SLEEP AND HEALTH SERVICE USE IN SURVIVORS OF INTIMATE PARTNER

VIOLENCE

A LONGITUDINAL FEMINIST ANALYSIS


A Thesis

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**SUPERVISORY AND EXAMINING COMMITTEE**

Meghan Anne Woods, candidate for the degree of Doctor of Philosophy in Clinical Psychology**,** has presented a thesis titled, ***Sleep and Health Service Use In Survivors of Intimate Partner Violence  - A Longitudinal Feminist Analysis,*** in an oral examination held on June 24, 2013.  The following committee members have found the thesis acceptable in form and content, and that the candidate demonstrated satisfactory knowledge of the subject material.

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ABSTRACT

The lifetime prevalence of intimate partner violence (IPV) in Canada is estimated

to be 25% (Ellsberg & Heise, 2005; Seager, 2003). Survivors of IPV report experiencing

sleep difficulties (M. A. Woods, & Hampton, 2008) that impact their health, subsequently

increasing health service use (Bonomi, Andreson, Rivara, & Thompson, 2009; Colten &

Altevogt, 2006; Moorcroft, 2005; Rosa, 2006; Soares, 2005). Being able to isolate the

effect of IPV on health service and long term sleep disruption may shed light on the

economic as well as social cost of IPV to society. The purpose of the present study was to

measure the relationship between sleep, IPV, and health service use in a sample of

survivors of IPV from Alberta, Saskatchewan, and Manitoba, participating in the Healing

Journey Project (Social Sciences and Humanities Research Council/Community

University Research Alliance). The Healing Journey Project is a longitudinal study

including seven waves of data collection, and the data from the current study was drawn

from Waves 1, 2, and 4. At Wave 1, 665 women participated in the study, with 595

women participating at Wave 2 and 484 at Wave 4. A subsample of 205 women who had

not been in a violent intimate partner relationship since Wave 2 was created at Wave 4 to

test two of the hypotheses. Overall, three hypotheses were tested: (1) sleep problems due

to abuse predict frequency of health service utilization, (2) survivors of IPV experience

long term sleep problems due to abuse, and (3) that long term health service use

frequency is predicted by long term sleep problems due to abuse. The following

information was collected to test these hypotheses: demographic characteristics (age,

working status, educations status, presence of children in the home, childhood abuse, and

cultural background), symptoms of post-traumatic stress disorder (PTSD) as assessed

using the Post-traumatic Stress Disorder Checklist (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996; Weathers, Litz, Herman, Huska, & Keane, 1993), depression symptoms as assessed using a short form of the Center for Epidemiological Studies Depression Scale (Andresen, Carter, Malmgren, & Patrick, 1994; Radloff, 1977), self-report ratings of health status, number of injuries in the previous 12 months, IPV as assessed using the Composite Abuse Scale (Hegarty, Bush, & Sheehan, 2005), sleep problems due to abuse as assessed using a brief measure of sleep problems in survivors of IPV, and reports of frequency of health service access in the previous 12 months. The three hypotheses were each tested using hierarchical multiple regression. The second hypothesis was also tested using frequency counts and comparison between reports of sleep problems due to abuse at Waves 2 and 4. The first hypothesis, that sleep problems due to abuse predicated health service use, and the third hypothesis, that sleep problems due to abuse predicted long-term health service use, were both rejected. The second hypothesis, that past abuse predicted long-term sleep problems due to abuse, was supported. The findings suggest that health service use is not related to sleep problems due to abuse, despite evidence that survivors of IPV experience significant disruption to their sleep as a result of the violence. It appears that while survivors of IPV are not using health services in association with sleep problems due to abuse that clinicians should avoid over-treating sleep problems in survivors of IPV as not sleeping may be a protective strategy when victims of IPV are avoiding sleep to avoid danger (Colten & Altevogt, 2006; Stepanski, 2006). The implications of these findings and future direction are discussed.

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POST DEFENSE ACKNOLWEDGEMENT

I would like to thank Dr. Angela Bowen for acting as the external examiner for the defense of this dissertation. Her thorough examination and analysis was very helpful in completion of this work. I appreciated the time she spent working with me on this project. I would also like to thank Dr. Warren Wessel for acting as chairperson of the dissertation defense. He was a friendly face in the crowd. It was enjoyable to have him present.

DEDICATION

I would like to dedicate this dissertation to my aunt, Maureen Woods (February 3, 1953 – April 13, 2013). When I was 15, she predicted I would do post-graduate work. At that time, I did not know what post-graduate work was, so I pretended I knew what she was talking about. This past Easter, she took great pleasure in announcing to her friends and family that I had nearly completed my dissertation and was in the final stages of revisions. She was so supportive and proud of me, and I wish she were here to see this day. She was an amazing role model for me as a feminist, activist, community member, and professional woman, and I hope to do half as much as she did in her time. I have yet to see the full influence of her mentorship on my life, and I miss her dearly.

I would also like to dedicate this work to my son, Samuel Berry. Being his mom made me realize that I needed to get this sucker done. My darling boy, I will forever cherish memories of working on my dissertation while you napped, had tummy time, and breast fed. It was a joyful and magical time, and I loved sharing it with you. Finally, I would like to dedicate this project to my husband, Nicholas Berry. I could not ask for a more supportive or loving partner. He dared to dream big for me when I could not. I would not be here without him.

Finally, I would like to dedicate this work to the women who shared their stories with us and to all survivors of IPV. We work every day to make the world a safer place for women. It is due to the bravery and speaking out of survivors of IPV that we are able to bring awareness to the importance of making the world a safer place for all women.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

## LIST OF ABBREVIATIONS

CES-D-20             Center for Epidemiological Study of Depression scale, original 20 item version

CES-D-10             Shortened ten item version of CES-D

IPV                    Intimate partner violence

PTSD                Post-traumatic Stress Disorder

PCL                    PTSD Checklist

Sleep-6               Six item measure of sleep problems due to abuse

SSHRC/CURA       Social Sciences Humanities Research Council/Community University Research Alliance

# 1. INTRODUCTION

Intimate partner violence (IPV) refers to behaviour that causes physical, sexual, or psychological harm, including physical aggression, sexual coercion, psychological abuse, and controlling behaviour, against an adult woman by a current or former intimate partner (Dillan, Hussain, Loxton, & Rahman, 2013). The lifetime prevalence for women (percent of women who experience IPV at any time in their life) of IPV in Canada is estimated to be 25% (Dillan et al., 2013; Ellsberg & Heise, 2005; Seager, 2003). According to feminist researchers such as Lenore Walker (2000), the wide spread prevalence of IPV is the result of patriarchal structural inequalities in our society that support violence against women (Dillan et al., 2013; Ellsberg & Heise, 2005; Hegarty et al., 2013).

Researchers have observed that survivors of IPV experience sleep difficulties (Ansara & Hindin, 2011; Humphreys & Lee, 2005; Humphrey, Lee, Neylan, & Marmar, 1999; Humphreys, Lowe, &Williams, 2009; Rauer, Kelly, Buckhalt, & El-Sheikh, 2010; Scheffer, Lindgren, & Renck, 2008; R. Walker, Shannon, & Logan, 2010; M. A. Woods & Hampton, 2008). Further, researchers have demonstrated the existence of relationships between sleep, health, cognitive functioning, and health service use (Bonomi et al., 2009; Colten & Altevogt, 2006; Daley, Morin, LeBlance, Gregoire, & Savard, 2009; Daley, Morin, LeBlanc, Gregoire, Savard & Baillargeon, 2009; Kyle, Morgan, & Espie 2010; Moorcroft, 2005; Rosa, 2006; Siverstein, Krokstad, Mykletun, & Overland, 2013; Soares, 2005). Isolating the contribution of sleep problems due to IPV on health service use may construe the economic burden of IPV to society as a function of sleep problems resulting from the abuse.

The purpose of the present dissertation was to measure the relationship between sleep, IPV, and health service use in a sample of 665 survivors of IPV from Alberta, Saskatchewan, and Manitoba. A measure of sleep disruption due to violence was created and tested in a previous study (M. A. Woods & Hampton, 2008) and was used to test three hypotheses using questionnaire data collected with "The Healing Journey: A Long-Term Study of Women Affected by Intimate Partner Violence," funded by the Social Sciences and Humanities Research Council/Community University Research Alliance (SSHRC/CURA). Prospective, longitudinal data were collected by interviewing women about their experiences over a four-year period; this dissertation includes a subset of data collected in 2004-2009. The findings indicate that while sleep problems do not predict short or long-term health service use in survivors of IPV, survivors of IPV report ongoing sleep problems due to abuse even after they have not been in an abusive relationship for at least six months.

## 1.1 Literature review

### 1.1.1 Intimate partner violence

Stopping violence against women, including IPV, and researching violence against women continues to be on the feminist agenda (Dillan, Hussain, Loxton, & Rahman, 2013) as IPV continues to is be a significant threat to the safety of women in Canadian society (Seager, 2005). Women are more likely to be victims of IPV than any other physical crime (Kirk & Okazawa-Rey, 2004), making home the most unsafe place for many women (Borooah & Mangan, 2009). IPV research is a feminist issue as women are more likely to be victims of more severe assault, such as choking, beating, threatened assault with a weapon, and sexual assault, than male victims (Ellsberg & Heise, 2005;

Statistics Canada, 2004; Straus, 2006). The goal of the present study is not to devalue

men's experiences as survivors of IPV; however, the disproportionate experiences of IPV

calls for a feminist approach where findings are interpreted using a feminist paradigm

focusing on the perpetuation of violence by structural inequalities in society and not

blaming the victim for the violence experienced (Sampselle et al., 1992).

1.1.1.1 Defining IPV

Defining IPV is complex as this term has been used to label a range of physically,

sexually, and psychologically coercive and controlling acts inflicted upon an adult

woman by a current or former male or female intimate partner (Kelly, 2004). IPV may be

conceptualized as part of a three-stage abuse cycle outlined by Walker in 1979 (Kelly,

2004). These stages include: (1) the tension building stage, characterized by the

perpetrator's efforts to control the victim non-violently; (2) the explosion stage,

characterized by a violent incident; (3) and the calm, "honeymoon," stage, characterized

by professions of love and promises to stop the abuse (Kelly, 2004).

Many theories have been proposed about the nature of violence due to IPV versus

other types of violence in relationships (Hegarty, Sheehan, & Schonfeld, 1999; Hegarty,

Bush, & Sheehan, 2005). This distinction is necessary in order to capture the nature of

violence as a result of systematic oppression of women in society as compared to

violence that results from poor communication and problem solving in relationships

(Johnson, 1995). Johnson (1995) refers to violence in relationships not due to IPV as

"common couple violence," which involves occasional outbursts of violence from either

partner. Meanwhile, Johnson (1995) discusses "patriarchal terrorism" as systematic male

initiated violence considered to be consistent with the types and purposes of behaviour

seen in IPV. Some families experience both types of violence, but these types of violence are viewed as distinct with separate causes.

Neidig and Freidman (1984) proposed a similar model outlining types of violence in families. Expressive violence is the result of escalating conflict between equally participating partners with a clear and identifiable precipitating event. Instrumental violence is the purposeful use of violence as a tool to punish or control the behavior of the partner. Further, distressed relationships can involve verbal aggression and withdrawal of affection, but abusive relationships involve isolation from friends, family, and outside resources as a method of control. Patriarchal terrorism and instrumental violence parallel torture strategies used in military designed to intimidate or control the victim (Greenberg & Dratel, 1995). Instrumental violence that involves severe control strategies, such as isolation, rather than violence due to poor relationship skills, is the type of abuse considered to be IPV as defined in the current study (Hegarty, Sheehan, & Schonfeld, 1999).

In the IPV literature, psychological, physical, and sexual abuse are the most commonly discussed types of violence against an intimate partner (Ellsberg & Heise, 2005; Kelly, 2004); however, researchers focus particularly on physical and sexual acts of violence because they are easier than psychological acts to quantify and measure (Kirk & Okazawa-Rey, 2004). For the purpose of the current study paper, IPV is defined as behaviour that causes physical, sexual or psychological harm, including physical aggression, sexual coercion, psychological abuse, and controlling behaviour, against an adult woman by a current or former intimate partner (Dillan et al., 2013).

1.1.1.2 Prevalence of IPV

      As research in the area of IPV has become more abundant, understanding of the prevalence of IPV has become more thorough. With the creation of Transition Houses in Canada in 1979, Linda MacLeod conducted the first national survey to explore IPV in the general population (as reviewed in Bonnycastle & Rigakos, 1998). She conducted the survey by phone, querying if respondents had experienced IPV. Based on her findings, she postulated that the lifetime prevalence of IPV in Canada could be 10% of women. Fourteen years later, in a nationwide survey of a randomized representative sample of Canadian women, 3 in 10 reported experiencing either physical or sexual, suggesting McLeod's initial estimation was overly conservative (as reviewed in Bonnycastle & Rigakos, 1998). Researchers suggest that IPV is likely under-reported due to minimization of experiences or women's unwillingness to disclose abuse due to feelings of shame, self-blame, loyalty to the abuser, fear of disrupting the family, or fear of retribution from the abuser (Borooah & Mangan, 2009).

      Thus, many problems exist with estimating prevalence of IPV due to measurement error, including lack of consensus regarding the definition of violence, behaviours that constitute as IPV, under-reporting of IPV, and sampling biases (Dillan et al., 2013; Ellsberg & Heise, 2005). Therefore, a wide range of prevalence rates of IPV has been reported in the literature, making it difficult to reach consensus regarding the Canadian lifetime prevalence of IPV. In this current study, IPV is considered to have a lifetime prevalence of 25%, which is the most commonly reported rate of IPV in the literature (Dillan et al., 2013; Ellsberg & Heise, 2005; Seager, 2003).

