perceived ability to cope and prevent her from appraising the situation as highly stressful. Following a stress appraisal, adequate social support may intervene between the experience of stress and the onset of physical or psychiatric disease by reducing the perceived importance of the problem or encouraging healthful behaviors (Cohen & Wills, 1985). This theory suggests that experience of intimate partner violence may disparately impact women's health depending on their perceived level of social support.

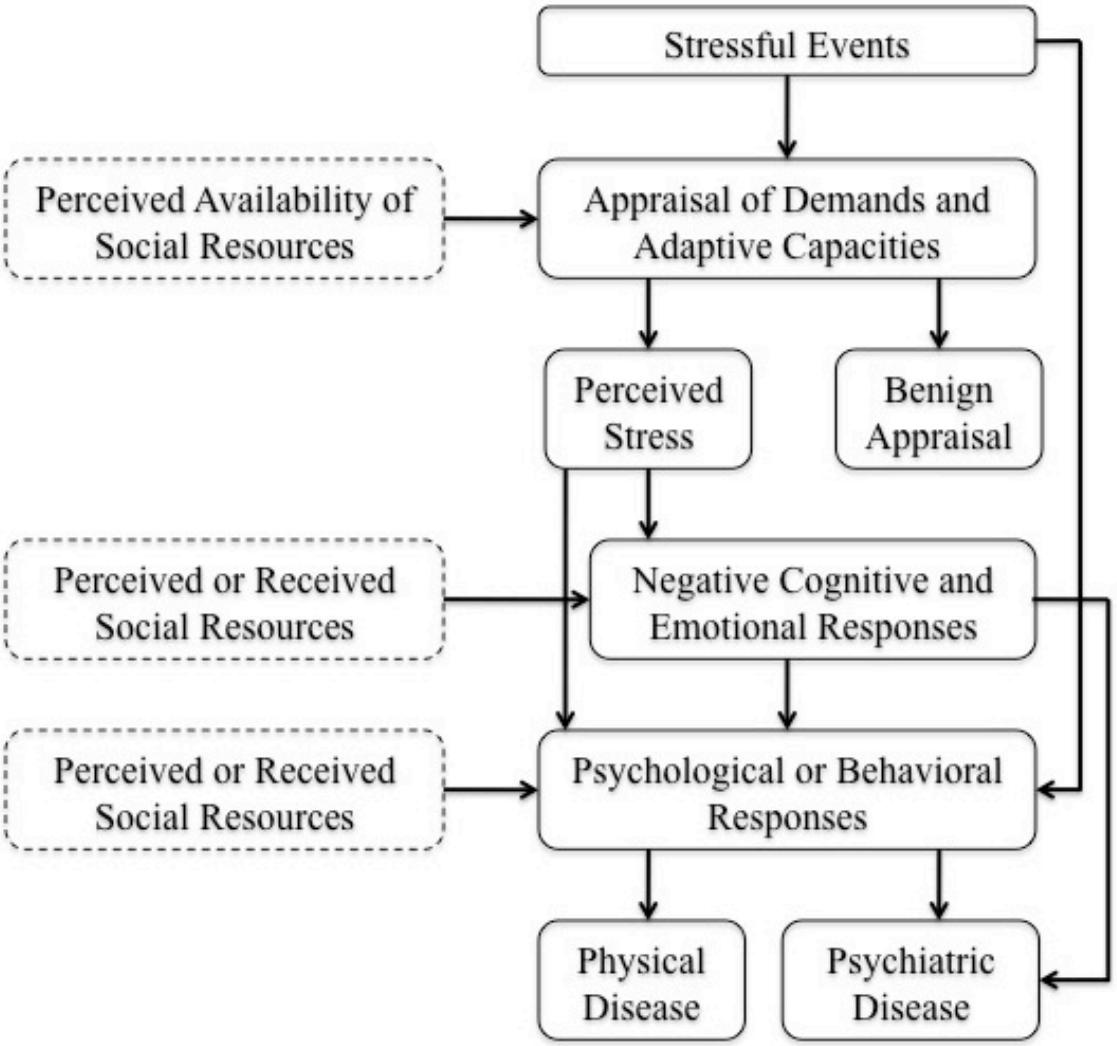

Figure 1.Stress-Buffering Model of Social Support (Cohen, 2000)

To date, no research has looked solely at the relationship between experience of intimate partner violence, mental health outcomes, and level of social support among women with disabilities. This study expands on previous research linking experience of intimate partner violence, social support, and mental health functioning among all women by examining these associations in a population of women with disabilities. Specifically, through a secondary of 2007 BRFSS data, this research proposes to:

1) Describe the prevalence of intimate partner violence among women with disabilities

2) Compare the prevalence of intimate partner violence among women with disabilities to the prevalence of intimate partner violence among women without disabilities

3) Examine the association between experiences of intimate partner violence and mental health among women with disabilities

4) Determine the extent to which presence of perceived social support moderates the relationship between experience of intimate partner violence and poor mental health outcomes

Based on the findings of previous research and Cohen's (1985) stress-buffer model of social support, this research hypothesizes that:

1) There will be a significant difference in prevalence of intimate partner violence among women with disabilities when compared to prevalence of intimate partner violence among women without

2) Experience of intimate partner violence will be associated with poorer mental health outcomes among women with disabilities

3) Among women with disabilities, presence of perceived social support will moderate the relationship between experience of intimate partner violence and poor mental health outcomes

II. LITERATURE REVIEW

In order to better understand the relationship between experience of intimate partner violence, mental health outcomes, and level of social support among women with disabilities, this chapter will begin by broadly surveying the research landscape of intimate partner violence among women in the United States generally before moving to a thorough exploration of studies that have looked at this issue among women with disabilities specifically. Because no studies have examined these associations expressly in this population, the narrative will then shift back to review literature that has investigated the relationship between intimate partner violence and mental health among all women, as these findings support the hypothesis that women with disabilities who have a history of intimate partner violence will have poorer mental health functioning than those who have not been abused. Finally, this chapter will examine studies that have explored the pathways through which social support attenuates the mental health consequences of intimate partner violence.

Intimate Partner Violence

Intimate partner violence is pervasive in the United States and is a serious public health concern. It is estimated that nearly 25% of women and 8% of men have been physically and/or sexually abused by an intimate partner over the course of their lifetime (Tjaden & Thoennes, 2000). While both men and women experience intimate partner violence, women are disproportionately at risk. According to the National Violence Against Women (NVAW) survey, women are not only significantly more likely to experience intimate partner violence than men, they also

have a greater likelihood of experiencing more serious forms of intimate partner violence and sustaining injury (Tjaden & Thoennes, 2000). In addition, experience of intimate partner violence has been linked to a number of deleterious physical (Coker, Smith, Bethea, King, & McKeown, 2000), mental (Dutton et al., 2006) and behavioral health outcomes (Plichta, 2004). Because intimate partner violence presents an enormous public health burden, serious attention has been given to the issue within the research community.

Findings from the NVAW survey also indicate that prevalence of intimate partner violence varies across race and ethnicity groups (Tjaden & Thoennes, 2000). American Indian and Alaska Native women report significantly higher lifetime experience of intimate partner violence than women of any other racial backgrounds. When compared to White women, African American females are also at increased risk for experience of intimate partner violence. While overall reported prevalence of intimate partner violence did not differ significantly between Hispanic and non-Hispanic women, Hispanic women were more likely to report experiences of sexual violence (Tjaden & Thoennes, 2000). However, other research suggests that differences in prevalence of partner violence in minority populations are more closely tied to socioeconomic status than race or ethnicity (Hien & Ruglass, 2009).