1.1.1.3 Causes of IPV

IPV continues to be a problem not taken seriously by many social institutions (Dillan et al., 2013; Ellsberg & Heise, 2005). Canadian society promotes values and standards that perpetuate violence against women. This includes blaming women for choosing to remain in abusive relationships; denying the effects of Battered Women's Syndrome; claiming women want to be raped, beaten, or controlled; insisting that IPV is relatively uncommon in our society; minimizing severity of abuse experienced; claiming gender symmetry of experiences of IPV; promoting evolutionary and biological explanations of violence; and devaluing "feminine" behaviour and traits as weak and undesirable (Abramsky et al., 2011; Kirk & Okazawa-Rey, 2004; Sampselle et al., 1992; Walker, 2000). Many social institutions continue to legitimize, obscure, and minimize the cause, frequency, severity, and impact of IPV, particularly considering that similar behaviours would not be condoned if directed towards a neighbour or acquaintance by the perpetrator (Ellsberg & Heise, 2005).

1.1.1.4 Risk factors for IPV

1.1.1.4.1 Age and IPV

Age has also been identified as a risk factor IPV where age is inversely associated with abuse severity (Hegarty, Sheehan, & Schonfeld, 1999; Hegarty, Bush, & Sheehan, 2005). Hegarty and Bush (2007) found that abuse was associated with being younger in a sample of women attending general practice. It is possible that as women age they become more skilled at submitting to the perpetrator's control. With practice, violence and control in the relationship may have become more efficient as the perpetrator and victim establish a practiced system of dominance and control.

1.1.1.4.2 Employment, education level, and IPV

Employment and education level are associated with IPV in that economic independence allows victims of IPV to leave abusive relationships. Haegerich and Dahlberg (2011) indicated predictors of violence include low SES and lower education. Power differentials serve to perpetuate IPV as in Canada men continue to earn more money than women, preventing women from attaining equal cultural, economic, and political status (Kirk & Okazawa-Rey, 2004). However, increased independence is also associated with greater attempts by the perpetrator to control the victims and may lead to more severe violence (Power & Kaukinen, 2012). For example, in 2012, Powers and Kaukinen found that being employed was associated with increased risk of IPV in both white and non-white women.

1.1.1.4.3 Cultural background and IPV

As we discussed in Hampton, Kubik, Juschka, Bourassa, and Woods (2010), the impact of colonization places Aboriginal women at higher risk of all types of violence, including IPV, childhood abuse, and sexual assault. Additionally, Aboriginal women in Canada report more severe abuse than non-Aboriginal women. Aboriginal women are also more likely to die from any source of violence, including IPV, than all other Canadian women (National Women's Association of Canada, 2002). This imbalance is due to the effect of multiple sources of oppression by gender as well as culture, where Aboriginal women experience inequalities that place that at greater risk of violence in a society where violence against those seen as unequal is condoned.

1.1.1.5 Impact of IPV

Over time, understanding of the effects of IPV has changed, particularly as researchers have gained an awareness of the greater prevalence of this societal problem (Kirk-Okazawa-Rey, 2004). The emphasis of the impact of this problem is underscored by the demonstrated costs of IPV to the individual as well as society (Ellsberg & Heise, 2005). Among other factors, IPV has been demonstrated to impact health, psychopathology, and children.

1.1.1.5.1 Impact of IPV on health

A clear relationship has been demonstrated between IPV and health both during and following the relationship (Ellsberg & Heise, 2005; Kendall-Tackett, 2005; Lacey et al., 2013). Functional disorders that develop from excessive exposure to stress are more common in victims of IPV (Ellsberg & Heise, 2005). Many victims of IPV experience chronic pain as a result of injury or stress (Campbell, 2002; Dillan et al., 2013; Kendall-Tackett, 2005; Plichta, 2004; Sutherland, Bybee, & Sullivan, 2002). Survivors of both child and adult abuse report increased headaches, fibromyalgia, pelvic pain, back pain, generalized pain syndromes (Ellsberg & Heise, 2005; Kendall-Tackett, 2005), digestive problems, such as ulcers and irritable bowel syndrome, as well as increased rates of both diabetes and cancer (Ellsberg & Heise, 2005; Haegerich & Dahlberg, 2011; Kendall-Tackett, 2005; McNutt, Carlson, Persaud, & Postmus, 2002; Staggs & Riger, 2005).

Victims of physical and sexual violence often experience health problems directly due to injury, which can result in temporary or permanent physical disability (Campbell, 2002; Ellsberg & Heise, 2005; Haegerich & Dahlberg, 2011; Johnson & Bunge, 2001; Kendall-Tackett, 2005; Sutherland, Bybee, & Sullivan, 2002). IPV is a significant cause

of injury in 40% to 75% of female victims, and 37% of American women attending emergency rooms for care received their injuries from an intimate partner (Ellsberg & Heise, 2005; Kirk & Okazawa-Rey, 2004). Borooah and Mangan (2009) examined data collected from an Australian sample of women and concluded that injuries experienced through spousal assault were likely to be more severe than non-abuse related injuries.

1.1.1.5.2 Impact of IPV on psychopathology

IPV has an adverse effect on women's psychopathology (Ellsberg & Heise, 2005). Victims of IPV report higher levels of psychopathology than do non-victimized controls. Sufferers of abuse, including physical, sexual, and psychological, are more likely to experience low self-esteem, anxiety disorders, substance abuse problems (Ellsberg & Heise, 2005; Kelly, 2004), increased suicide attempts, difficulty with interpersonal relationships, low confidence in problem solving abilities, increased somatisation (Carlson, McNutt, Choi, & Rose, 2002), feelings of shame and guilt, interpersonal problems (Johnson & Bunge, 2001), feelings of isolation, and fear of ongoing violence (Kirk & Okazawa-Rey, 2004; Resnick, Acierno, Holems, Dammeyer, & Kilpatrick, 2000). As many as 50% of victims of IPV develop PTSD following physical or sexual violence by an intimate partner (Carlson et al., 2002; Ellsberg & Heise, 2005; Johnson & Bunge, 2001; Kendall-Tackett, 2005; M. A. Woods & Shercliffe, 2004), and high rates of victims experience depression following IPV (Carlson et al., 2002; Ellsberg & Heise, 2005; Johnson & Bunge, 2001; Kendall-Tackett, 2005; Logan, Walker, Cole, Ratliff, & Leukefeld, 2003; Weaver & Clum, 1995). Feminist researchers have suggested that psychopathology following experiences of IPV should not be viewed as a dysfunction residing in the individual that requires treatment but rather that the experiences women

have following IPV are understandable reactions to a pathological environment (Kirk &

Okazawa-Rey, 2001; Lips, 2003).

1.1.2 Sleep

Sleep has been a topic of interest for centuries, and many researchers,

philosophers, and practitioners have theorized about the cause and reason for sleep

(Thorpy, 2001). Johannes Hans Berger was the first to record electrical activity in the

brain in 1929, to describe beta waves, and was the first demonstrate differences in brain

electrical activity between waking and sleeping (Lee-Chiong, 2008; Thorpy, 2001).

Researchers went on to describe sleep stages, resulting in our present day understanding

of sleep structure.

There are five stages of sleep that have been identified using

electroencephalogram (a device that measures brain waves associated with each sleep

stage): Stages 1-4 (also known as non-Rapid Eye Movement sleep), and Rapid Eye

Movement sleep (American Psychiatric Association, 1994). Stage 1 is the transition from

being awake to being asleep. This stage accounts for five percent of the time spent

sleeping and is characterized by delta waves. Stage 2 of sleep accounts for 50% of time

spent sleeping and is characterized by sleep spindles and K complexes. Stages 3 and 4 are

the deepest levels of sleep, characterized by alpha and beta waves, and therefore often

also being referred to as slow wave sleep. This sleep stage accounts for 10-20% of sleep.

These two stages occur more in the first half of the sleep period and increase in length if

the individual is sleep deprived. The fifth stage of sleep is Rapid Eye Movement sleep,

also referred to as dream sleep and paradoxical sleep. This stage of sleep is the deepest

level of sleep and is called paradoxical sleep because of the presence of delta waves. This

stage of sleep alternates every 80-100 minutes with non-Rapid Eye Movement sleep (Stages 1-4).

Sleep deprivation is usually the result of sleeping uninterrupted for less than seven hours a night (Moorcroft, 2005). While recovery from sleep deprivation is possible by increasing amount of uninterrupted sleep, contrary to popular belief, compensation for sleep deprivation is not possible by increasing activity levels, stimulant consumption, food, or other forms of increasing energy, and people are not able to adapt to sleep deprivation (Moorcroft, 2005). If a person does not recover from sleep deprivation by increasing the amount of their uninterrupted sleep to optimal levels, then they are constantly functioning in a sleep-deprived state.

1.1.2.1 Prevalence of sleep problems

Researchers have found that a large number of adults experience sleep deprivation (Colten & Altevogt, 2006). According to Statistics Canada (2008), 35% of women and 25% of men in Canada report difficulty falling asleep or maintaining sleep.

1.1.2.2 Causes of sleep problems

1.1.2.2.1 Age and sleep

Age also impacts sleep. Sleep duration decreases with age, often without a deterioration of sleep satisfaction (Bjorkelund, Bengtsson, Lissner, & Rodstrom, 2002). Novak, Musci, Shapiro, Rethelyi, and Kopp (2004) indicated that in a sample of 12,643 Hungarians that sleep complaints increased with age. As individuals age, sleep duration is often shorter as well and accompanied by more frequent awakenings (American Psychiatric Association, 1994).

1.1.2.2.2 Education, employment, and sleep

Researchers have found that socioeconomic status, predicted by education level and employment status, is associated with sleep problems. Specifically lower socioeconomic status is associated with increased sleep problems (Novak et al., 2004). Novak and colleagues examined sleep problems in a sample of 12,643 Hungarians and found that lower socioeconomic status, calculated using education and employment, was associated with more sleep problems. However, higher paid jobs have also been associated with sleep problems. Specifically, Statistics Canada (2008) reported that individuals with higher paying jobs tend to spend more time working, resulting in an average of 40 minutes less sleep per night.

1.1.2.2.3 Cultural background and sleep

Little research has been conducted regarding the relationship between cultural background and sleep. However, sleep does appear to be associated with cultural background. Specifically, Heilemann, Choudhury, Kury, & Lee (2013) postulated that culture impacts sleep in that it is predictive of socioeconomic status, which in turn predicts living conditions that affect sleep, such as crowding.

1.1.2.2.4 Psychopathology, physical health, and sleep

Several psychological disorders involve sleep disruption as a symptom (American Psychiatric Association, 1994). Re-experiencing symptoms of post-traumatic stress disorder (PTSD), such as nightmares, have been demonstrated to contribute to sleep disruption (American Psychiatric Association, 1994; Kendall-Tackett, 2005; Soares, 2005). Depression is often marked by difficulty initiating or maintaining sleep

disturbance (American Psychiatric Association, 1994; Kendall-Tackett, 2005; Soares, 2005).

Several health problems can also lead to sleep disruptions. Pain from injuries and chronic pain (Lavigne, Brousseau, Montplaisir, & Mayer, 2001) have been demonstrated to contribute to sleep problems. Health problems that contribute to sleep disruption or changes in sleep architecture include Alzheimer's disease, Parkinson's disease, epilepsy (Colten & Altevogt, 2006), asthma, substance withdrawal (Moorcroft, 2005; Stepanski, 2006), and irritable bowel syndrome (Campbell, 2002; Colten & Atlevogt, 2006; Kundermann, Krieg, Schreiber, & Lautenbacher, 2004; Moorcroft, 2005).

1.1.2.2.5 Gender and sleep

Being a woman increases risk of experiencing sleep deprivation (Soares, 2005; Williams, 2008). According to Statistics Canada (2008), although men report sleeping an average of 11 minute longer per night than women, women have more difficulty falling asleep and staying asleep. Specifically, 25% of Canadian men reported having difficulty falling asleep and staying asleep, as compared to 35% of Canadian women (Moorcroft, 2005; Troxel, Buysse, Hall, & Mathews, 2009). Researchers have demonstrated higher prevalence of insomnia in women, even after controlling for age, smoking, snoring, and psychological status such as anxiety or depression (Colten & Altevogt, 2006; Driver, 2006; Soares, 2005). Relationship status predicts sleep problems in women as women are also more likely to suffer from insomnia if they are divorced, widowed, or housewives (Soares, 2005).

Hislop and Arber (2003a) suggest women experience unique barriers to sleep problems due to family dynamics. Using qualitative methods, these researchers examined

mid-life (40 to 59 years) women's experiences with sleep deprivation in relation to their family roles. Women reported perceiving a power differential regarding sleep with their male spouses. Specifically, they perceived their male partner's sleep to be more important than their own. Women indicated because of this imbalance, they were responsible for children and pets at night. This problem appeared to be due to expectations of women to be the parent primarily responsible for the home and family. Women also reported that male partners would purposefully wake them up because the male partner was unable to sleep.

Researchers have examined the relationship between marital satisfaction and sleep disturbances. Troxel and colleagues (2009) examined sleep disturbances in 1,938 multi-ethnic married women in the United States when controlling for the effect of depression, medication use, health status, sexual activity, caffeine and alcohol consumption, employment, age, menopausal status, and social support. The findings were that marital satisfaction predicted both presence of as well as severity of sleep disturbances. Further, depression, medication use, and health status were statistically related to sleep disturbances, while sexual activity, caffeine and alcohol use, employment, age, menopausal status, and social support were not statistically related to sleep disturbances.

In a cross-sectional study of 410 couples (810 husbands and wives ages 51 to 94 years) in the United States, Strawbridge, Shema, and Roberts (2004) found that an individual's sleep problems predicted negative outcomes such as poor marital satisfaction, poor physical health, depressed mood, poor psychopathology, and relationship difficulty. They also found that partner's sleep problems exacerbated pre-existing sleep problems. Meanwhile, Ulferb, Carter, Talback, and Edling (2000) found in

14

a sample of 1,032 women that a partner's snoring was associated with women's insomnia, morning headache, daytime sleepiness, and fatigue.

1.1.2.2.6 Children and sleep

Parenting roles have been linked to women's sleep. Hislop and Arber (2003a) found that women reported experiencing sleep disruption as a result of being mothers, such as being responsible for their children when they awaken in the evening or return home late in the evening. Researchers have also found a relationship between parenting and sleep disruption, and Statistics Canada (2008) reported that having children was correlated with less sleep for Canadians who participated in the Statistics Canada General Social Survey. Meltzer and Mindell (2007) examined this relationship and piloted a study to examine 47 mother's sleep, depression, parenting, stress, and fatigue. Children's sleep statistically predicted 17.0% of the variance of mother's sleep, which in turn statistically predicted maternal daytime functioning as well as depression, parental distress, fatigue, and sleepiness.

The presence of children as disruptive to women's sleep was echoed by Humphreys, Lowe, and Williams (2009) who qualitatively explored the relationship between women and children's sleep in those experiencing IPV. Victims of IPV are particularly prone to worrying about their children being impacted by IPV (Humphreys et al., 1999). Researchers have indicated that children who live in households where their mothers are being abused are more likely to sleep poorly, even after leaving the abusive environment (Lowe, Humphrey, & Williams, 2007). Further, presence of children in the household has been demonstrated to be a predictor of sleep in victims of IPV (Walker, Shannon, & Logan, 2010).

1.1.2.2.7 Childhood abuse and sleep

Researchers have found that abuse as a child predicts sleep problems in adulthood. Women who experienced severe levels of IPV as well as childhood abuse were more likely to report sleeping either less than seven hours or more than eight hours per night, compared to women who experienced low levels of abuse or had not experienced abuse (McNutt et al., 2002). Adverse childhood events also predict different symptom patterns in those experiencing insomnia (Bader, Schafer, Schenkel, Nissen, & Schwander, 2007; Noll, Trickett, Susman, & Putnam, 2006). Women who have experienced IPV were reported to experience sleep problems indirectly as a result of childhood abuse experiences (S. J. Woods, Kozachik, & Hall, 2010). S. J. Woods, Kozachik, and Hall (2010) found in a sample of 157 survivors of IPV accessing crisis shelters that poor sleep quality was indirectly associate with childhood maltreatment.

1.1.2.2.8 IPV and sleep

As shown in Appendix A, 14 studies to date to specifically examine sleep in victims of IPV (Brokaw et al., 2002; Hathaway et al., 2000; Himelfarb, Gupta, Lieu, Silverman, & Raj, 2006; Humphreys et al., 1999; Humphreys & Lee, 2005; Humphreys, Lowe, & Williams, 2009; Krishnan & Cutler, 2005; Lowe, Humphreys, & Williams, 2007; Rauer et al., 2010; Scheffer, Lindgren, & Renck, 2008; R. Walker, Shannon, & Logan, 2010; Rasmussen, 2007; M. A. Woods & Hampton, 2008; S. J. Woods, Kozachik, & Hall, 2010). Sleep in victims of IPV is of particular interest to researchers since a sleep state renders the victim completely vulnerable to attack (Ansara & Hindin, 2011; Hernandez-Ruiz, 2005; Lowe, Humphrey, & Williams, 2007; Rauer et al., 2010; Scheffer, Lindgren, & Renck, 2008).

Researchers have found that victims of IPV do experience more sleep difficulties than the general public. Many factors may contribute to the relationship between IPV and sleep. For example, pain from injuries and chronic pain (Lavigne et al., 2001) have been demonstrated to contribute to sleep problems. Kendall-Tackett (2005) also reports that severity of abuse appears to be related to increased sleep problems in survivors of IPV. Experiencing a traumatic event, such as IPV or sexual assault, can lead to sleep disruption even when symptoms of PTSD are not present (Caldwell & Redeker, 2008). Kendall-Tackett (2005) reported that 52% (36% report nightmares) of female survivors of sexual abuse experience sleep problems, while only 24% of women who are not sexual abuse survivors report sleep problems. Krakow, Tandberg, Marya, and Scriggins (1995) demonstrated that sleep disturbances in victims of rape include nightmares and insomnia, independent of as well as in conjunction with PTSD.

Survivors of IPV might be more prone to anxious sleep disruption as anxiety is a common condition in this population (Kendall-Tackett, 2005). Further, stress of experiencing an abusive relationship might affect the victims' sleep, and increased stress as a result of IPV could likely contribute to insomnia levels (Campbell, 2002). These findings are reflected in Brissett (2001), who explored sleep and health in a sample of 47 male and female adults and reported that interpersonal conflict was correlated with sleep loss the following evening.

In a cross-sectional sample of South Asian women in relationships with males, Himelfarb and colleagues (2006) found that 43 women (21.0%) reported experiencing IPV. While 30% of the overall sample reported disrupted sleep, 40% of the IPV subsample reported disrupted sleep. Furthermore, in a case study with an immigrant

woman who had experienced IPV, the client reported experiencing ongoing anxiety, depressed mood, and sleep disturbances, both during and following the abusive relationship (Krishnan & Cutler, 2005).

Ansara and Hindin (2011) explored the psychosocial consequences of IPV in a sample of 1,131 Canadian men and women completing the 2004 General Social Survey. These researchers found that the negative impact of IPV for women particularly pronounced because they abuse they reported was more chronic and severe than abuse reported by the men. Specifically, 15.7% of the women reported sleep problems due to abuse, while 4.1% of the men reported sleep problems due to abuse.

Brokaw and colleagues (2002) examined nightmares and clinic use frequency in a sample of 108 women accessing emergency services in an urban center. Women were divided into groups based on never experiencing IPV ($n = 52$), recently experiencing IPV in the past year ($n = 22$), and having a history of IPV later than one year prior ($n = 34$). Both the recent and remote IPV groups reported higher levels of nightmares than the no IPV group at the time of data collection, with the recent IPV group reporting the highest level of nightmares. The remote IPV group reported the highest median number of clinic visits (median = 4; range = 0 – 60), followed by the current IPV group (median 3; range 1 – 12), and the no IPV group (median = 2; range = 0 – 14). These findings suggest that sleep disturbances and increased health service use may persist for women, even after being out of the abusive relationship for at least a year.

Hathaway and colleagues (2000) explored the correlates of IPV in a sample of 2,043 women participating in the 1998 Massachusetts Behavioral Risk Factor Surveillance System (BRESS). The results of this study indicated that 6.3% of the

women reported experiencing IPV in the past year. Women who experienced IPV were twice as likely as those who had not experienced IPV to report not getting enough sleep for 14 or more days in the past month. While women who had experienced IPV were less likely to have health insurance, they were equally likely to receive routine health care compared to other women in the sample.

In 1999, Humphreys and colleagues administered a survey and analyzed data describing sleep of 50 female victims of IPV living in transitional housing. Many of the participants (82%) reported experiencing some sort of sleep problem or greater feelings of fatigue, including difficulty falling asleep or early awakenings. Only 18% of the sample reported no sleep problems. When compared to a sample of non-abused women, victims of IPV suffered from poorer sleep, as measured by the Pittsburgh Sleep Quality Index (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989). Humphreys and Lee (2005) conducted a second study examining sleep in a convenience sample of 29 victims of IPV. The results of this study mirrored those of the previous study, leading these researchers to conclude that victims of IPV experience poorer sleep quality than healthy controls.

Lowe, Humphreys, and Williams (2007) conducted a qualitative study with 16 female victims of IPV, examining how IPV victims' sleep was affected by the abuse. Women reported that sleeping, particularly when their spouse was awake or home, placed them at increased risk of violence, and reported experiencing physical and sexual attacks when they were asleep. Many women chose to stay awake in order to avoid future attacks, despite known consequences of sleep deprivation. Women also reported choosing to sleep in a different place in the home rather than sharing a bed with their abusive partner in order to feel safe. Few women reported that this strategy worked in providing

protection because of the rendered vulnerability of the sleep state despite the victim's location when sleeping. Women also reported that tension and vigilance prevented them from achieving a sleep state or from maintaining sleep continuity. Participants also reported numerous health problems resulting from poor sleep, including reduced immune system functioning, pain, headache, fibromyalgia, increased blood pressure, digestive problems, and not adhering to medication. In 2009, Humphreys, Lowe, and Williams conducted a further qualitative study with 17 female victims of IPV, examining how their children's sleep was affected by the violence and how children's sleep in turn affected women's sleep. The children exhibited difficulty sleeping, bedwetting, nightmares, and night panics after living in an environment where IPV occurred. This night time disruptions in turn affected the women's sleep.

Rasmussen (2007) further explored sleep disturbances in 30 women accessing transitional housing or a family counselling center, 50% of whom were currently in an abusive relationship and 50% of whom were no longer in an abusive relationship. The results of the quantitative findings were that 50% of the sample reported experiencing nightmares on a weekly basis. Fifty percent reported using some sort of medication to help them sleep, and 60% reported having trouble falling asleep. These findings suggest that survivors of IPV report high levels of sleep problems. However, comparison with a control group was not available.

Rauer and colleagues (2010) looked at impact of psychological abuse on sleep in a random sample of 241 married couples in Tennessee, USA. In this longitudinal study, participants participated in two interviews at a one-year interval. Psychological abuse was

associated with sleep problems at both interviews, and sleep problems were statistically mediated by anxiety and depression, especially for the female partners.

Scheffer, Lindgren, and Renck (2008) explored psychological stress reactions as a consequence of IPV in 14 Swedish survivors of IPV. Results of qualitative analysis yielded that IPV played a role in women's sleep. Specifically, two women reported being unable to fall asleep due to fear of being killed by the perpetrator. Further, several women reported sleeping all day as a result of depression associated with IPV. While some participants reported their sleep returning to normal and being able to sleep as much as they wanted, while other participants reported they continued to relive the trauma and to "kick and fight" in their sleep, as reported by non-abusive intimate partners.

R. Walker, Shannon, and Logan (2010) found in a sample of 609 American female survivors of IPV with protection orders against their previous intimate partners that women who had experienced IPV reported not getting enough sleep. Specifically, they reported getting an average of less than 5.5 hours of sleep a night. In this sample, quantitative analysis indicated that predictors of sleep disturbance were race, number of children, depression and PTSD symptoms, health status, and severity of IPV experienced.

S. J. Woods, Kozachik, and Hall (2010) recruited a convenience sample of 157 women accessing crisis shelters. They explored the relationship between experiencing IPV and sleep problems by examining PTSD and depression associated with IPV, health concerns, and childhood abuse experiences. Their quantitative analysis results suggested women experience sleep problems associated with PTSD and stress related health symptoms after experiencing IPV. Both childhood maltreatment and IPV were also indirectly associated with poor sleep quality and disruptive nighttime behaviours.

However, depression, neuromuscular, and gynaecological symptoms were not associated with sleep quality.

M. A. Woods and Hampton (2008) used data from the Healing Journey Project and found that in a sample of 181 female survivors of IPV in Saskatchewan, IPV independently predicted sleep problems due to abuse when controlling for the effect of age, children, employment, education, childhood abuse, depression, anxiety, and PTSD. These researchers also began developing a six-item measure of sleep problems due to abuse and found this measure had sufficient reliability to measure sleep problems in this population. Further, Humphreys, Lowe, and Williams (2009) conducted a qualitative study with 17 survivors of IPV, who reported children's sleep was disrupted in relation to IPV. The findings from these studies suggest that the relationship between sleep and IPV is important and needs to be further explored. Of notice are parallels that can be drawn between purposeful disruption of sleep by partner (M. A. Woods & Hampton, 2008) and sleep torture tactics used on detainees (Greenberg & Dratel, 2005). Sleep deprivation is used as a torture tactic to control and manipulate victims, where those being tortured experience sleep deprivation by being forced to sit in an uncomfortable physical position, listen to loud blaring music, non-stop 24 hour interrogations, and being only allowed to sleep four hours in a 24 hour period (Greenberg & Dratel, 2005). These strategies are methods of control, mirroring survivors of IPV's reports that their abusers purposely disrupted their sleep as a method of control (M. A. Woods & Hampton, 2008).

In measures of IPV, specific reference to sleep disruption as an abuse tactic is uncommon. Follingstad and DeHart (2000) conducted a survey of 449 psychologists who were asked to classify a list of psychologically abusive behaviours into specific

categories. Eighty-nine percent of participants identified "would not let her sleep" as a type of psychological abuse (p. 914). In an adaptation of the Conflict Tactics Scale, a questionnaire used to assess victims' experiences with IPV, "woken up in the night and demanded sex," was included (Mertin, 1992, p. 169). In a qualitative study of 16 women who had experienced IPV during pregnancy, one woman reported that her partner would demand sex of her even when she was exhausted and wanted to sleep (Bacchus, Mezey, & Bewley, 2006, p. 593). The Artemis Intake Questionnaire, a 64-item checklist used to assess victims' experiences with IPV, includes "kept me from sleeping" (p. 350), implying that perpetrators have purposefully prevented victims from sleeping in order to control the victim.

1.1.2.3 Impact of sleep problems

1.1.2.3.1 Impact of sleep problems on health

A clear relationship exists between sleep problems and health status (Colten & Altevogt, 2006; Moorcroft, 2005; Soares, 2005). Sleep deprivation has been demonstrated to contribute to poor health. People reporting sleep deprivation experience lower energy levels, increased likelihood of injury and falls, and increased risk of diabetes and glucose intolerance, obesity, hypertension, heart attack, and stroke (Colten & Altevogt, 2006; Daley, Morin, LeBlanc, Gregoire, & Savard, 2009; Daley, Morin, LeBlanc, Gregoire, Savard & Baillargeon, 2009; Krueger & Majde, 2006; Kyle, Morgan, & Espie, 2010; Moorcroft, 2005; Soares, 2005; Stepanski, 2006). Sleep deprivation also appears to aggravate existing medical conditions, such as seizure in individuals with epilepsy (Colten & Altevogt, 2006). Further, researchers have found sleep deprivation contributes to depressed immune system functioning (Kendall-Tackett, 2007; Krueger &

Majde, 2006; Moorcroft, 2005). Pain is both a source and a consequence of disrupted

sleep where sleep deprivation is associated with increased pain and pain is associated

with disrupted sleep (Hakki Onen, Alloui, Gross, Eschallier, & Dubray, 2001;

Kundermann et al., 2004; Kyle, Morgan, & Espie, 2010; Lavigne et al., 2001; Moorcroft,

2005). In women, sleep deprivation has also been correlated with increased pregnancy

complications, including increased risk for caesarean delivery and longer labours (Soares,

2005).