Experience of intimate partner has been associated with a number of both acute and chronic physical health conditions. Injury is often a direct outcome of intimate partner violence, and it is estimated that more than 40% of women who report partner violence were injured during their most recent exposure to violence (Tjaden & Thoennes, 2000). Martin and colleagues (2008) found that women who

report a history of intimate partner violence also report significantly more poor health days generally than non-abused women. Coker et al. (2000) determined that experience of psychological violence was associated with more physician visits, poorer overall reported health, and a number of health conditions, including chronic pain, frequent headaches, migraines, irritable bowel syndrome, bladder, kidney and urinary tract infections, pelvic inflammatory disease, and sexually transmitted infections.

Further research has demonstrated that women who experience intimate partner violence are consistently more likely to report poor mental health functioning. Studies have found that women who experience partner violence report a greater number of poor mental health days (Martin et al., 2008), higher psychological distress (Edwards, Black, Dhingrah, McKnight-Elly, & Perry, 2009), and lower mental functioning scores (Bonomi, et al., 2006). Experience of intimate partner violence has additionally been associated with anxiety (Blasco-Ros, Sanchez-Lorente, & Martinez, 2010), depression, PTSD symptoms (Dutton, Green, Kaltman, Roesch, Zeffiro, & Krause, 2006; Golding, 1999; Mechanic, Weaver, & Resick, 2008), suicidal ideation and suicidal attempts (Golding, 1999; Houry, Kaslow, & Thompson, 2005).

In addition, women who experience intimate partner violence are more likely to engage in a number of risk behaviors that further compromise their physical, mental, and sexual health. Women with a history of intimate partner violence are more likely to abuse substances, including alcohol, tobacco, psychotropic drugs and pain medications (Golding, 1999; Plichta, 2004). Intimate partner violence has also

been associated with disordered eating patterns, including overeating, vomiting, using laxatives and taking other extreme measures to control weight (Plichta, 2004; Zolotor, Denham, & Weil, 2009). Women who have experienced intimate partner violence are also more likely to engage in sexual risk-taking behaviors, including unprotected sex, multiple sex partners, and trading sex for money, food and other items (Zolotor, Denham, & Weil, 2009).

Intimate Partner Violence and Women with Disabilities

Women with disabilities are an underserved and understudied population that is especially vulnerable to experiences of violence (Brownridge, 2009). While research within this field has remained relatively inchoate until recently, emerging scholarship suggests that women with disabilities are at particular risk for experiencing intimate partner violence (Brownridge, 2006; Brownridge et al., 2008; Martin, et al., 2006; Smith, 2008). Several studies indicate that women with disabilities experience intimate partner violence at rates comparable to their non-disabled counterparts (Martin, et al., 2006; Young et al., 1997), and more recent literature suggests that women with disabilities may in fact experience intimate partner violence at higher rates than women without disabilities (Brownridge, 2006; Smith, 2008). Moreover, research has demonstrated that women with disabilities experience abuse for significantly longer periods of time than women without disabilities (Young et al., 1997) and that they are more likely to experience more serious forms of violence than their non-disabled counterparts (Martin et al., 2006). However, differing definitions of disability and a lack of consistency in measures establishing experience of violence among women with disabilities make it difficult

to compare results across studies. Additionally, while more recent scholarship has begun to move beyond the mere documentation of prevalence rates to explore correlates of violence, much more work is needed in this area.

That women with disabilities have largely been excluded from previous intimate partner violence research may in part be explained by the marginalization of this population in society. It is only within the last quarter century, with the passage of the Americans with Disabilities Act of 1990 (ADA) (U.S. Department of Justice, 2008), that any policy efforts have been undertaken to amend the historical discrimination against and isolation of persons with disabilities. Findings of Congress reported in the ADA cited persistent discrimination against individuals with disabilities in critical areas, including "employment, housing, public accommodations, education, transportation, communication, recreation, institutionalization, health services, voting, and access to public services" (USDOJ, 2008). Given that persons with disabilities had little or no legal recourse to redress such discrimination, Congress intended to "provide a clear and comprehensive national mandate for the elimination of discrimination against individuals with disabilities" through the act (USDOJ, 2008). However, despite this and other more recent policy efforts, several scholars have noted the reality that women with disabilities remain an isolated and invisible population (Barranti & Yuen, 2008; Curry, Hassouneh-Phillips, & Johnston-Silverberg, 2001; Mays, 2006).

In addition, this societal marginalization and devaluation of women with disabilities likely contributes to their increased vulnerability to intimate partner violence (Nosek, Howland, & Hughes, 2001). Andrews and Veronen (1993)

delineated eight possible reasons for increased vulnerability to intimate partner violence among women with disabilities, which included: increased dependency on others for long-term care; denial of human rights that results in perceptions of powerlessness; less risk of discovery as perceived by the perpetrator; difficulty some survivors have in being believed; less education about appropriate and inappropriate sexuality; social isolation and increased risk of manipulation; physical helplessness and vulnerability in public places; and values and attitudes within the field of disabilities toward mainstreaming and integration without consideration for each individual's capacity for self-protection (as cited in Nosek et al., 2001, p. 480). Nosek and colleagues (2001) further contended that lack of economic independence-- women with disabilities' participation in the labor market is lower than that of both men with disabilities and women without disabilities-- places women with disabilities at greater risk for abuse.

Feminist disability theorists maintain that the sociocultural context in which this violence takes place is important in explaining both the assumptions that underlie the vulnerability to violence experienced by women with disabilities as well as their exclusion from intimate partner violence research (Mays, 2006). Feminist theory, which posits that societal organization around capitalism has served to institutionalize a patriarchy that privileges male power over women, has proved itself useful as an explanatory tool for violence against women. Similarly, disability theorists depart from conventional interpretations of disability as a medical condition in arguing that disability is a societal construct that is the result of historical, material and social conditions that marginalize and oppress persons with disabilities (Mays, 2006).

While neither feminist interpretations of violence nor disability theory on their own fully account for the difficulties faced by women with disabilities, taken together these approaches provide a powerful theoretic basis for interpreting intimate partner violence among women with disabilities.

Pervasive beliefs that women with disabilities are asexual and unlikely to be in intimate relationships, are dependent, passive, and unfit for mothering all work to sustain a culture that stigmatizes and isolates women with disabilities and increases their vulnerability to intimate partner violence (Mays, 2006). The imagery of female standards of beauty and normality that are ubiquitous throughout our culture further serves to instill feelings of physical inferiority and negative self-image in women with disabilities (Curry et al., 2001). In addition, women with disabilities have been stripped of traditional female roles of wife, mother and caregiver, yet are simultaneously deemed unfit to fill conventional male roles of provider and worker; this stereotyping leaves women with disabilities few opportunities for self-affirmation and can be socially, psychologically and economically damaging (Curry et al., 2001).

Curry and colleagues (2001) have proposed an ecological model for understanding partner violence against women with disabilities that incorporates elements of feminist disability theory but expands on this theory in arguing that cultural factors, as well as environmental factors, the characteristics of potential victims and the characteristics of potential perpetrators of violence are contributing to intimate partner violence in this population. While acknowledging that sociocultural factors likely play an outsize role in intimate partner violence, Curry et al. (2001) additionally point to environmental dynamics--such as poverty, dependence on

caregivers, limited community resources, and lack of accessible shelters-- that factor into women with disabilities' increased vulnerability to violence and prevent many women from seeking assistance when faced with abuse. On an individual level, women who depend on their partner for daily personal care may be reluctant to report abuse, which is often reinforced by providers who ignore attempts to report violence (Curry et al, 2001).