1.1.2.3.2 Impact of sleep problems on psychopathology

Sleep disorders and psychiatric disorders are highly comorbid and as many as

40% of people experiencing insomnia are also suffering from a comorbid psychiatric

disorder (American Psychiatric Association, 1994; Colten & Altevogt, 2006; Siverstein,

Krokstad, Mykletun, & Overland, 2013; Stepanski, 2006; Soares, 2005). Risk of mood

disturbance and suicide also increases following sleep problems, implying a causal

relationship (Colten & Altevogt, 2006; Daley, Morin, LeBlanc, Gregoire, & Savard,

2009; Daley, Morin, LeBlanc, Gregoire, Savard & Baillargeon, 2009; Harvey, 2001;

Kyle, Morgan, & Espie, 2010; Moorcroft, 2005; Stepanski, 2006). In a meta-analysis of

the impact of sleep deprivation on mood, cognitive performance, and motor functioning,

mood was affected by sleep deprivation more than cognitive performance or motor

functioning (Pilcher & Huffcutt, 1996). Partial sleep deprivation, such as sleep disruption,

more greatly affects mood than complete sleep deprivation, possibly due to an interaction

with the circadian rhythm. People experiencing insomnia are five to eight times as likely

to develop depression (Colten & Altevogt, 2006; Harvey, 2001; Stepanski, 2006), and

sleep deprivation predicts a longer course of depression for victims of IPV (Kendall-

Tackett, 2007). People suffering from comorbid insomnia and depression are also more likely than depressed clients without insomnia to commit suicide (Colten & Altevogt, 2006; Harvey, 2001; Stepanski, 2006).

Those experiencing sleep deprivation are also at increased risk of experiencing elevated anxiety (Colten & Altevogt, 2006). Researchers have found that people experiencing insomnia are more likely to develop panic disorder and PTSD (Harvey, 2001). This relationship is likely bidirectional, as anxiety has been demonstrated to lead to sleep disturbances (American Psychiatric Association, 1994; Stepanski, 2006). Women living in an abusive environment where they live in fear and anxiety may be experiencing sleep disruption due to their increase in worrying as a result of the abuse they experience.

1.1.2.3.3 Impact of sleep problems on work performance

As mentioned previously, in Canadian society women continue to hold less power than men do, and specifically, men continue to hold more economic power as they have access to scarce valuable resources (Kirk & Okazawa-Rey, 2004; Sampselle et al., 1992). These inequalities prevent women from attaining equal status with men culturally, economically, and politically, thus making them second-class citizens. One consequence of these inequalities is that women are at significantly greater risk of experiencing IPV. The findings of the current study suggest that these inequalities may contribute to further power imbalances for women due to the consequences of experiencing IPV, such as sleep disruption. As demonstrated by previous researchers, sleep disruption is linked to poorer functioning, including poorer work performance (Colten & Altevogt, 2005; Kendall-Tackett, 2005; Kendall-Tackett, 2007; Pilcher & Huffcutt, 1996). It is possible that one of the reasons that women as a group experience economic and political inequality is that

many of them are experiencing economic and work impairments that are caused by sleep problems due to experiences of IPV.

1.1.3 Health service utilization

1.1.3.1 Definition of health service utilization

Health service utilization refers to the amount of access an individual demonstrates to health services (Deykin et al., 2001; Siverstein et al., 2013). Health service access can be examined in terms of frequency of access to health services (Deykin et al., 2001) or number of services accessed (Siverstein et al., 2013). In the current study, frequency of access to health services is examined.

1.1.3.2 Causes of increased health service utilization

1.1.3.2.1 Age and health service utilization

Age has been demonstrated to play a role in health service utilization. Schiller, Luca, and Peregoy (2011) examined the relationship of age to health visits in the general population and found that number of health visits to a doctor was inversely related to age in the USA. Further, age is associated with health care utilization as it is a predictor of health status where increasing age is associated with poorer health status (Hathaway, 2000; Hegarty et al., 2013; Siverstein et al., 2013).

1.1.3.2.2 Education level and health service utilization

Researchers have found differences between high and low users of health services in terms of education and employment. For example, Deykin and colleagues (2001) found that low users of health services had higher levels of education and were more likely to be employed. Education level is a predictor of health status, which in turn is

related to health service utilization (Hathaway, 2000; Hegarty et al., 2013; Siverstein et al., 2013).

1.1.3.2.3 Cultural background and health service utilization

Lacey and colleagues (2013) emphasized that cultural background needs to be considered when examining health status because oppression of Aboriginal women results in higher levels of health service use due to poorer health (see also National Women's Association of Canada, 2002). Due to oppression, Aboriginal people experience unique barriers to health service access (Health Canada, 2000). A particular barrier to access to health services for Aboriginal women is lack of culturally appropriate and sensitive services (National Women's Association of Canada, 2002).

Culture has been found to be associated with health service utilization in other countries and cultural groups. Lipsky, Caetano, Field, and Larkin (2006) examined health service use in a sample of 182 survivors of IPV compared to 147 controls identifying as Caucasian, Hispanic, and Black. They found that survivors of IPV were more likely to use health and social services. Cultural background appeared also to be associated with service use, where Hispanic survivors of IPV were less likely than Caucasian or Black survivors were to use services.

1.1.3.2.4 Childhood abuse and health service utilization

Childhood abuse has been linked to increased health service utilization. Herrenkohl and colleagues (2010) indicated that experiences of violence before the age of 15 is associated with poorer health outcome. Leeb, Lewis, and Zolotar (2011) further presented findings that childhood maltreatment leads to both immediate as well as long

term health problems. Health problems in turn are associated with increased health service utilization.

1.1.3.2.5 Health status and health service utilization

Poorer health status is associated with increased health service utilization (Deykin et al., 2001; Fishman, Bonomi, Andreson, Reid, & Rivara, 2010; Herrenkohl et al., 2010). Individuals reporting chronic health problems that require ongoing care require increased access to multiple health services (e.g., diabetes care result in frequent access to general practitioners, endocrinologists, blood laboratories, dieticians, diabetes nurses, and pharmacies). Researchers have suggested that poorer health is associated with increased use of specialized health services as well (Daley et al., 2009).

1.1.3.2.6 Psychopathology and health service utilization

Psychopathology has been associated with increased health service utilization (Deykin et al., 2001; Hegarty et al., 2013). Deykin and colleagues (2001) examined psychological symptoms in 156 high and low non-psychopathology service users. Their findings were that high service users were more likely to currently meet *Diagnostic and Statistical Manual of Mental Disorders-4th edition* criteria for PTSD, had greater severity of PTSD symptoms, and had higher depression scores, implying that "combined psychopathology burden" increases service use (p. 835). These researchers also found that physician-diagnosed conditions mediated the relationship between PTSD diagnosis and service use, and those meeting criteria for full or partial PTSD were statistically more likely to have a physician-diagnosed medical condition.

These findings were expanded by Stapleton, Asmundson, Woods, Taylor, and Stein (2006), who explored the relationship between PTSD, depression, and health

service use in a sample of 473 United Nations peacekeeping veterans. Their findings were that those with combined psychopathology burden of PTSD and depression used statistically more health services than those with only PTSD or depression and those with only PTSD or depression used statistically more health services than those with few to no symptoms.

1.1.3.2.7 IPV and health service utilization

IPV has been associated with increase health service use due to increased health complaints associated with IPV (Bonomi et al., 2009; Kapur et al., 2002; Soares, 2005). Physical injury, physical health problems, chronic pain, arthritis, headaches, sexually transmitted infections, ulcers, digestive problems, hearing loss, heart difficulties, bladder and kidney infections, are all potential health consequences of IPV (Bonomi et al., 2009; Kapur et al., 2002; Soares, 2005). Increases in physical health problems are associated with increases in health service use, which may lead to survivors of IPV exhibiting higher levels of health service utilization (Kendall-Tackett, 2005). For example, Bloom, Curry, and Durham (2007) found in a sample of 500 pregnant women enrolled with a health maintenance organization (organization that provides managed care for individuals receiving health insurance or health benefits plans), high health service users were more likely to have a history of abuse and forced sex.

Researchers have suggested victims of IPV report greater health service use than non-abused controls. Wisner, Gilmer, Satlzman, and Zink (1999) examined cost of IPV in health service us in a sample of 1,133 women enrolled in a health plan. In this sample, women reporting IPV used $1,775 more in health related services than women not reporting IPV. Specifically, the increased cost was due to increased use of

psychopathology services. Ulrich, Cain, Sugg, Rivara, Rubanowice, and Thompson

(2003) also examined cost of IPV in health service use in a sample of 8,381 health

maintenance organization enrolees, and found that the 62 women with documented IPV

experienced a 1.6 to 2.3 fold increase in health service use and cost compared to women

who have not reported experiencing IPV. Jones and colleagues (2006) compared health

service use in 185 physically or sexually abused women to that of 198 non-abused

controls. Both type of abuse and recency of abuse were considered when exploring health

service use in this sample. The findings were that abused women used more services than

non-abused women did over a three year period. Women reporting physical abuse

experienced higher service use than sexually or emotionally abused women, but all abuse

types resulted in higher health costs. Women reporting abuse within the previous year

had highest service use levels.

Rivara and colleagues (2007) examined the relationship between health service

use and IPV in a sample of 3,333 female health maintenance organization enrolees. In

this sample, 46% (1,546) reported a lifetime prevalence of IPV. Of those reporting IPV,

13% reported currently experiencing IPV. These researchers also demonstrated that

women who experienced IPV anytime in their life were more likely to use

psychopathology services, substance abuse services, visit the hospital as an outpatient,

use the emergency room, be admitted to the hospital for overnight or longer due to IPV,

visit a doctor or nurse for primary care, visit a specialist, and use prescriptions. Use of

psychopathology, substance abuse, and emergency room services decreased when IPV

ended; however, visiting the hospital as an outpatient and being admitted to the hospital

increased. Further, health service use continued to be higher for survivors of IPV than women not reporting IPV for five years after IPV ended.

Fishman and colleagues (2010) explored changes in health care costs over time following the cessation of IPV. They compared health care costs over an 11 year period in IPV survivors and women who had not experienced IPV (ages 18-64). In the IPV group, health care costs were higher during the relationship and for three years following. However, after three years the IPV group did not demonstrate any difference in health care use than the non-IPV group, suggesting that while the effects of IPV linger beyond the cessation of the relationship, they eventually return to baseline.

Bonomi and colleagues (2009) examined health service use in a sample of 3,333 female survivors of IPV. These researchers found experiencing either non-physical or concurrent physical or non-physical IPV lead to greater health service use than non-abused controls. Particularly, both abuse types were associated with greater psychopathology services use, and specifically physical abuse was associated with greater physical health service use. Further, abused participants reported recency of abuse impacted services use. Participants experiencing ongoing abuse reported highest levels of service use, followed by recently abused (within previous five years), and then remotely abused (more than five years prior) participants. It appears that abuse type as well as recency may be related to women's use of health care services.

1.1.3.2.1 Sleep and health service utilization

Sleep problems are a contributor to increased health service utilization. Siverstein and colleagues (2013) found symptoms of insomnia to be a significant predictor of health service utilization, including visiting a general practitioner, hospital doctor,

physiotherapist, chiropractor, homeopath, or traditional healer. Daley and colleagues

(2009) found in a sample of 953 Quebecois Canadians that sleep problems associated

with insomnia were statistically predictive of greater health service utilization.

Specifically, participants in this study with insomnia related sleep problems reported

more likely access to a health professional in the previous 12 months. These researchers

also found that participants perceived their sleep difficulties to be a cause of increased

work absenteeism and on the job injuries. Novak and colleagues (2004) examined the

relationship specifically between insomnia and health service utilization in a cross-

sectional study utilizing a sample of 12,643 Hungarians. They indicated that insomnia

was associated with increased utilization of health services, hospitalization, and sick

leave from work.

1.1.3.3 Implications of increased health service utilization

Increased health service utilization is a concern for Canadian society due to the

increase monetary cost of increased service use. Survivors of IPV have been found to cost

more in health service use than women who have not been abused (Wisner et al., 1999;

Ulrich et al., 2003). Understanding contributors of health service utilization is also

important in order to identify needs for treatment in survivors of IPV and allocation of

health resources, especially in terms of funding needed to make health service available

(Deykin et al., 2001). Meanwhile, understand patterns of increased health service

utilization and populations more likely to access health services aids to inform

appropriate and sensitive interventions for health behaviours (McNutt et al., 2002).

1.1.3 IPV, sleep, and health service utilization

Although the causal mechanisms for the correlation between IPV and health are not clear, it has been hypothesized that sleep disruption is one of the causal factors of health problems in victims of IPV (Kendall-Tackett, 2005). Researchers have found that both IPV and sleep are closely related and are also associated with health problems. In a sample of 16 survivors of IPV, Lowe, Humphreys, and Williams (2007) found participants reported several health problems resulting from poor sleep due to IPV, including reduced immune system functioning, pain, headache, fibromyalgia, increased blood pressure, digestive problems, and not adhering to medication. R. Walker, Shannon, and Logan (2010) demonstrated a similar relationship where predictors of sleep disturbance in 609 American women with protection orders against the perpetrators were race, number of children, depression and PTSD symptoms, health status, and severity of IPV experienced. Similarly, S. J. Woods, Kozachik, and Hall (2010) found in sample of 157 women accessing crisis shelters that women experience sleep problems associated with PTSD and stress related health symptoms after experiencing IPV. Both childhood maltreatment and IPV were also indirectly associated with poor sleep quality and disruptive nighttime behaviours.

1.2 The current study

The current study was an analysis of self-report quantitative interview data focusing on the immediate and long-term relationship between IPV, sleep disruption, and health service use when controlling for demographic characteristics, psychological health, and physical health. The purpose of the overall study was to better understand how women's sleep is affected by experiences of IPV. The current study involved testing three

hypotheses using longitudinal data. The first aim was to learn if sleep disruption due to abuse is associated with increased current health service use; it was hypothesized that the participants report higher levels of health service use that is independently predicted by sleep problems due to abuse while controlling for the effect of demographic characteristics, psychopathology, IPV, and health status.

The second aim was to determine if women continue to experience sleep problems due to abuse, even after leaving the abusive relationship, which will be tested using frequency counts. The third aim was to determine if long term health service use is independently predicted by sleep disruption due to abuse after women have left the abusive relationship; it was hypothesized that long term health service use is predicted independently by sleep problems due to abuse when accounting for the effect of current demographic characteristics, current psychopathology, current health status, and recent abuse experiences.

## 2. METHOD

The current study was a sub-study of a larger research project called "The Healing Journey: A Longitudinal Study of Women Affected by Intimate Partner Violence," funded by SSHRC/CURA. This project was completed in 2011 and was conducted by the Research and Education for Solutions to Violence and Abuse (RESOLVE) group in Saskatchewan, Manitoba, and Alberta. The Healing Journey Project spanned seven years of data collection to help gain insight into the experiences of women in the Prairie Provinces of Canada who have suffered IPV and their use of services designed to help them cope with and end violence, as well as related factors.

My role in this project was as the project coordinator for the Saskatchewan team. I was responsible for supervising interviewers, organizing data collection and management, questionnaire preparation and development for interviews, and other administrative responsibilities. I was also involved in the project as an interviewer, regularly interviewing fourteen participants, mostly from rural Saskatchewan, and was involved in data entry for the first of seven waves of data collection, which take place approximately every six months. I used the first two waves of data from the Healing Journey Project for my Masters' thesis, and the first four waves of the Healing Journey Project were used for the current dissertation.

### 2.1 Data collection

### 2.1.1 Instrument

Data collection for the entire Healing Journey Project took place in seven meetings/waves starting in 2005 and ending in 2011. Interviewers initiated contact with

participants every six months to complete a three-hour semi-structured interview. All seven waves of data collection have been completed.

The Healing Journey researchers selected questions for the study in order to gather information about five main themes: (1) Demography and History, (2) General Functioning and Service Utilization, (3) Health, (4) Parenting, and (5) Labour Market. Questions selected to assess these themes included standardized measures, questions drawn from other studies, and questions divided by the Healing Journey team.

There was not enough time at each interview to address each theme. Instead, the theme of each interview alternated between interviews. Specifically, Waves 1, 3, 5, and 7 focused on the "Demography and History" and the "General Functioning and Service Utilization" themes, while Waves 2, 4, and 6 focused on the "Health" and "Parenting" theme. When a theme was not the main focus of an interview, a briefer version of the questionnaire designed to assess a theme was included in order to update important information. Meanwhile, the "Labour Market" theme was only included in the Wave 6 interview.

The questions included in the entire Healing Journey are too numerous to list in the current document as several hundred questions were included in the overall study. The following is a general description of the specific areas assessed within each theme. In order to assess the "Demography and History" theme, questions were included that addressed basic demographic information, information regarding the most recent abusive relationship, descriptions of abuse experienced, childhood abuse experiences, past relationships, sexual history, pregnancy history, custody arrangements, disability, coping strategies for dealing with abuse, and history of self-harm. In order to assess the "General

Functioning and Service Utilization" theme, questions were included that addressed sources of social support, satisfaction with social support, interpersonal relationship functioning, family goals, community involvement, typical activities completed during the day, quality of life, spirituality, and community service use. In order to assess the "Health" theme, questions were included that addressed general health status, health improvement behaviours, sleep problems, emotional and mental health, sexual health, substance use, and health service use. In order to assess the "Parenting" theme, questions were included that addressed parent child relationships, parenting activities, parenting support, protecting children from violence, mothering in an IPV context, parenting within custody arrangements, children's reactions to violence, and parenting efficacy.

The time span from the first wave of data collection until the fourth wave completion was 48 months. The data for the current dissertation were collected across the first, second, and fourth waves, including information from the Waves 1, 2, and 4 "Demography and History" themed questionnaire as well as the Waves 2 to 4 "Health" themed questionnaire. Specific details about the sources of the questions used in the current study are included below. Please refer to Appendix B for a complete list of all questions used for the current study. Figure 1 summarizes the structure of the Healing Journey Project and the portions of the Healing Journey Project included in the current study.

## Healing Journey Project Timeline and Questionnaires

## Waves and Data Accessed for Current Study

**Wave 1 (September 2005; 665 participants)**
• Demography and History
• General Functioning and Service Utilization

**Wave 1**
• Age, cultural background, childhood abuse, employment, education, children in the home, and relationship status
• Composite Abuse Scale

**Wave 2 (April 2006; 595 participants)**
• Update of Demography and History
• Update of General Functioning and Service Utilization
• Health and Parenting

**Wave 2**
• Update on Demography and History (employment, education level, children in the home, relationship status, and Compositie Abuse Scale)
• Health and Parenting (PTSD symptoms, depression symptoms, general health status, injuries, sleep problems, & health service access)

**Wave 3 (November 2006; 504 participants)**
• Update of Demography and History
• Update of Health and Parenting
• General Functioning and Service Utilization

**Wave 3**
• Not accessed for current study as relevant health information not collected

**Wave 4 (May 2007; 485 participants)**
• Update of Demography and History
• Update of General Functioning and Service Utilization
• Health and Parenting

**Wave 4 (subsample of 205 participants not in new abusive relationship since Wave 2)**
• Update of Demography and History (employment, education, children in the home, relationship status, Composite Abuse Scale)
• Health and Parenting (PTSD symptoms, depression symptoms, general health status, injuries, sleep problems, & health service access)

**Wave 5 (November 2007; 453 participants)**
• Update of Demography and History
• Update of Health and Parenting
• General Functioning and Service Utilization

**Wave 5**
• Not relevant to the current study

**Wave 6 (May 2008; 419 participants)**
• Update of Demography and History
• Update of General Functioning and Service Utilization
• Health and Parenting
• Labour Market Questionnaire

**Wave 6**
• Not relevant to the current study

**Wave 7 (November 2008; 380 participants)**
• Update of Demography and History
• Update of Health and Parenting
• General Functioning and Service Utilization

**Wave 7**
• Not relevant to the current study

Figure 1

*Structure of the current study in relation to the Healing Journey Project*

*Note.* Left column represents structure of the larger Healing Journey Project and the themes addressed at each wave (see above for description of themes). Right column represents specific information drawn from the Healing Journey Project for the current study.

2.2.1  Demographics

Demographic data were collected during each wave of the above mentioned study. Data that did not require updating were collected primarily at Wave 1. Most of the demographic information was collected using original items designed by the Healing Journey team, with some items being drawn from other existing questionnaires. Further details regarding the origin of each item follow.

2.2.1.1 Age

Participants reported their age at Wave 1.

2.2.1.2 Employment status

Participants were asked, "Are you currently working?" Responses were categorized as either "full-time," "part-time," "casual" or "not working," and then collapsed into "working" and "not working" categories. At subsequent interviews, participants were asked if there had been any changes to their employment status and what current working status was.

2.2.1.3 Education level

At the first interview, participants were asked their highest level of education. Responses were coded into categories based on grade, or type and level of post-secondary education, received. These categories were then collapsed into "completed grade 12" and "not completed grade 12." At subsequent interviews, participants were asked about changes to their education level and current education level was reported.

2.2.1.4 Children

Participants were asked if they have children and if all, some, or no children live with them. Children included biological, adopted, foster, grandchildren, and any other

child for whom the participant assumed parental responsibilities. At subsequent interviews, participants were asked if there had been any changes to whether or not they have children and how many children were living with them. Because the participants having children was more than 90% of the sample, this variable did not yield sufficient variance to be used in the regression analysis (Tabachnick & Fidell, 2001). Instead, whether or not participants had children living with them was included in the regression analyses, which is consistent with the theory that children in the home impact sleep and service use (Hislop & Arber, 2003a).

2.2.1.5 Cultural background

At the first interview participants identified their cultural background. Open ended responses were coded into fourteen categories, which were then collapsed into "Aboriginal" and "non-Aboriginal." Inter-rater reliability of this item exceeded 0.70, which was sufficient reliability to proceed with analysis (Hsu & Field, 2003).

2.2.1.6 Abusive relationship status

Participants were asked to identify their relationship status with their most recent abusive partner (married, separated, divorced, common-law, ex-common-law, boyfriend/girlfriend, ex-boyfriend/girlfriend, and other). This question does not indicate current relationship status, but does indicate if the participant is currently in an abusive relationship.

2.2.2   Abuse

2.2.2.1 Childhood abuse experiences

Participants indicated if they experienced any kind of abuse in childhood, including sexual abuse, physical abuse, emotional abuse, neglect, or witnessing violence

between their parents. Previous research (M. A. Woods & Hampton, 2008) indicated the best use of these variables is to create a dichotomous variable indicating whether or not the participant indicated any kind of abuse in childhood.

2.2.2.2 Measurement of IPV using the Composite Abuse Scale

2.2.2.2.1 Composite Abuse Scale description and scoring

All information about the participants' experiences with IPV, except for the sleep information, was collected using the Composite Abuse Scale, which provides a behavioural description of abuse experienced (Appendix B; Hegarty, Bush, & Sheehan, 2005; Hegarty, Sheehan, & Schonfeld, 1999). At each interview, participants completed this measure if in an ongoing or new abusive relationship.

This measure is well suited for research with the current population as the validation studies were conducted with samples of women, many of whom reported IPV. Specifically, the first validation sample was female nurses (Hegarty, Sheehan, & Schonfeld, 1999), and the second validation sample was women accessing medical clinics (Hegarty, Bush, & Sheehan, 2005), which is particularly parallel to the purpose of the current study examining health service utilization patterns. Further, the Composite Abuse Scale is widely used in the psychological literature (MacMillan et al., 2006; Sohal, Eldridge, & Feder, 2007; Wathen et al., 2007).

The Composite Abuse Scale was selected because it is a psychometrically sound, commonly used measure of IPV that addresses many limitations existing in available tools assessing IPV and is provided to users free of charge (Hegarty, Bush, & Sheehan, 2005; Hegarty, Sheehan, & Schonfeld, 1999; Rabin, Jennings, Campbell, & Merritt, 2009). The initial version of the Conflict Tactics Scale (Straus & Gelles, 1986) is the

most widely used measure of IPV. However, problems have been noted regarding this measure (Hegarty, Sheehan, & Schonfeld, 1999), specifically, conflation of self-defence against a perpetrator with abuse by a perpetrator. Straus, Hamby, Boney-McCoy, and Sugarman (1996) published a revised version that addresses these issues. However, the revised version requires payment, whereas the original continues to be available free of charge. Thus, the original Conflict Tactics Scale continues to be the most widely used measure of IPV, which is problematic for the literature considering the above mentioned limitations of the measure. The Composite Abuse Scale is an adequate alternative to the Conflict Tactics Scale that addresses these issues. Further, the Composite Abuse Scale has been used in several similar studies regarding health service utilization (Hegarty & Bush, 2007; Hegarty et al., 2013) which makes the results of this study more comparable to other findings in the literature regarding health service use and IPV.

The Composite Abuse Scale contains 30 items answered using a five-point Likert scale (Hegarty, Bush, & Sheehan, 2005; Hegarty, Sheehan, & Schonfeld, 1999). Higher scores indicate greater severity of IPV. Hegarty, Sheehan, and Schonfeld (1999) compiled this measure by conducting a content analysis of a number of items from previously existing measures. The Composite Abuse Scale is scored by summing the frequency scores of each of the items (Hegarty, Bush, & Sheehan, 2005). Higher scores indicate more severe and frequent violence. Scores can be divided into four subscales: severe abuse, physical abuse, emotional abuse, and harassment. These subscales can be combined to create sixteen categories of abuse to describe abuse patterns and can also be used to identify four independent abuse categories:  one episode of severe abuse as well as any combination of other abuse or severe abuse only, physical abuse as well as

emotional abuse or harassment, physical abuse only, and emotional abuse or harassment only.

2.2.2.2.2 Composite Abuse Scale psychometric properties

As I discussed previously (Langille, Woods, & McKenzie, 2013), few studies have been conducted regarding the psychometric properties of the Composite Abuse Scale. Therefore, more research is needed to expand the existing information available regarding the psychometric properties of the Composite Abuse Scale. The limited information available suggests is has good psychometric properties (Hegarty, Sheehan, & Schonfeld, 1999; Hegarty, Bush, & Sheehan, 2005).

Hegarty, Sheehan, and Schonfeld (1999) reported a Cronbach's alpha of greater than 0.90 and item-total correlations greater than 0.60 for the Composite Abuse Scale in a sample of nurses. Hegarty, Bush, and Sheehan (2005) reported Cronbach's alpha of greater than 0.85 and corrected item-total coefficients of > 0.50 in a sample of women accessing healthcare. These results indicate this measure demonstrates excellent internal consistency. Future assessment of the Composite Abuse Scale may involve examining the greater lower bound in place of Cronbach's alpha as Cronbach's alpha has recently been suggested to be an inappropriate measure of internal consistency (Sijtsma, 2009). The internal consistency of the Composite Abuse Scale in the current study was comparable to the validation studies (Wave 2 Composite Abuse Scale Cronbach's alpha = 0.94).