In this context, it is perhaps unsurprising that until recently there has been a paucity of research exploring experiences of partner violence among women with disabilities. As recently as 2001, there were only three published studies examining abuse among women with disabilities living in community settings (Curry et al., 2001). Riddington conducted the earliest of these studies in Canada in 1989 (as cited in Curry et al., 2001). This research, which examined experiences of violence among women with physical disabilities, found that 40% of the 245 women surveyed had experienced some form of abuse over their lifetime, and that spouses and ex-spouses were the most common perpetrators of abuse. Riddington's (1989) work was important in that it established that intimate partner violence was the most commonly experienced form of violence among women with disabilities (as cited in Curry et al., 2001). However, while it is imperative to consider other forms of violence experienced by women with disabilities, as hired caretakers are often cited perpetrators of violence, equating the two obscures our understanding of intimate partner violence in this population. As Brownridge (2009) has noted, intimate partner violence and violence perpetrated by a personal care assistant are likely different phenomena with distinct dynamics; because women with disabilities largely have

control over who provides their personal care, escaping from a violent personal caretaker might prove easier than from an intimate partner, particularly if that partner is a spouse.

In addition to the study conducted by Riddington in Canada, two studies led by the Center for Research on Women with Disabilities (CROWD) were conducted in the United States beginning in 1992 in order to document experiences of abuse among women with disabilities (Nosek et al., 2001). In the first of these two studies, qualitative interviews were conducted with 31 women with physical disabilities. Though originally intended to investigate women with disabilities' sexuality broadly, the issue of abuse figured so prominently in these women's experiences-- 25 of the 31 women had experienced some form of abuse-- that it became impossible to ignore. Importantly, these interviews revealed that many aspects of abuse described by these women were directly related to their disability. One woman, recounting an experience in which her husband was emotionally violent, reported that he told her "I would never have married you if I had known you were going to be disabled" (Nosek et al., 2001, p. 183). Another woman with multiple sclerosis recalled an experience in which her husband pushed her out of her wheelchair, at which point she was left lying on the floor for five hours until a neighbor came by to help. From these interviews, Nosek and colleagues determined that women with disabilities are distinctly at risk due to certain factors that increase their susceptibility to abuse, including inability to leave an abusive situation because of mobility limitations or dependency on a partner for personal care, and increased perceived vulnerability to violence due to physical limitations (Nosek et al., 2001).

Prompted by the findings of these qualitative interviews, investigators from the CROWD study launched a national, quantitative study to further examine women with disabilities' experiences of abuse (Young et al., 1997). A total of 504 women with physical disabilities were recruited through independent living centers, through announcements in local and national news media, and through disability publications. In addition, each woman who completed the survey was sent an additional questionnaire and asked to recruit a nondisabled friend, and 442 nondisabled women were included in the comparison group. The questionnaire, which was developed based on the findings of the qualitative study, contained questions that measured emotional, physical and sexual abuse. Young et al. (1997) found that even though women with disabilities were more highly educated than their nondisabled counterparts, they were less likely to be employed, had lower mean household incomes, and were more likely to live at or below poverty level. Although they were not able to establish any significant difference in prevalence of abuse, 62.0% of women with disabilities and 62.2% of women without disabilities experienced some form of abuse, Young and colleagues (1997) determined that women with physical disabilities experienced abuse for significantly longer periods of time than women without disabilities. Similar to the Riddington study, however, the findings of this research should be interpreted with caution, as the investigators do not distinguish between intimate partner violence and interpersonal violence. Moreover, because participants were not recruited using probability sampling, the results are likely not representative of the population at large.

Within the last decade, the issue of intimate partner violence among women with disabilities has garnered more attention within the research community, and a number of both quantitative and qualitative studies have begun to explore this issue in earnest. To better establish prevalence of intimate partner violence and risk for abuse among women with disabilities, several scholars have utilized large, national surveys to estimate experiences of violence in this population (Barrett et al., 2009; Brownridge, 2006; Brownridge & Ristock, 2009; Martin et al., 2006; Smith & Strauser, 2008; Smith, 2008). Using data collected from 25,876 men and women who completed the 1999 General Social Survey in Canada, Brownridge (2006) found that although there was no difference in the one year reported prevalence of violence between women with disabilities and those without (2.0% vs. 1.7%), when recalling violence over a five year period, a significantly higher proportion of women with disabilities reported experiences of violence (4.9% vs. 3.5%). Smith (2008) analyzed data from the 2005 Behavioral Risk Factor Surveillance System (BRFSS) and determined that women with disabilities were more than twice as likely to be threatened with violence, to be physically abused and to experience unwanted sex from an intimate partner than women without disabilities. Other research, when looking at lifetime experience of intimate partner violence, as reported through the 2006 BRFSS, has indicated that prevalence rates are significantly higher among women with disabilities (33.2%) compared to women without disabilities (21.2%) (Barrett et al., 2009). These studies confirm earlier findings demonstrating that women with disabilities experience intimate partner violence at rates comparable to

their non-disabled counterparts (Young et al., 1997), and further suggest that women with disabilities may in fact be at greater risk for partner violence.

Furthermore, research suggests that women with disabilities are not only at greater risk for partner violence generally, but also at increased risk for more severe forms of partner violence (Brownridge, 2006; Martin et al., 2006). According to Brownridge (2006), while women with disabilities were likely to report experiencing many of the 10 items measuring violence more frequently than women without disabilities, the disparities between levels of abuse were most pronounced for some of the most severe forms of violence. Women with disabilities were twice as likely to report being beaten and kicked, bit or hit with a fist, and they were three times as likely to report being forced into some form of sexual activity (Brownridge, 2006). Martin and colleagues (2006) likewise found that while women with disabilities were no more likely to be physically assaulted than women without disabilities, they had more than four times the odds of being sexually assaulted within the past year.

As research has begun to document and describe intimate partner violence within this population, it has become apparent that available assessment tools are insufficient in adequately capturing the range of abuse experienced by women with disabilities. While women with disabilities' experiences of intimate partner violence often share many similarities with those of women without disabilities, they are nevertheless distinctive. In-depth interviews conducted with women with disabilities have helped to contextualize these experiences of partner violence and have shed light on aspects of abuse that are particular to this population (Copel, 2006; Nosek et al., 2001; Yoshida, Odette, Hardie, Willis, & Bunch, 2009). Withholding medications,

destroying or confiscating assistive devices and personal items such as prescriptions and insurance cards, and leaving dependent persons alone for long stretches of time are all forms of partner violence that are unique to women with disabilities (Copel, 2006; Yoshida et al., 2009).

Recognizing that many forms of abuse experienced by women with disabilities are distinctive to this population, several researchers within the field have crafted and tailored measurement tools to better quantify the occurrence of violence within this community (Curry, et al., 2009; McFarlane, Hughes, Nosek, Groff, Swedlend, & Mullen, 2001; Oschwald, Renker, Hughes, Arthur, Powers, & Curry, 2009). With the addition of two disability-specific questions, McFarlane et al.'s (2001) modified abuse assessment screen (AAS), though not designed specifically to measure intimate partner violence but rather broader forms of abuse, captured 2% more abuse within a sample of women with physical disabilities. Similarly, a 17-item, disability-specific, anonymous computer assisted self-interview (A-CASI), uncovered that 68% of women with disabilities reported some type of abuse, 22% reported physical abuse, and 30% reported sexual abuse-- rates much higher than previously indicated (Curry, et al., 2009). These findings suggest that current intimate partner violence screening tools may underestimate actual incidence of intimate partner violence and that measures that account for the experiences of partner violence that are singular to women with disabilities are needed.

While research has linked experiences of violence to a number of demographic factors from early on (Young et al., 1997)-- employment and income disparities are especially pronounced among women with disabilities (Smith &

Strauser, 2008)-- very few studies have moved beyond these characteristics when considering factors that may contribute to increased risk. This is particularly true of studies looking specifically at intimate partner violence and not at interpersonal violence more generally. To my knowledge, only one study has examined correlates of intimate partner violence among women with disabilities outside of these sociodemographic factors. This study found that women with disabilities who have experienced intimate partner violence are much more likely to have unmet health care needs due to costs and poorer overall health than women without disabilities (Barrett et al., 2009).