Convergent validity was assessed by comparing outcomes on the Composite Abuse Scale with self-rated abuse and was associated with self-ratings of abuse (Hegarty, Bush, & Sheehan, 2005). Higher Composite Abuse Scale scores were associated with younger age as well as the victim's being separated or divorced, which supports findings

in the literature. Composite Abuse Scale scores were inversely correlated with socio-economic status and education level, evidencing discriminant validity because abuse is usually, but not always inversely correlated with these variables (Hegarty, Bush, & Sheehan, 2005). Discriminant validity was limited as socioeconomic status was not associated with scores on the Composite Abuse Scale (Hegarty, Sheehan, & Schonfeld, 1999).

2.2.3 Health questionnaire

The following questions were drawn from the Healing Journey Project Health Questionnaire.

2.2.3.1 Sleep

Participants completed sleep questions at waves 2 and 4 (Appendix A). Based on a thorough review of the literature, a checklist of sleep related experiences that might be related to IPV was developed. After receiving approval from the thesis committee and from the Healing Journey Project team, these questions were integrated into the larger survey instrument as a measure of sleep disturbances due to abuse. M. A. Woods and Hampton (2008) found the reliability of this measure to be 0.70, which is acceptable (DeVellis, 2003; Pallant, 2006).

The participants were asked, "Do you feel you get as much sleep as you need?" Responses were categorized as "yes," "no," or "don't know." Participants were also asked how their sleep was affected by the abuse they experienced, answering yes or no to each of the following items: disruption due to partner's angry outbursts, nightmares about abuse, awakened by pain due to injuries, could not sleep if anyone else was in the room, partner would deprive of sleep as a method of control, found it difficult to fall or

stay asleep because was nervous or tense, children awakened frequently in the night, had to sleep with the light on, and "other" sleep problems due to abuse. Follow the reliability analysis, items relating to amount of sleep, other sleep experiences, sleeping with light on, and children awakening were dropped from the measure. Responses to the remaining six questions are summed, yielding a score between zero and six. Higher scores indicate greater sleep disruption due to abuse.

2.2.3.2 Injury

At all waves except for Wave 1, participants were asked if they were injured in the past 12 months due to abuse, inadvertently due to abuse, or not due to abuse and were asked how many injuries fell into each category. Number of injuries is used as a continuous score reflecting injuries during the previous 12 months.

2.2.3.3 Self-report health status

At all waves except for Wave 1, participants were asked to rate their general health on a five-point Likert scale (poor, fair, good, very good, excellent).

2.2.3.4 Health service use

At Waves 2 and 4 participants completed a measure reflecting their health service use during the previous 12 months. For each health service, participants indicated if they used the service, if using the service was due to abuse, number of times accessing the service in the past 12 months, and barriers to accessing the service. Number of services accessed as well as frequency of access to services will be used as a continuous measure, higher scores reflecting greater service use.

Services include general check-up, dental, breast self-examination or mammogram, hospital overnight, emergency department, drug or alcohol treatment,

counselor, social worker or psychologist, family doctor or nurse, specialist, alternative treatment, Indigenous traditional healer, walk-in medi-centre, home care services, elder, priest, minister, or other religious counselor, and health related self-help group. This is not a standardized measure and psychometric properties are not available for this measure.

2.2.3.5 Psychological health

A short form of The Center for Epidemiological Study of Depression Scale (CES-D-10) was used to measure symptoms of depression (Andresen et al., 1994; Radloff, 1977). The PTSD Checklist (PCL) was used to screen for PTSD (Blanchard et al., 1996; Weathers et al., 1993). Screening for PTSD and depression allowed control of the influence of these disorders on sleep, as symptoms of both disorders include sleep disruption (American Psychiatric Association, 1994).

2.2.3.5.1 CES-D-10

2.2.3.5.1.1 CES-D-10 description and scoring

The CES-D-10 (Centre for Epidemiological Studies – Depression – 10) is a short form of the CES-D-20 (Andresen et al., 1994). This measure was used to screen for depressive symptoms in participants. Questions were designed to describe participants' depressive symptoms during the previous week. Participants endorsed items using a 0-3 Likert scale, with zero meaning "rarely or none of the time (less than 1 day)," and three meaning "all of the time (5-7 days)." This measure was designed for research purposes. Items five and eight are reverse-scored, and the score is the sum of the items. This measure should not be scored if more than two items are missing. A cut-off score of 10 is being considered at risk of depression (Andresen et al., 1994).

This measure is considered to be appropriate for use in survivors of IPV. It has been used widely in several forms with survivors of intimate partner violence (e.g., Beydoun, Beydoun, Kaufman, Lo, & Zonderman, 2012; Bonomi et al., 2006; Devries et al., 2013; La Flair, Bradshaw, & Campbell, 2012). Bonomi, Kernic, Anderson, Cannon, and Slesnick (2008) found short forms of the CES-D to be adequate in detecting symptoms of depression in survivors of IPV. Further, the CES-D-20 (Radloff, 1977) is a widely used measure in a variety of populations. Although the psychometric properties presented in the next section are gathered from non-IPV populations, the CES-D-10 is considered to be psychometrically sound in survivors of IPV due to its wide use (e.g., e.g., Beydoun, Beydoun, Kaufman, Lo, & Zonderman, 2012; Bonomi et al., 2006; Devries et al., 2013; La Flair, Bradshaw, & Campbell, 2012).

2.2.3.5.1.2 CES-D-10 psychometric properties

The psychometric properties of the CES-D-10 have been widely assessed and found to be acceptable in several populations (Andreson et al., 1994; Zhang et al., 2012). Andreson and colleagues (1994), found this measure to have good predictive accuracy (kappa = 0.97). Test-retest reliability was found to be comparable across several studies, with Andreson and colleagues (1994) reported a correlation of $r = 0.59$ in a sample of older adults after a 12 month interval. Internal consistency reliability was demonstrated as adequate (Cronbach's alpha = 0.88) in a sample of individuals diagnosed with human immunodeficiency virus (Zhang et al., 2012). In the current study, a similar internal consistency was demonstrated at Wave 2 (Cronbach's alpha = 0.84) and at Wave 4 (Cronbach's alpha = 0.87).

This instrument has proven validity because it has a positive correlation with poorer health status ($r = 0.37$) and positive correlation with negative affect ($r = 0.71$) in a sample of older adults (Andreson et al., 1994). This measure is also highly correlated (Spearman's rho = 0.97) with the previously validated CES-D-20 (Zhang et al., 2012). As compared to the CES-D-20 (Radloff, 1977), the CES-D-10 demonstrates acceptable classification of patients with depression (kappa = 0.82) in a sample of individuals diagnosed with human immunodeficiency virus (Zhang et al., 2012).

2.2.3.5.2 PCL

2.2.3.5.2.1 PCL description and scoring

The PCL was used to screen for symptoms of PTSD (Blanchard et al., 1996; Weathers et al., 1993). This measure is a self-report questionnaire containing 17 items that measure the three symptom clusters of PTSD that the participant has experienced in the previous month. These symptoms clusters reflect criteria specified in the fourth edition of the *Diagnostic and Statistical Manual* criteria (American Psychiatric Association, 1994), and include re-experiencing (5 items), avoidance/numbing (7 items), and hyper arousal (5 items). This is a self-administered questionnaire that specifically targets experiences with IPV, and is therefore useful in IPV research. Participants completed the measure using a five point Likert scale. Higher scores on the measure and on subscales indicate greater severity of symptoms.

Asmundson, Stapleton, and Taylor (2004) recommend separating the three PTSD diagnostic criteria (re-experiencing, avoidance-numbing, and hyper arousal) into four diagnostic criteria by splitting the avoidance-numbing category into two distinct categories of symptoms, specifically an avoidance category and a numbing category.

Researchers have found that splitting these categories increases diagnostic utility. The symptom profiles created by splitting these criteria have been demonstrated to be predictive of treatment response. Therefore, PTSD symptom clusters will be treated as four, rather than three, distinct subscales on the PCL. The symptom clusters were not used for the primary analysis in this study but were used for data cleaning.

2.2.3.5.2.2 PCL psychometric properties

The PCL has been demonstrated to have good reliability and validity (Blanchard et al., 1996; Weathers et al., 1993). When testing concurrent validity, the PCL had a 0.93 correlation with the Clinician Administered PTSD Scale (CAPS), and was concluded to have good concurrent validity. This measure has also been demonstrated to have good internal consistency, both within the entire measure as well as within the subscales. Cronbach's alpha for the entire scale, to indicate internal consistency, was 0.94. The PCL was demonstrated to have similar internal consistency in the current study at Wave 2 (Cronbach's alpha = 0.91) and at Wave 4 (Cronbach's alpha = 0.93).

Scoring of this measure yields a score for each of the four symptom clusters as well as a total score that indicates PTSD symptom severity (Blanchard et al., 1996). Higher scores indicate greater PTSD symptoms. The PCL is scored using a cut-off score (Blanchard et al., 1996). The recommended cut-off score is 50, with scores higher than 50 indicating increased likelihood of PTSD diagnosis. However, Blanchard and colleagues (1996) found that lowering the cut-off score for this particular version of the measure to 44 increased diagnostic utility from 0.83 to 0.90 and increased sensitivity from 0.79 to 0.94. With both cut-off scores, specificity remains the same at 0.86.

2.3     Procedure

2.3.1   Ethics

The Healing Journey Project (SSHR/CURA) has been granted ethics clearance from the data collection sites, specifically the Universities of Regina, Saskatchewan, Manitoba, and Calgary Ethics Boards (Appendices D, E, F, and G), and data-collection is complete. Specific questions regarding sleep were added to the measures used by this larger project in order to provide the data for the current study. I submitted a data use request to the Healing Journey team to request access to the data for the current study. The current study and analyses fall within the scope of the ethics clearance given to the larger Healing Journey Project, as the current study focuses on the relationship between IPV experiences and other aspects of the participants functioning, such as sleep. Therefore, further ethical clearance was not sought.

2.3.2   Selection and training of interviewers

Interviewers were hired to conduct the semi-structured interviews with the participants. Interviewers were selected based on characteristics that would make them appropriate for conducting research in this field. Because the participants were all female, and the subject matter of the semi-structured interview quite personal, only female interviewers who espoused feminist values were hired. Such women were identified in the community by the academic and community partners on the study through previous experience. Women were selected as interviewers if they had experience working in the field of IPV, either as service providers or as students, in order to ensure that the interviewers were competent in working with difficult IPV subject matter and working

with distressed participants. Approximately 45 interviewers were involved in data collection.

To control data collection quality, a protocol was developed that was used to train the interviewers in ethical conduct, including informed consent and confidentiality, screening participants, unbiased data-collection, responding to difficult subject matter, working with distressed or suicidal participants, and interviewing skills. All interviewers attended a two-day training workshop, during which emphasis was given to completion of quantitative survey schedules and the importance of adhering to administration instructions for standardized measures. They received ongoing supervision from site coordinators and academic researchers. All interviewers participated in an updated training session after Wave 1 that focused on common errors and issues that were identified during Wave 1 data collection and entry.

### 2.3.3   Recruitment and Screening

Participants were recruited from the community with the help of community service providers. The Healing Journey Project research team includes members who were either community or university employees; community team members coordinated recruitment of participants who met our specified criteria. Researchers and interviewers contacted service providers to inform them of the study and request permission to include the agency in the project. Potential service providers in Saskatchewan were identified via an environmental scan conducted in July, 2005. Project descriptions were sent to interested parties, containing a brief description of the study and examples of all recruitment materials. Information sessions were conducted at the sites to provide service providers with further information about the project, what participation in the project

entailed, and the characteristics of the participants being targeted. Service providers were given recruitment packages, including a recruitment screening form (Appendix H), and were asked to distribute packages to participants who appeared to meet the inclusion criteria.

Asking service providers to select participants whom they thought meet the recruitment criteria posed a threat to confidentiality. It was possible that participants' involvement with the service was disclosed as result of being recruited by the service; therefore, participants signed the recruitment screening form and returned to the receptionist so that the service worker was unaware of who agreed to participate in the study. These forms were mailed to the Principal Investigator in each province, who then sent the contact information to the project coordinator to assign the potential participant to an interviewer who would then make first contact with the potential participant. At first contact, it was clarified for participants that their involvement with the services involved in the recruitment process would not be disclosed in any way that would breach their confidentiality agreement with the service provider. Because participants were recruited from services, it was emphasized that participants' specific responses would not be shared with service providers and that their specific responses for the study would not have any impact on the services they received, even if they discussed the service they were recruited from for the study.

Participants were also informed that their choice to or not to participate in the Healing Journey Project would not be shared with service providers, and that the services they receive would not be impacted by their choice to participate in the study. These

conditions were outlined in the form of consent and confidentiality, which was reviewed and signed by all participants (Appendix C).

Certain demographic groups of participants were less likely to be connected to services, including Aboriginal, disabled, lesbian, bisexual, two-spirited, and HIV positive participants. Professionals with connections to these communities were hired to assist with recruitment of these populations. Flyers with the project description and contact information for the project were distributed in the community, which interested women could use to learn more about the project. Some participants not connected to specific service providers were recruited by word of mouth. Once learning of the project, participants were responsible for forwarding their contact information to the research office for the project in their community, either by returning completed recruitment packages, contacting the phone number, or emailing the address provided.

Recruitment of participants was coordinated in multiple sites in Alberta, Manitoba, and Saskatchewan. The academic coordinators for each site received participants' recruitment screening forms, and participants were then contacted by the interviewers following details of safe contact provided by the participants on the forms. Interviewers reviewed informed consent and confidentiality, collected contact information, explained the study procedure, and scheduled the first interview.

Because the service providers for survivors of IPV had the most extensive contact with participants and knowledge of participants' circumstances, screening of the participants for the above mentioned inclusion criteria was conducted primarily by the service providers before recommending participants for participation in The Healing Journey Project. Interviewers conducted an informal second screening during the first

phone contact with the participants. Interviewers reviewed the inclusion criteria with the

participants, giving participants opportunity to indicate if the criteria did not apply to

them and if participation in the study would be problematic for them considering their

circumstances at the time. During this conversation, interviewers had opportunity to

evaluate participants' circumstances, psychological status, and if participation in the

project would be overly distressing for the participants.

2.3.4  Informed consent and confidentiality

Participants read and signed a consent form (Appendix C). The form contained

information explaining the study. Participants were informed of their right to choose not

to answer any question and to withdraw from the study without any consequences to

themselves or the services they receive. Confidentiality was reviewed, and participants

were also informed of the duty to report guidelines, including disclosure of the

participant's intent to harm herself, harm someone else, or if there was past or current

unreported child abuse. If these conditions were met, then the participant would be

notified, and confidentiality would be breached so that the interviewer could notify the

necessary authorities.

2.3.5  Interviewing participants

For data collection, a semi-structured interview containing both closed and open-

ended questions was used. Please see section 2.1 (Instrument) for a complete description

of the interview. Interviewers read the questions to the participants and recorded their

responses. Interview length varied, taking between one and six hours, depending on the

participants' needs and responses. Following completion of the interview, the

interviewers debriefed the participants to address distress in response to the difficult

subject matter of the interview. Debriefing included the interviewers' assessing the participants' distress levels by offering to discuss the participants' reactions to the interview and asking the participant if her level of distress required referral to counselling. If the participants presented with significant distress during or following the interview, they were referred for counselling either to a service they were currently using or to a service in their area. When necessary, suicide assessments were conducted by the interviewers in consultation with the project coordinators, academic, and community partners. Following debriefing, participants were given the interviewers' contact information, a list of services for survivors of violence, and a $50 honorarium for the interview. An agreement was worked out with financial services in each university so that participants could anonymously receive this honorarium. Participants signed a receipt of honorarium form indicating that they received the honorarium for the interview. Interviewers initiated contact with participants approximately six months between meetings.

2.4 Participants

2.4.1 Selection of participants

Participants were selected based on a number of inclusion criteria. Only women who reported experiencing a physical act of violence since January, 2000, were included in the study because memories of experiences with IPV may be less accurate with greater lengths of time between the most recent physical incident and commencement of data collection. This date was chosen in order to ensure that a sufficient sample size was collected while decreasing likelihood of memory problems. Women in crisis at recruitment were not included because participating in the study might increase the stress

they were experiencing (Hernandez-Ruiz, 2005). Women who self-identified as having

severe psychological disorders that may influence their ability to accurately recall their

experiences or discuss their experiences were not included in this sample. Specifically,

women were asked by the interviewer at the initial screening meeting if they were

experiencing psychological problems that may interfere with their participation. If

women presented to interviewers with behaviour that interfered with their ability to

participate in the study, possibly due to severe psychological disorders, they were not

included in the study. Because data collection took place for several years, women

unwilling to participate in the study for the duration of data collection were not included.

2.4.2 Participants characteristics

The participant data from the first, second, and fourth waves of data collection of the

Healing Journey Project were used as these wave included the relevant information for

the current study. At the first meeting (Wave 1), participants consisted of a community

sample of 665 female survivors of IPV from Alberta, Manitoba, and Saskatchewan. The

mean age of the full Wave 1 sample was 36.38 ($SD = 10.78$) years. A breakdown of the

demographics of the Wave 1 sample is included in Table 1. Due to attrition, 595 women

completed the second wave of data collection. At Wave 2, the mean age of the remaining

participants as reported at Wave 1 was 36.70 ($SD = 10.92$) years, which is slightly higher

than the original sample. A full breakdown of the demographics characteristics of the

Wave 2 sample is presented in Table 1. Seventy participants were lost between Waves 1

and 2 due to attrition. At Wave 4, 484 participants completed collection. At Wave 4, the

mean age of the remaining participants as reported at Wave 1 was 36.98 ($SD = 10.95$)

Table 1

*Participant demographics (Wave 1* N *= 665; Wave 2* N *= 595; Wave 4* N *= 484*; *Wave 4 subsample* n = *205)*

| Parameter | | Wave 1 *n* (%) | Wave 2 *n* (%) | Wave 4 *n* (%) | W4 subsample n (%) |
|---|---|---|---|---|---|
| Age | | *M* = 36.38 (*SD* =10.78) | *M* = 36.70 (*SD* = 10.92) | *M* = 36.98 (*SD* = 10.95) | *M* = 38.35 (*SD* = 11.12) |
| Province | MB | 222 (33.4%) | 205 (34.5%) | 183 (37.7%) | 60 (29.3%) |
| | SK | 214 (32.2%) | 185 (31.1%) | 155 (32.0%) | 61 (29.8%) |
| | AB | 229 (34.4%) | 205 (34.5%) | 147 (30.3%) | 84 (41.0%) |
| Culture | Aborig. | 328 (49.3%) | 278 (46.7%) | 226 (46.6%) | 79 (38.5%) |
| | Non-Aborig | 335 (50.4%) | 315 (52.9%) | 257 (53.0%) | 126 (61.5%) |
| Children | | 423 (63.6%) | 357 (60.0%) | 306 (63.1%) | 126 (61.5%) |
| Work | | 250 (37.6%) | 226 (38.0%) | 226 (46.8%) | 75 (36.6%) |
| Gr. 12 | | 381 (57.3%) | 350 (58.8%) | 318 (65.6%) | 133 (64.9%) |
| Ch. Abuse | | 524 (78.8%) | 470 (79.0%) | 386 (79.6%) | 157 (76.6%) |

*Note*. MB = Manitoba; SK = Saskatchewan; AB = Alberta; Culture = cultural background (either Aboriginal or Non-Aboriginal); Aborig. = Aboriginal; Non-Aborig = Non-Aboriginal; Children = children currently living in the home; Work = currently working either casual, part-time, or full-time; Gr. 12 = completed Grade 12 or equivalent; Ch. Abuse = experienced abuse in childhood.

years, which again is slightly higher than the original sample as well as the Wave 2 sample. A breakdown of the demographics of the Wave 4 sample is included in Table 1.

Between Waves 2 and 4, 111 participants were lost due to attrition. For selected analyses, a Wave 4 subsample of participants was selected if they had not entered into a new abusive relationship since Wave 2 ($N = 205$). The average Wave 1 age of this subsample was 38.35 ($SD = 11.12$) years, which is higher than the full sample at Wave 4, suggesting participants no longer in abusive relationships were older than participants still in abusive relationships. A breakdown of the demographics of this subsample is included in Table 1.

2.4.3 Power available to detect effect size for planned analyses

Tabachnick and Fidell (2001) provide an equation to determine if sample size for multiple regression is sufficient to detect a medium effect size. The Wave 2 sample ($N = 595$) provides sufficient power to detect a medium effect size for hypothesis one (Cohen, 1992; Tabachnick & Fidell, 2001). The Wave 4 subsample ($N = 205$) provides sufficient power to detect a medium effect size for hypotheses two and three.

2.3.4 Differences between participants due to attrition and subsample selection

2.3.4.1 Comparison of participants retained and lost to attrition at Wave 2

Analyses were conducted in order to determine if statistically significant differences existed between participants who remained in the study at Wave 2 and participants no longer in the study at Wave 2 due to attrition. The Wave 2 analyses were conducted using Wave 1 variables included in the predictive analyses. T-tests were conducted with continuous variables, and chi-square tests for independence were conducted for dichotomous variables. In terms of attrition patterns at Wave 2, participants

were more likely to be retained if they were older, employed, completed Grade 12, reported less severe abuse at Wave 1, and were Non Aboriginal. A more detailed summary of these analyses follows.

2.3.4.2 Details of Wave 2 attrition comparison analyses

An independent-samples t-test was conducted to compare Wave 1 age for women lost due to attrition and women remaining in the study at Wave 2. There was a significant difference in age for women lost due to attrition ($M = 36.66$, $SD = 10.91$) and women remaining in the study at Wave 2, $M = 33.67$, $SD = 9.17$; $t(654) = 2.19$, $p < 0.05$ (two tailed). The magnitude of the difference in the means (mean difference = 3.00, 95% CI: 0.31 to 5.68) was very small (eta squared = 0.007). An independent-samples t-test was also conducted to compare Wave 1 abuse severity as measured by the Composite Abuse Scale for women lost due to attrition and women remaining in the study at Wave 2. There was a significant difference in abuse severity as measured by the Composite Abuse Scale for women lost due to attrition ($M = 54.96$, $SD = 28.44$) and women remaining in the study at Wave 2, $M = 63.52$, $SD = 31.04$; $t(654) = -2.34$, $p < 0.05$ (two tailed). The magnitude of the difference in the means (mean difference = -8.56, 95% CI: -15.74 to -1.38) was very small (eta squared = 0.008).

A Chi-square for independence (with Yates Continuity Correction) indicated no significant association between Wave 2 attrition and relationship status with most recent abuse partner, $\chi^2(1, n = 664) = 0.00$, $p = 0.97$, phi = -0.007. A Chi-square for independence (with Yates Continuity Correction) indicated a significant association between Wave 2 attrition and working status, $\chi^2(1, n = 657) = 7.96$, $p < 0.01$, phi = -0.12, where retention at Wave 2 was associated with being employed. A Chi-square for

59

independence (with Yates Continuity Correction) indicated a significant association between Wave 2 attrition and completion of Grade 12, $\chi^2$ (1, $n = 664$) = 12.20, $p < 0.001$, phi = -0.14, where retention at Wave 2 was associated with completion of Grade 12. A Chi-square for independence (with Yates Continuity Correction) indicated no significant association between Wave 2 attrition and having children in the home, $\chi^2$ (1, $n = 661$) = 1.89, $p = 0.17$, phi = -0.06. A Chi-square for independence (with Yates Continuity Correction) indicated a significant association between Wave 2 attrition and cultural background, $\chi^2$ (1, $n = 665$) = 15.97, $p < 0.001$, phi = 0.15, where Non-Aboriginal participants were more likely to be retained at Wave 2.

2.3.4.3 Comparison of participants retained and lost to attrition at Wave 4

Analyses were conducted in order to determine if statistically significant differences existed between participants who remained in the study at Wave 4 and participants no longer in the study at Wave 4 due to attrition. These analyses were conducted using the Wave 2 variables included in the predictive analyses. T-tests were conducted with continuous variables, and chi-square tests for independence were conducted for dichotomous variables. Overall, participants were more likely to be retained at Wave 4 if they were not Aboriginal, were employed, and reported lower abuse severity. A detailed summary of these analyses follows.

2.3.4.4 Details of Wave 4 attrition comparison analyses

An independent-samples t-test was conducted to compare frequency of health service use for women lost due to attrition and women remaining in the study at Wave 4. There was not a significant difference in frequency of access to health services for women lost due to attrition ($M = 5.96$, $SD = 2.84$) and women remaining in the study at

Wave 4, $M = 5.90$, $SD = 2.39$; $t (542) = 0.24$, $p = 0.82$ (two tailed). The magnitude of the difference in the means (mean difference = 0.06, 95% CI: -0.48 to 0.61) was extremely small (eta squared = 0.0001). An independent-samples t-test was conducted to compare sleep problems due to abuse for women lost due to attrition and women remaining in the study at Wave 4. There was not a significant difference in sleep problems due to abuse for women lost due to attrition ($M = 2.91$, $SD = 1.76$) and women remaining in the study at Wave 4, $M = 3.00$, $SD = 1.71$; $t (542) = -0.44$, $p = 0.66$ (two tailed). The magnitude of the difference in the means (mean difference = -0.09, 95% CI: -0.47 to 0.30) was very small (eta squared = 0.0008).

An independent-samples t-test was conducted to compare PTSD symptoms for women lost due to attrition and women remaining in the study at Wave 4. There was not a significant difference in PTSD symptoms for women lost due to attrition ($M = 26.13$, $SD = 14.54$) and women remaining in the study at Wave 4, $M = 28.33$, $SD = 14.14$; $t (542) = -1.37$, $p = 0.17$ (two tailed). The magnitude of the difference in the means (mean difference = -2.20, 95% CI: -5.36 to 0.96) was very small (eta squared = 0.003). An independent-samples t-test was conducted to compare depression symptoms for women lost due to attrition and women remaining in the study at Wave 4. There was not a significant difference in depression symptoms for women lost due to attrition ($M = 11.89$, $SD = 6.36$) and women remaining in the study at Wave 4, $M = 12.58$, $SD = 6.20$; $t (542) = -0.99$, $p = 0.33$ (two tailed). The magnitude of the difference in the means (mean difference = -0.69, 95% CI: -2.08 to 0.69) was very small (eta squared = 0.002).

An independent-samples t-test was conducted to compare number of injuries for women lost due to attrition and women remaining in the study at Wave 4. There was not

a significant difference in number of injuries for women lost due to attrition ($M = 0.90$, $SD = 2.05$) and women remaining in the study at Wave 4, $M = 1.37$, $SD = 2.78$; $t (542) =$ -1.62, $p = 0.11$ (two tailed). The magnitude of the difference in the means (mean difference = -0.48, 95% CI: -1.06 to 0.10) was very small (eta squared = 0.005). An independent-samples t-test was conducted to compare general health status for women lost due to attrition and women remaining in the study at Wave 4. There was not a significant difference in general health status for women lost due to attrition ($M = 1.93$, $SD = 0.94$) and women remaining in the study at Wave 4, $M = 1.72$, $SD = 1.05$; $t (542) =$ 1.02, $p = 0.31$ (two tailed). The magnitude of the difference in the means (mean difference = 0.12, 95% CI: -0.11 to 0.34) was very small (eta squared = 0.002). An independent-samples t-test was conducted to compare age for women lost due to attrition and women remaining in the study at Wave 4. There was not a significant difference in age for women lost due to attrition ($M = 37.16$, $SD = 10.95$) and women remaining in the study at Wave 4, $M = 35.81$, $SD = 10.22$; $t (542) = 1.12$, $p = 0.26$ (two tailed). The magnitude of the difference in the means (mean difference = 1.35, 95% CI: -1.02 to 3.71) was very small (eta squared = 0.002).