Although not solely focused on experiences of intimate partner violence, one study conducted by Nosek and colleagues (2006) did explore the psychosocial characteristics of women with disabilities who have experienced abuse. This research demonstrated that level of social support, social isolation, perceived stress and depression are all significantly associated with experiences of abuse (Nosek, Hughes, Taylor, & Taylor, 2006). However, only social isolation and depression remained significant in predicting experience of abuse when controlling for demographic and disability related variables. More work is needed to better understand the implications of experience of intimate partner violence in terms of both the physical and mental health outcomes for women with disabilities. As negative health consequences of intimate partner violence may exacerbate existing disability related complications, understanding the relationship between the two is critical in directing the appropriate resources toward women who have experienced and are experiencing partner violence.

Intimate Partner Violence and Mental Health

The association between experience of intimate partner violence and poor mental health functioning is well documented in the literature. In her analysis of more than 40 studies examining the relationship between previous experience of intimate partner violence and mental health problems, Golding (1999) established that in the United States, women with a history of intimate partner violence have a 3 to 5 times greater likelihood of depression, suicidality, and posttraumatic stress disorder (PTSD) than women who have never experienced partner violence. Greater severity of intimate partner violence, multiple experiences of victimization, and continued violence over long periods of time have been associated with increased severity of mental health symptoms (Bonomi et al., 2007; Dutton et al., 2006; Golding, 1999; Mechanic, Weaver, & Resick, 2008). Though some studies indicate that poor mental health functioning is most pronounced with recent exposure to intimate partner violence (Blasco-Ros, Sanchez-Lorente, & Martinez, 2010; Bonomi, et al., 2006), other research suggests that symptoms endure for prolonged periods, even in the absence of recent experiences of violence (Mechanic et al., 2008). Moreover, while resultant poor mental health functioning can be debilitating in and of itself, research has demonstrated that it may additionally mediate the relationship between intimate partner violence, adverse health outcomes, and other negative health behaviors (Dutton et al., 2006).

The weighted mean prevalence of depression among women who have experienced intimate partner violence is 47.6%; this is substantially higher than lifetime estimates in the general population of women, which range from 10.2% to

21.3% (Golding, 1999). Although all forms of intimate partner violence have been linked to depression, psychological abuse appears to uniquely influence the presence and duration of depressive symptoms (Blasco-Ros et al., 2010; Dutton et al., 2006; Mechanic et al., 2008). Mechanic and colleagues (2008), drawing from a sample of 413 women in community battered women's programs, found that when psychological violence, consisting of both emotional and verbal abuse, was entered into their regression model, the impact of physical violence and injuries were muted. When studying the lasting effects of varying forms of intimate partner violence, Blasco-Ros et al. (2010) determined that while both women who experienced physical and psychological violence in combination and women who only experienced psychological violence had more severe depressive symptoms than the nonabused comparison group immediately following experiences of violence, only those who experienced psychological violence alone continued to have higher levels of depression three years later. Mechanic et al. (2008) have further suggested that it is perhaps the degrading nature of this type of violence, which has corrosive effects on self-esteem and self-worth, that it so powerfully predicts later depression.

Women who report a history of intimate partner violence also report high rates of PTSD (Golding, 1999; Mechanic et al., 2008; Woods, 2005). Golding (1999) has reported that the mean prevalence of PTSD across 11 studies of women who experienced intimate partner violence was 63.8%, compared to lifetime prevalence estimates ranging between 1.3% and 12.3% in the general population of women. PTSD has been associated with all forms of intimate partner violence, though studies have demonstrated that experiences of sexual and psychological violence more

accurately predict PTSD symptoms (Dutton et al., 2006; Mechanic et al., 2008). According to Dutton and colleagues (2006), multiple experiences of intimate partner violence throughout adulthood are associated with increased PTSD symptomology, and severity and frequency of physical violence have also been associated with the advancement of PTSD (Golding, 1999; Mechanic et al., 2008). Women who experience intimate partner violence and PTSD are also more likely to engage in negative health behaviors, such as sexual risk-taking and subtance abuse, and to experience more negative health outcomes (Dutton et al., 2006). As Woods (2005) has noted, research across several studies indicates that individuals with PTSD are at increased risk for morbidity and mortality, as well as numerous chronic diseases, and more than 50% of individuals with PTSD also have symptoms of major depression, which is the most common co-morbidity of PTSD (Dutton et al., 2006).

While depression and PTSD are most frequetly associated with initmate partner violence (Mechanic et al., 2008), anxiety, suicidal ideation and sucide attempts have additionally been linked to experience of partner violence (Blasco-Ros, et al., 2010; Golding, 1999; Houry, Kaslow, & Thompson, 2005). Furthermore, several studies have examined the association between intimate partner violence and overall mental health functioning. Findings from these studies indicate that experiencing multiple forms of intimate partner violence, experiencing more serious forms of violence, the duration of intimate partner violence and the recency of violence all significantly increase risk for poor mental health outcomes generally (Bonomi, et al., 2006; Edwards et al., 2009; Martin, et al., 2008). Edwards and colleagues' (2009) sub-analysis of data from the 2007 BRFSS found that women who

experienced physical violence were nearly 4 times more likely to report severe psychological distress than women without a history of IPV; the odds of reporting severe psychogical distress rose to 7 among women who reported sexual violence, and to 9 among women who reported both forms of violence. Similarly, Martin et al. (2008) found that women who experienced both physical and sexual violence reported significantly more poor mental health days than both women who reported only one form of violence and women who reported no experience of violence.

Intimate Partner Violence, Mental Health, and Social Support

Research suggests that social support may mitigate the potentially damaging effects of intimate partner violence on mental health. Coker and colleagues (2002) have delineated a number of reasons why social support may be of particular importance to women who have experienced intimate partner violence. Fear of stigmatization or retaliation from their partner might prevent women from disclosing abuse and seeking social support. Victim-blaming and discomfort with the sensitive nature of the issue may additionally hinder women who do disclose abuse from receiving the social and emotional support needed (Coker et al., 2002). Due to the enormous toll that intimate partner violence can have on these women's physical and mental well-being, especially in the face of continued abuse, having an established support network in place may help ameliorate some of these deleterious health consequences. While the exact pathways through which social support modifies this relationship are not fully understood (Beeble et al., 2009), research indicates that social support is protective against poor mental health outcomes for women who have experienced intimate partner violence (Carlson, McNutt, Choi, & Rose, 2002; Coker,

Smith, Thompson, McKeown, Bethea, & Davis, 2002; Mburia-Mwalili, Clements-Nolle, Lee, Shadley, & Yang, 2010; Meadows, Kaslow, Thompson, & Jurkovic, 2005).

Several studies have demonstrated that social support is independently protective against adverse mental health outcomes among women who have experienced intimate partner violence (Coker et al., 2002; Mburia-Mwalili et al., 2010; Meadows et al., 2005). Through in-person interviews with women recruited at family practices clinics, Coker et al. (2002) established that women with a history of intimate partner violence who have high social support are significantly less likely to report anxiety, depression, PTSD symptoms, suicidal ideation and suicide attempts than those with low social support. Overall, this study found that social support reduces the risk of negative mental heatlh outcomes among women who have experienced partner violence by almost half (Coker et al., 2002). These findings are supported by research conducted by Meadows and colleagues (2005), which found that social support was predictive of suicide attempts in African American women. In addition, when using a population-based sample from the 2006 BRFSS, Mburia-Mwalili et al. (2010) determined that women who experienced intimate partner violence and had high social support were less likely to be depressed than women with moderate or low social support.

Social support is not only protective against negative mental health outcomes in women with a history of intimate partner violence, but also acts as a mediator and moderator of the relationship between experience of violence and mental well-being (Beeble et al., 2009; Carlson et al., 2002). Research conducted by Carlson and

colleagues (2002) found that social support, in combination with other protective factors such as self-esteem and partner support, moderated the relationships between lifetime experience of abuse, anxiety and depression. Through a longitudinal study, Beeble et al. (2009) established that social support has main, mediating, and moderating effects on the mental health of women who have experienced intimate partner violence. In this study, social support not only predicted depression, but also moderated the relationship between experience of violence and overall quality of life, and within-person change in social support mediated the effects of abuse on both quailty of life and depression (Beeble et al., 2009).

However, there is some evidence to suggest that social support systems may not be equally protective against adverse mental health outcomes across all populations of women with a history of partner violence (Lee, Pomeroy, & Bohman, 2007). To date, no studies have specifically addressed either the direct relationship between experience of intimate partner violence and mental health or the modifying effects of social support on that relationship among women with disabilities. Though some studies have determined that depression is associated with abuse generally among women with disabilities (Nosek et al., 2006), research is needed to establish whether experience of partner violence is predictive of poor mental health in this popuation. Moreover, social isolation figures largely in the everyday experiences of women with disabilities (Curry et al., 2001; Mays, 2006), and has been associated with increased risk for abuse (Nosek et al., 2006). Further research is required to determine if social support is protective against negative mental health outcomes among women with disabilites who have a history of intimate partner violence; if

social support does factor into this relationship, resources are needed to strengthen support networks among women with disabilities in order to lessen the devastating effects of intimate partner violence. Therefore, through a secondary analysis of the 2007 BRFSS data, this research proposes to: 1) describe the prevalence of intimate partner violence among women with disabilities; 2) compare the prevalence of intimate partner violence among women with disabilities to the prevalence of intimate partner violence among women without disabilities; 3) examine the association between experience of intimate partner violence and mental health among women with disabilities; and 4) determine the extent to which social support moderates the relationship between experience of intimate partner violence and mental health outcomes among women with disabilities.

III. METHODS

Participants

This study is a secondary analysis of a subset of the 2007 Behavioral Risk Factor Surveillance System (BRFSS) data (CDC, 2007). The BRFSS is administered through the collaboration of the Centers for Disease Control & Prevention (CDC) Behavioral Surveillance Branch (BSB) and U.S. State Health Department officials and is designed to measure health practices and risk behaviors in the U.S. adult population. Currently, adults 18 years of age and older who live in households are surveyed on a yearly basis in all 50 U.S. states, the District of Columbia, Puerto Rico, Guam and the U.S. Virgin Islands as part of the BRFSS. This analysis looks specifically at female participants who identified as having a physical and/or mental/emotional disability and their experiences with intimate partner violence.

Participants were selected for this study using probability sampling methods, with participants chosen at random from a U.S. telephone numbers frame. While Guam, Puerto Rico and the U.S. Virgins Islands used simple random sampling (SRS) designs to sample their populations, the majority of states (51 projects in total) employed disproportionate stratified sampling (DSS) designs. In the most frequently used design, DSS, the sampling frame consisted of all listed telephone numbers, and a sample record was one telephone number. Telephone numbers were divided into blocks of one hundred that contained all telephone numbers with an identical area code, prefix, and first two digits of the suffix. For example, telephone numbers between 404-555-1100 and 404-555-1199 would comprise a single block. These numbers were divided into two strata based on the presumed density of household

phone numbers within each state, and all numbers that came from blocks with one or more listed households were either placed in the high-density stratum or the medium-density stratum. Telephone numbers in the high-density stratum were sampled at a higher rate than those in medium density stratum, typically at a 1.5:1 sampling ratio. This strategy, which divided phone numbers into high-density and medium-density strata, allowed states to achieve a higher hit rate while still obtaining a statistically representative sample.

CDC (2007) estimates suggest that approximately 42% of all telephone numbers within hundred blocks containing one or more numbers were households. For the purposes of this study, households were considered eligible if they were a housing unit containing a separate entrance, if occupants ate separately from other persons on the property and if members occupied them as either a primary or secondary place of residence. Non-eligible households included vacation homes not occupied for more than 30 days per year, group homes, and institutions. Furthermore, all related adults and any unrelated adults, roomers or domestic workers ages 18 and older who considered the household their home were considered eligible, and individual participants were randomly selected from all eligible household members.

Additionally, as most states represented a single stratum, it was the goal of the CDC to support at least 4,000 interviews within each state. However, some states generated further strata based on geographic regions and required larger sample sizes to achieve the same precision. All told, 430,912 U.S. adults participated in the 2007 BRFSS. Of the more than 400,000 adults who participated in the 2007 BRFSS, nearly 63% were female (n= 270,161). Moreover, 65,847 women, nearly 1 in 4, reported a

disability. However, because only two states-- Hawaii and Virginia-- measured both experience of intimate partner violence and mental health status, the sample used for this analysis was limited to women, both with and without disability, residing in those states. In summation, 5,188 women between the ages of 18 and 65 and living in either Hawaii or Virginia were interviewed in 2007, of which 954 (18.4%) reported some form of disability (CDC, 2007).

Procedure

The BRFSS employs a cross-sectional survey design in order to collect state-specific health data and monitor risk behaviors in the U.S. adult population. The BRFSS questionnaire consists of three parts: the core component, optional modules and state-added questions. Both the core component and the optional modules were developed and rigorously evaluated by the Behavioral Surveillance Branch (BSB) at the CDC. The BRFSS core component contains standard questions asked by all participating states and territories, and the core includes both demographic questions and questions about health perceptions, health conditions, and health risk behaviors. In 2007, 26 optional modules were developed by the CDC and made available to partnering state health departments. Each module contained a set of questions related to a specific topic, such as Intimate Partner Violence or Cardiovascular Disease, and states could append any number of these models to the core component; however, to maintain a reasonable time length, most states only selected the optional modules most relevant to the needs of their local health departments. Furthermore, each state had the opportunity to develop and add questions related to their specific health priorities, though the CDC did not evaluate these state developed measures.

Since it was initiated in 1984, the BRFSS has continued to collect vital health data in all 50 U.S. states as well as in the District of Columbia, Puerto Rico, Guam and the U.S. Virgin Islands on an ongoing basis. The 2007 BRFSS was implemented in January of that year, from which point all questions remained fixed until January of the following year. While the BSB was responsible for developing the core component and optional modules of the survey instrument, state health department officials carried out the day- to-day field operations. The majority of states contracted data collection responsibilities to university research centers or private firms.

Trained interviewers conducted the 2007 BRFSS using Computer Assisted Telephone Interviewing (CATI) and following CDC protocol. Although informed consent was not required of participating adults, as surveillance does not fall under the purview of traditional research, utmost caution was taken to protect the confidentiality of respondents-- no identifiers were collected during the interviews and all reports cite only aggregate data. After agreeing to take part in the BRFSS, participants were given a brief overview of content areas and survey format. Generally, the core component of the questionnaire took approximately 10 minutes to complete, and depending on the number of added modules, interviews lasted roughly 15-20 minutes. However, all surveys containing age, sex and race data were considered complete. Telephone interviews were conducted every calendar month during 2007, and calls were placed seven days a week during both daytime and evening hours. An estimated 20% of interviews were conducted on weekdays, while the remainder were conducted in the evenings or on the weekends. If unable to reach

a selected household, interviewers were instructed to callback a minimum of 15 times during 4 different calling periods. Sampled adults who initially refused to participate were called at minimum one more time, and if busy at the time of an initial call, interviews were rescheduled to the respondents' convenience. In short, every effort was made to retain as many recruits as possible to the study. Given that respondents received no compensation for their participation, response rates were oftentimes low: the median response rate was 50.6%, with rates ranging from 29.6% to 65.4%.

Moreover, each state was required to have a comprehensive plan for monitoring and evaluating data collection procedures. Calls were monitored both on-site, listening only to the interviewer, and from remote locations, listening to both the interviewer and the participant. Additionally, all states preformed verification callbacks for a sample of completed interviews as part of their quality control practices (CDC, 2007).

Measures

A number of variables measuring demographic characteristics were collected through the BRFSS. Demographic variables used as part of this study include age, sex, race and/or ethnicity, marital status, education level and annual household income.

Disability status was assessed through two items: one asked participants if they were limited in any way due to physical, mental or emotional problems, the other asked if participants currently had any health problems that required the use of special equipment, such as a cane, wheelchair, a special bed or a special telephone.

Participants who responded affirmatively to either of these questions were identified as persons with a disability.

The Intimate Partner Violence module included seven items intended to measure both lifetime and recent experience of intimate partner violence. For this analysis, only questions assessing lifetime intimate partner violence were included. History of intimate partner violence was measured through four questions which asked respondents 1) if an intimate partner had ever threatened physical violence against them, including threatening to hit, slap, push or kick; 2) if an intimate partner had ever attempted physical violence against them but was unsuccessful; 3) if an intimate partner had ever hit, slapped, pushed or hurt them in any way; and if 4) they had ever experienced any unwanted sex by a current or former intimate partner. Finally, an additional variable was created to indicate any experience of intimate partner violence. Women who responded yes to any one of these questions assessing lifetime intimate partner violence were identified as having a history of intimate partner violence, while women who responded no to all four measures were categorized as having no experience of intimate partner violence.

Social support was measured through a single item that asked participants to indicate on a 5-point scale how often they got the social and emotional support they needed. Possible response options ranged from 1 (always) to 5 (never).

Mental health was assessed using a brief screening tool, the Kessler-6 (K6) (Kessler, et al., 2003). Using a 6 item scale, the K6 measures generalized distress within the past 30 days by asking respondents to indicate how often they felt nervous, hopeless, restless or fidgety, so depressed that nothing could cheer them up, that

everything was an effort, and worthless. Possible response options ranged from 0 (all of the time) to 4 (none of the time). Scores from these 6 items were reverse coded and summed together to calculate overall distress, with possible scores ranging from 0 to 24, where higher scores represented poorer psychological functioning. As indicated by Kessler, total scores were dichotomized by designating respondents who scored a 13 or higher on the K6 as suffering from serious psychological distress (Kessler, et al., 2003).

Analysis

State-specific data were collected, cleaned and processed by the CDC on a monthly basis, at which point post-stratification weights were developed. Weights were also created to correct for differences in selection due to non-response and non-coverage errors, to adjust demographic data between the sample and the general population, and to adjust for household size and disproportionate sampling from certain geographic regions. However, as this study only examines a small subset of the original data, these weights were not applied to the final anlayses (CDC, 2007).

All analyses were conducted using PASW 18. Descriptive statistics were used to report sociodemographic data, including age, race, marital status, education level, income and employment status. Descriptive analyses were used to calculate prevalence of intimate partner violence, and chi-squares were used to determine if there were any significant difference between prevalence among women with disabilities and those without.

Before proceeding to the multivariate analysis, bivariate analyses, including chi-squares and independent t-tests, were conducted to determine if there were any

significant associations between intimate partner violence, social support, sociodemographic factors and health related factors and the outcome variable, psychological distress. Finally, multiple logistic regression was used to determine if intimate partner violence is significantly associated with serious psychological distress, and to assess whether social support moderates this relationship when controlling for sociodemographic and other health related independent variables.

IV. RESULTS

Sample Characteristics

A total of 5,188 women between the ages of 18 and 65 were included in this sub-analysis (Table 1). Approximately 18.4% of women included in this sample reported some form of disability (n=954), which is largely consistent with U.S. Census figures indicating that 17.6% of females between the ages of 16 and 64 report a physical, mental or sensory disability (U.S. Census Bureau, 2000). The mean age of participants was 46.0 years (sd=12.1), and the majority of participants were white (n=3,481, 52.1%). Overwhelmingly, participants included in this analysis were employed (n=3,520, 67.8%), reported at least some college education (n=3,649, 70.4%) and were married or a member of an unmarried coupled (n=3,227, 62.4%). Most women reported earning an income greater than $50,000 per year (n=2,625, 54.3%).

In addition, chi-square and independent t-test analyses indicate that on average, women with disabilities were more likely to be older ($p<0.001$) and white ($p<0.001$) than women without disabilities. Women with disabilities were also less likely to be married ($p<0.001$), less likely to be employed ($p<0.001$), earned lower incomes (<0.001) and had less education ($p<0.001$) than their non-disabled counterparts.

Table 1: Characteristics of the Sample

	Entire Sample		Women with Disabilities		Women without Disabilities	
	N	%	N	%	N	%
Total	5,188		954	18.4%	4,224	81.6
Age (mean, sd)*	46.0	12.1	50.6	10.4	45.0	12.2
Race/ Ethnicity*						
White	2,684	52.1%	535	56.4	2,142	51.1%
Black	299	5.8%	59	6.2%	239	5.7%
Hispanic or Latino	339	6.6%	57	6.0%	282	6.7%
Multiracial	904	17.5%	178	18.8%	725	17.3%
Other	927	18.0%	119	12.6%	807	19.2%
Marital Status*						
Married or member of an unmarried couple	3,227	62.4%	488	51.3%	2,733	64.9%
Divorced, widowed, or separated	1,141	22.1%	314	33.0%	827	19.6%
Single, never married	806	15.6%	149	15.6%	654	15.5%
Income*						
Less than $15,000	364	7.5%	163	18.3%	201	5.1%
$15,000 - $24,999	530	11.0%	140	15.7%	389	9.9%
$25,000 - $34,999	523	10.8%	109	11.4%	413	10.5%
$35,000 - $49,999	792	16.4%	127	14.3%	664	16.9%
$50,000 and Greater	2,625	54.3%	351	39.4%	2,270	57.7%
Education*						
Less than high school	60	1.2%	23	2.4%	37	0.9%
Some high school or high school graduate	1,474	28.4%	322	33.8%	1,149	27.2%
Some college or college graduate	3,649	70.4%	609	63.8%	3,033	71.9%
Employment Status*						
Working	3,520	67.8%	441	46.3%	3,072	72.9%
Out of work	177	3.4%	57	6.0%	120	2.8%
Not in workforce	1,481	28.5%	454	47.7%	1,024	24.3%

*Indicates p-value <0.001 based on chi-square or t-test

Prevalence of Intimate Partner Violence

Of women with disabilities, 36.4% reported having ever experienced intimate partner violence (n=347) (Table 2). This prevalence was significantly higher than the prevalence of intimate partner violence among women without disabilities (n=858, 20.3%) (χ^2=112.42, df=1, p<0.001). This finding was consistent across all forms of intimate partner violence. Women with disabilities (n=272, 28.5%) were

significantly more likely to report experiencing threats of physical violence than women without disabilities (n=610, 14.4%) (χ^2=108.95, df=1, p<0.001); were significantly more likely to report experiencing attempted physical violence from an intimate partner (n=227, 23.8%) than women without disabilities (n=562, 13.3%) (χ^2=66.74, df=1, p<0.001); and were significantly more likely to report actual physical violence by an intimate partner (n=277, 29.1%) than women without disabilities (n=674, 16.0%) (χ^2=89.38, df=1, p<0.001). Additionally, 19.0% of women with disabilities reported experiencing unwanted sex by an intimate partner (n=181), which was significantly higher than the prevalence of sexual violence among women without disabilities (n=308, 7.3%)(χ^2=124.48, df=1, p<0.001).

Table 2: Prevalence of Intimate Partner Violence by Disability Status

	Women with Disabilities		Women without Disabilities		
	N	%	N	%	p-value
Any experience of IPV	347	36.4%	858	20.3%	<0.001
Intimate partner ever *threatened* you with physical violence	272	28.5%	610	14.4%	<0.001
Intimate partner ever *attempted* physical violence with you	227	23.8%	563	13.3%	<0.001
Intimate partner ever hit, slapped, pushed, kicked or hurt you	277	29.1%	674	16.0%	<0.001
Ever experienced any unwanted sex by an intimate partner	181	19.0%	308	7.3%	<0.001

Intimate Partner Violence and Mental Health

Among women with disabilities, 13.6% had K6 scores that met the criterion for serious psychological distress (n=130). In terms of available social support, 69.8% reported that they usually or always receive the social and emotional support

they need (n=662). In bivariate analysis, experience of intimate partner violence was found to be significantly associated with reported serious psychological distress. Specifically, among women with disabilities, those who reported ever experiencing intimate partner violence (n=78, 22.7%) were significantly more likely to report serious psychological distress than those without a history of intimate partner violence (n=52, 8.7%)(χ^2=35.98, df=1, p<0.001).

Additional bivariate analyses were conducted to determine which sociodemographic and health related variables were significantly associated with psychological distress, and any variables with a $p \leq 0.20$ were included in the final multivariate logistic regression model. Of the variables considered for inclusion-- age, race, marital status, education level, income, employment status, health status, health care coverage, cigarette smoking, BMI, binge drinking and daily alcohol consumption, and social support-- only race, BMI and daily alcohol consumption were not found to be significantly associated with psychological distress (p>0.20) and were excluded from the final model.

As shown in Table 3, when controlling for sociodemographic factors (age, marital status, education level, income and employment status), general health, health care coverage, cigarette smoking and binge drinking, women with disabilities who have experienced intimate partner violence are approximately 2.3 times more likely to report serious psychological distress than those who have not experienced partner violence (AOR=2.28, 95% CI: 1.42, 3.65, p=0.001).

Table 3: Logistic Regression Analysis of Psychological Distress Among Women with Disabilities

	Odds of Having Serious Psychological Distress		
	AOR	95% CI	p-value
Age	0.98	0.96 - 1.01	0.084
Marital Status			
Married or member of an unmarried couple	0.67	0.33 - 1.43	0.256
Divorced, widowed, or separated	0.95	0.49 - 1.85	0.876
Single, never married	Referrent		
Income			
Less than $15,000	1.50	0.67 - 3.36	0.325
$15,000 - $24,999	1.68	0.77 - 3.64	0.191
$25,000 - $34,999	1.47	0.62 - 3.48	0.379
$35,000 - $49,999	2.50	1.17 - 5.36	0.018
$50,000 and Greater	Referrent		
Education			
Less than high school	1.67	0.49 - 5.66	0.409
Some high school or high school graduate	1.66	1.02 - 2.68	0.040
Some college or college graduate	Referrent		
Employment Status			
Working	0.43	0.24 - 0.77	0.005
Out of work	1.58	0.75 - 3.34	0.228
Not in workforce	Referrent		
General Health			
Excellent	0.26	0.09 - 0.76	0.014
Very Good	0.09	0.03 - 0.24	<0.001
Good	0.22	0.11 - 0.41	<0.001
Fair	0.27	0.15 - 0.47	<0.001
Poor	Referrent		
Has Health Care Coverage	0.87	0.44 - 1.72	0.682
Smoked more than 100 cigarettes	1.60	0.97 - 2.62	0.064
Binge Drinking	1.26	0.66 - 2.40	0.487
Any Experience of IPV	2.28	1.42 - 3.65	0.001

Intimate Partner Violence, Social Support and Mental Health

When the social support variable and an interaction term created by multiplying social support and intimate partner violence were added to the regression model, only social support remained significant (p=0.003) (Table 4). This suggests

that social support does not moderate the relationship between experience of intimate partner violence and serious psychological distress among women with disabilities.

However, social support does appear to mediate, or partially mediate, the relationship between intimate partner violence and serious psychological distress. As demonstrated previously, a model testing the main effect of intimate partner violence on psychological distress found that the relationship was significant (B=0.824, p=0.001). Additionally, when controlling for the same sociodemographic and health related variables, a regression model estimating the main effect of intimate partner violence on the social support variable found that experience of partner violence significantly predicted level of social support (B=0.327, p<0.001). Finally, when both social support and intimate partner violence were entered into the regression model, social support significantly predicted serious psychological distress (B=0.487, p<0.001) and the effect of intimate partner violence on psychological distress, though still significant, decreased (B=0.670, p=0.007), indicating that social support mediates, or partially mediates, the relationship between experience of intimate partner violence and serious psychological distress among women with disabilities. Results of the Sobel Test indicate that social support was a significant intervening variable of intimate partner violence's association with psychological distress (p=0.001)

Table 4: Analysis of Social Support as a Moderator of Intimate Partner Violence

	Odds of Having Serious Psychological Distress			
	B	AOR	95% CI	p-value
Moderation Analysis				
Intimate Partner Violence	-0.03	0.97	0.33 - 2.88	0.963
Social Support	0.89	2.43	1.34 - 4.40	0.003
Social Support x IPV	-0.28	0.76	0.51 - 1.12	0.159

V. DISCUSSION

This is the first study to explicitly examine the relationship between experience of intimate partner violence, social support and mental health outcomes among women with disabilities. Though intimate partner violence research in the general female population has found that women who experience abuse are more likely to suffer from negative mental health outcomes, including anxiety, depression, PTSD symptoms, suicidal thoughts and suicidal attempts (e.g. Bonomi et al., 2007; Golding, 1999; Mechanic et al., 2008) no other research to date has investigated this relationship specifically among women with disabilities. It is further known that presence of available social support modifies the relationship between experience of partner violence and subsequent poor mental health outcomes among women generally (e.g. Coker et al., 2002; Meadows et al., 2005). However, no studies have examined the role of social support as a moderating factor in the relationship between abuse and negative mental health outcomes among women with disabilities. Additionally, while recent scholarship has begun to document experiences of intimate partner violence among women with disabilities, estimates of the prevalence of intimate partner violence within this population have varied widely, suggesting the need for further research. In that respect, this research adds to a growing body of literature indicating that women with disabilities are at greater risk for abuse than their non-disabled counterparts.

Prevalence of Intimate Partner Violence Among Women with Disabilities

Through a secondary analysis of a subset of the 2007 BRFSS data, this study found that the prevalence of intimate partner violence among women with disabilities was 36.4%. Though slightly higher than prevalence estimates reported in some earlier studies, these results are roughly comparable to the findings of Barrett et al. (2009), which, through an analysis of the 2006 BRFSS data, similarly demonstrated that approximately one in three women with disabilities had experienced some form of intimate partner abuse within their lifetime. Furthermore, the results of this analysis indicate that 28.5% of women with disabilities have experienced threats of intimate partner violence, 23.8% have experienced attempted physical violence, 29.1% have been hit, slapped, pushed, kicked or physically hurt by an intimate partner, and 19.0% have experienced forced sex by an intimate partner. Again, these results corroborate prior findings suggesting that the burden of abuse among women with disabilities is substantial.

Moreover, when compared to their non-disabled counterparts, women with disabilities were significantly more likely to experience intimate partner violence overall (36.4% vs. 20.3%) and across every individual measure of abuse. This confirms the findings of more recent studies demonstrating that women with disabilities are at much greater risk for intimate partner violence than women without (e.g. Barrett et al., 2009; Brownridge, 2006; Smith, 2008). Though it is especially alarming that the prevalence of sexual partner violence among women with disabilities was more than twice the prevalence among their non-disabled counterparts (19.0% vs. 7.3% respectively), these results additionally substantiate

earlier research indicating that women with disabilities are at greater risk of experiencing more serious forms of partner violence than women without disabilities. Taken as a whole, it is clear that women with disabilities are more vulnerable to partner abuse than women without, and that further research is needed to investigate experiences of abuse within this population.

Intimate Partner Violence and Mental Health

As hypothesized, women with disabilities who experienced intimate partner violence were more than twice as likely to meet the criterion for serious psychological distress than those who had not experienced intimate partner violence. Although no previous research has examined the relationship between experience of partner violence and mental health outcomes among women with disabilities, these findings are supported by research conducted in the general female population, which has established an association between experiences of intimate partner violence and serious psychological distress (Edwards et al., 2007) as well as poorer mental health functioning generally (Bonomi et al., 2006; Martin et al., 2008) among U.S. women. As research has linked experiences of partner abuse to a number of specific mental health outcomes, such as depression, PTSD, anxiety, and suicidality, future studies might explore the connection between intimate partner violence and negative mental health outcomes among women with disabilities more thoroughly.

Intimate Partner Violence, Social Support, and Mental Health

Surprisingly, the results of this analysis did not support the hypothesis that social support moderates the relationship between experience of intimate partner

violence and adverse mental health outcomes among women with disabilities. Although Cohen's (1985) stress-buffer model of social support theorizes that presence of social support may moderate the relationship between stressful events and the onset of physical or psychiatric disease, in this case experience of intimate partner violence and psychological distress were not moderated by social support. However, Cohen (1985) posits that social support is most effectual as a buffer of this relationship when the type of social support received effectively connects individuals experiencing stress to salient resources that aide in the coping process. Therefore, it is possible that presence of social support was not protective against poor mental health outcomes in this instance because the type of support received was not closely aligned with the specific coping needs of women with disabilities who experienced violence. Additionally, because this research examines lifetime experience of intimate partner violence, rather than recent abuse, it may be that women experienced partner violence in the distant past but were only recently connected with social support networks. This suggests that presence of social support may yet moderate the relationship, though further research is needed to investigate this association among women with disabilities who have more recently experienced abuse.

Although social support was not a significant moderating variable in this analysis, it did mediate the relationship between experience of intimate partner violence and psychological distress. While social support is perhaps more frequently conceptualized as a moderating variable in the literature (e.g. Coker et al., 2002; Mburia-Mawlili, 2010; Meadows et al., 2005), several studies have demonstrated that social support can also act as a mediator between partner abuse and numerous

deleterious health effects. Sales and colleagues (2008) found that social support mediated the relationship between experience of sexual violence and both psychological well being and sexual risk-taking behaviors among African American adolescent females. Similarly, other research has demonstrated that social support, in conjunction with other coping mechanisms, mediates the relationship between experience of intimate partner violence, depression, anxiety and stress among low-income, African American women (Mitchell, Hargrove, Collins, Thompson, Reddick, & Kaslow, 2006). Furthermore, through their longitudinal research, Beeble et al. (2009) have established that social support mediates the relationship between partner abuse and depression among women generally. For women with disabilities, experience of intimate partner violence may be stigmatizing, resulting in further isolation from social support systems. In turn, this isolation might trigger poor mental health responses or intensify already existing psychological symptoms.

Limitations

This work is important in that it is the first of its kind to examine the pathways between experience of abuse, social support, and psychological functioning among women with disabilities. However, it should be noted that there are a number of limitations to this study. Foremost, as this research was conducted through a secondary data analysis of the 2007 BRFSS, hypotheses were based on pre-established questions, many of which were not perfectly suited to my research objectives. Though it is a strength of this research that all of the measures have been previously validated by the CDC, these data are limited in that not all questions were applicable to this sub-population of women with disabilities. While the questions

used to measure disability status were consistent with the ADA (USDOJ, 2008) and U.S. Census definitions of disability, these questions were somewhat broader and more inclusive of a range of disabilities than those used for other studies. As a result, the findings of this research may not accurately reflect the true prevalence of intimate partner violence in this population. Further, because these measures did not distinguish between types of disability, it was not possible to examine how specific forms of disability might be linked to experience of violence.

Moreover, some researchers have indicated that there is a need for disability specific intimate partner violence assessment tools to measure prevalence of abuse within this population (Copel, 2006; Nosek et al., 2001). As women with disabilities experience forms of abuse that are both similar to and distinctive from those experiences of women without disabilities, additional questions are needed to capture the true prevalence of partner violence among these women. Furthermore, the BRFSS does not include any measures of psychological violence. This suggests that these findings potentially underestimate not only the actual prevalence of intimate partner violence among women with disabilities, but also the impact of intimate partner violence on mental health functioning, as psychological abuse has been closely tied to more severe psychological distress in a number of studies (Dutton et al., 2006; Mechanic et al., 2008). In regards to the measures used to assess experience of intimate partner violence, for this research study only measures examining lifetime experience of violence were included. However, moving forward it will be critical to capture more recent experiences of abuse in order to better

establish the relationship between partner violence, social support and mental health in this population.

It should also be noted that all data collected using the 2007 BRFSS questionnaire were gathered through self-report and are thus subject to respondent bias. Additionally, the BRFSS is a cross-sectional research study, and the results do not indicate either directionality or causality. Finally, although the BRFSS collects data nationwide using random sampling techniques, it does not gather information from persons living in institutions and is therefore not truly representative of the entire U.S. adult population. In addition, this secondary analysis of the BRFSS data only used information collected in two states, and the recommended survey weights provided through the CDC were not applied. Therefore, the findings of this study are not generalizable to all U.S. women with disabilities, and the results of this analysis should be applied to the broader population with extreme caution.

Public Health Implications

The findings of this analysis indicate that women with disabilities are disproportionately affected by intimate partner violence. However, as women with disabilities remain a stigmatized and isolated population, scant attention has been paid to this issue within the larger field of intimate partner violence research or within the broader public health community. The results of this study highlight the need for greater awareness of this issue within the field. Specifically, as these results indicate that women with disabilities who have experienced intimate partner violence are more likely to suffer from serious psychological distress, dedicated resources are needed to address mental health issues within this community. Furthermore, these

results have demonstrated that social support may mitigate some of the negative health outcomes associated with experiences of abuse, and public health professionals should work to bolster social support networks following reports of violence, as this may be an important avenue for significantly reducing the damaging effects of intimate partner violence on mental health.

To reiterate, researchers have only just begun to explore experiences of intimate partner violence among women with disabilities. This study, in addition to other more recent literature within the field, indicates that women with disabilities are particularly vulnerable to abuse and that the resulting health consequences can be tremendous. There is a desperate need for further research within this area. Future studies should consider examining the relationship between availability of social support and mental health outcomes among women who have more recently experienced abuse. Researchers might also consider exploring the relationship between partner abuse and specific mental health disorders, such as depression and PTSD, among women with disabilities. Another future direction for intimate partner violence research within this population would be to explore these variables across a range of disabilities in order to assess whether specific forms of disability are more closely associated with risk. Alternatively, research is needed to examine the relationship between abuse and other associated health risks within this population. While the findings of this analysis are important in that they contribute to a growing body of scholarship within an emerging field, it is clear that considerably more research is needed to fully explore this phenomenon.

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