An independent-samples t-test was conducted to compare severity of abuse as measured by the Composite Abuse Scale for women lost due to attrition and women remaining in the study at Wave 4. There was a significant difference in severity of abuse for women lost due to attrition ($M = 48.73$, $SD = 29.99$) and women remaining in the study at Wave 4, $M = 58.74$, $SD = 29.97$; $t (542) = -3.01$, $p < 0.01$ (two tailed). The magnitude of the difference in the means (mean difference = -10.01, 95% CI: -16.56 to -3.47) was very small (eta squared = 0.02).

A Chi-square for independence (with Yates Continuity Correction) indicated a significant association between Wave 2 attrition and being employed, $\chi^2$ (1, $n = 553$) = 11.93, $p < 0.01$, phi = -0.15, where being employed was statistically associated with retention at Wave 4. A Chi-square for independence (with Yates Continuity Correction) indicated no association between Wave 4 attrition and completion of Grade 12, $\chi^2$ (1, $n = 565$) = 2.67, $p = 0.10$, phi = -0.07. A Chi-square for independence (with Yates Continuity Correction) indicated no association between Wave 4 attrition and having children in the home, $\chi^2$ (1, $n = 562$) = 0.89, $p = 0.35$, phi = -0.05. A Chi-square for independence (with Yates Continuity Correction) indicated a significant association between Wave 4 attrition and cultural background in the home, $\chi^2$ (1, $n = 665$) = 6.39, $p < 0.05$, phi = 0.09, where Non-Aboriginal participants were more likely to be retained at Wave 4.

2.3.4.5 Comparison of participants available for Wave 4 subsample

Analyses were conducted in order to determine if statistically significant differences existed between participants who at Wave 4 reported not being in an abusive relationship since Wave 2 and participants who at Wave 4 reported being in an abusive relationship since Wave 2. These analyses were conducted using the Wave 2 variables included in the predictive analyses. T-tests were conducted with continuous variables, and chi-square tests for independence were conducted for dichotomous variables. Overall, women were more likely to report not being in an abusive relationship since Wave 2 if they reported higher levels of PTSD symptoms, higher severity of abuse, and if they were not Aboriginal. A detailed summary of these analyses follows.

2.3.4.6 Details of subsample comparisons at Wave 4

An independent-samples t-test was conducted to compare frequency of health service use for women at Wave 4 reporting being in an abusive relationship since Wave 2 to those reporting not being in an abusive relationship since Wave 2. There was not a significant difference in frequency of access to health services for women not reporting an abusive relationship since Wave 2 ($M$ = 5.21, $SD$ = 2.38) and women reporting an abusive relationship since Wave 2, $M$ = 5.17, $SD$ = 2.53; $t$ (387) = 0.18, $p$ = 0.86 (two tailed). The magnitude of the difference in the means (mean difference = 0.04, 95% CI: -0.45 to 0.54) was extremely small (eta squared < 0.0001). An independent-samples t-test was conducted to compare sleep problems due to abuse for women at Wave 4 reporting being in an abusive relationship since Wave 2 to those reporting not being in an abusive relationship since Wave 2. There was not a significant difference in sleep problems due to abuse for women not reporting an abusive relationship since Wave 2 ($M$ = 1.63, $SD$ = 1.56) and reporting an abusive relationship since Wave 2, $M$ = 1.40, $SD$ = 1.56; $t$ (387) = 1.43, $p$ = 0.16 (two tailed). The magnitude of the difference in the means (mean difference = 0.23, 95% CI: -0.09 to 0.54) was very small (eta squared = 0.005).

An independent-samples t-test was conducted to compare PTSD symptoms for women lost due to attrition and women at Wave 4 reporting being in an abusive relationship since Wave 2 to those reporting not being in an abusive relationship since Wave 2. There was a significant difference in PTSD symptoms for women not reporting an abusive relationship since Wave 2 ($M$ = 24.41, $SD$ = 15.44) and women reporting an abusive relationship since Wave 2, $M$ = 20.81, $SD$ = 14.78; $t$ (387) = 2.35, $p$ = 0.02 (two tailed), with women not being in an abusive relationship since Wave 2 reporting more

severe PTSD symptoms. The magnitude of the difference in the means (mean difference = 3.61, 95% CI: 0.59 to 6.62) was very small (eta squared = 0.01). An independent-samples t-test was conducted to compare depression symptoms for women at Wave 4 reporting being in an abusive relationship since Wave 2 to those reporting not being in an abusive relationship since Wave 2. There was not a significant difference in depression symptoms for women not reporting an abusive relationship since Wave 2 ($M$ = 11.37, $SD$ = 6.70) and women reporting an abusive relationship since Wave 2, $M$ = 10.16, $SD$ = 6.48; $t$ (387) = 1.08, $p$ = 0.07 (two tailed). The magnitude of the difference in the means (mean difference = 1.21, 95% CI: -0.11 to 2.52) was very small (eta squared = 0.003).

An independent-samples t-test was conducted to compare number of injuries for women lost due to attrition and women at Wave 4 reporting being in an abusive relationship since Wave 2 to those reporting not being in an abusive relationship since Wave 2. There was not a significant difference in number of injuries for women not reporting an abusive relationship since Wave 2 ($M$ = 1.01, $SD$ = 3.26) and women reporting an abusive relationship since Wave 2, $M$ = 1.07, $SD$ = 3.22; $t$ (387) = -0.19, $p$ = 0.85 (two tailed). The magnitude of the difference in the means (mean difference = -0.06, 95% CI: -0.71 to 0.59) was very small (eta squared < 0.0001). An independent-samples t-test was conducted to compare general health status for women reporting being in an abusive relationship since Wave 2 to those reporting not being in an abusive relationship since Wave 2. There was not a significant difference in general health status for women not reporting an abusive relationship since Wave 2 ($M$ = 1.85, $SD$ = 0.97) and women reporting an abusive relationship since Wave 2, $M$ = 1.86, $SD$ = 0.93; $t$ (387) = -0.07, $p$ =

0.94 (two tailed). The magnitude of the difference in the means (mean difference = 0.01, 95% CI: -0.20 to 0.18) was very small (eta squared < 0.0001).

An independent-samples t-test was conducted to compare age for women at Wave 4 reporting being in an abusive relationship since Wave 2 to those reporting not being in an abusive relationship since Wave 2. There was a significant difference in age for women not reporting an abusive relationship since Wave 2 ($M = 38.04$, $SD = 10.51$) and women reporting an abusive relationship since Wave 2, $M = 35.29$, $SD = 10.51$; $t (387) = 2.58$, $p < 0.05$ (two tailed), where women reporting not being in an abusive relationship since Wave 2 reported higher levels of PTSD symptoms. The magnitude of the difference in the means (mean difference = 2.75, 95% CI: 0.65 to 4.86) was very small (eta squared = 0.02).

An independent-samples t-test was conducted to compare severity of abuse as measured by the Composite Abuse Scale for women at Wave 4 reporting being in an abusive relationship since Wave 2 to those reporting not being in an abusive relationship since Wave 2. There was a significant difference in severity of abuse for women not reporting an abusive relationship since Wave 2 ($M = 53.88$, $SD = 30.95$) women reporting an abusive relationship since Wave 2, $M = 46.40$, $SD = 29.54$; $t (387) = 2.44$, $p < 0.05$ (two tailed), where women indicating they have not been in an abusive relationship since Wave 2 reported higher levels of abuse severity on the Composite Abuse Scale. The magnitude of the difference in the means (mean difference = 7.48, 95% CI: 1.44 to 13.52) was very small (eta squared = 0.02).

A Chi-square for independence (with Yates Continuity Correction) indicated no association between abusive relationship since Wave 2 and being employed, $\chi^2 (1, n =$

418) = 0.08, $p = 0.78$, phi = 0.02. A Chi-square for independence (with Yates Continuity Correction) indicated no association between abusive relationship since Wave 2 and completion of Grade 12, $\chi^2$ (1, $n = 426$) = 0.87, $p = 0.35$, phi = -0.05. A Chi-square for independence (with Yates Continuity Correction) indicated no association between abusive relationship since Wave 2 and having children in the home, $\chi^2$ (1, $n = 430$) = 0.34, $p = 0.56$, phi = 0.03. A Chi-square for independence (with Yates Continuity Correction) indicated no association between abusive relationship since Wave 2 and cultural background, $\chi^2$ (1, $n = 442$) = 10.94, $p < 0.01$, phi = 0.15, where Aboriginal participants were more likely to report being in an abusive relationship since Wave 2.

## 2.4    Data analysis

Data was collected by the interviewer using a paper questionnaire protocol.  The participant responses were then entered by computer into an Access database, which was exported into Statistical Package for the Social Sciences database. Research assistants from each province were responsible for the data entry for the interviews. Data entry employees received training to ensure continuity and quality of data entry. Data entry personnel were required to sign a confidentiality form to ensure that the interview responses are kept confidential. Data cleaning took place when the data have been completely exporting into an SPSS database.

## 2.4.1   Descriptive statistics

Frequency counts and descriptive statistics with basic demographic variables were conducted with SPSS 14.0 to characterize the sample.

2.4.2    Inferential statistics

2.4.2.1 Hypothesis #1 – survivors of IPV health service use is predicted independently by sleep problems due to abuse when controlling for the effect of demographic characteristics, psychopathology, health status, and abuse experiences

In order to test this hypothesis, hierarchical multiple regression analysis was conducted to determine if Wave 2 sleep problems due to abuse statistically predicted Wave 2 health service use when controlling for the effect of demographic variables, psychopathology, abuse experiences, and health status. Demographics at Wave 2 (age, employment, culture, education, children living in the home, and childhood abuse) were entered into the first block. Psychopathology at Wave 2 (PTSD, depression) were entered into the second block. IPV (Composite Abuse Scale total score) was entered into the third block. Health status (self-report general health, and injuries in past twelve months) was entered into the fourth block. Sleep problems due to abuse was entered into the fifth block.

2.4.2.2 Hypothesis #2 – when women are no longer in abusive relationships, they continue to report sleep problems due to abuse

To test this hypothesis, participants at Wave 4 who identified as not being in an abusive relationship since Wave 2 were used to create a subsample of participants who has not been exposed to recent IPV. Frequency counts were conducted using the sleep measure to determine if women report continued sleep problems due to abuse, despite not being in an abusive relationship. Hierarchical multiple regression was conducted predicting sleep problems due to abuse with IPV when controlling for demographics (age,

culture, employment, education, children, and childhood abuse) and psychopathology (PTSD and depression).

2.4.2.3 Hypothesis #3 – when women are no longer in abusive relationships, longer-term health service use for victims of IPV is predicted independently by sleep problems due to violence when controlling for the effect of demographic characteristics, psychopathology, abuse experiences, and health status

In order to test this hypothesis, hierarchical multiple regression was conducted with participants at Wave 4 who identify as no longer being in an abusive relationship and have not entered into a new abusive relationship since Wave 2. Using this subsample, hierarchical multiple regression as conducted predicting Wave 4 frequency of health service use with Wave 4 sleep problems due to abuse when controlling for Wave 4 demographics (age, employment, culture, children, education, and abuse in childhood), Wave 4 psychopathology (PTSD, depression), Wave 4 health status (self-report general health, and injuries in past six months), and most recent IPV (Wave 2 Composite Abuse Scale).

2.5 Preparing the data for analysis

2.5.1 Cleaning the data and missing data

The amount of missing data was examined. No variable was missing more than five percent of the data; therefore, all variables were suitable to be included in the analysis (Tabachnick & Fidell, 2001). When summing measures, participants did not receive a summed score if they were missing more than ten percent of the data (Tabachnick & Fidell, 2001). If participants were missing less than ten percent of their data in a measure, their missing scores were replaced with the mean of the participant's

69

scores on the other variables contributing to the measure. Summing and mean replacement syntax in SPSS were used for this purpose. Participants' most recent Composite Abuse Scale scores were used in all analyses. If participants did not complete the Composite Abuse Scale because they did not experience abuse since the previous wave, their Composite Abuse Scale score was carried forward from the previous wave.

2.5.2 Distribution analyses

Data plots were generated to determine whether the relationship between the dependent variables was linear or curvilinear. Upon examination of the scatter plots, the dependent variables were identified as skewed. Bootstrapping was used in all analyses to correct the abnormal distribution of these variables as this technique has been demonstrated to be an appropriate solution for abnormally distributed data in parametric statistical analysis (Chong, 2008; Sufahani & Ahmad, 2012). The data were examined for outliers. Z-scores for each of the dependent and independent variables were examined and indicated the presence of three outlying scores, $z > 3.33$ (Tabachnick & Fidell, 2001). Outlying values were replaced with the next highest non-outlying value (Osborne & Overbay, 2008; Tabachnick & Fidell, 2001).

Internal consistency of all measures used in the analyses are presented in Table 2. Internal consistency was calculated using Cronbach's alpha or KR-20. KR-20 is the reliability analysis for measures employing dichotomous items (Nunnally & Bernstein, 1994). An internal consistency of 0.70 is considered acceptable (DeVellis, 2003; Pallant, 2007). Normality of the distribution was checked by determining skewness and kurtosis statistics, which are also presented in Table 3. Scatter plots were also examined for the continuous variables.

Table 2

*Descriptive statistics for continuous variables entered into regression analyses*

| | N | Mean (SD) | Skewness (SE) | Kurtosis (SE) | Internal consistency |
|---|---|---|---|---|---|
| Wave 2 CAS | 511 | 50.0 (29.9) | 0.55 (0.10) | -0.26 (0.20) | 0.94 |
| Wave 2 PCL | 580 | 26.93 (12.89) | 0.34 (0.10) | -0.60 (0.20) | 0.91 |
| Wave 4 PCL | 470 | 20.43 (13.55) | 0.56 (0.11) | -0.65 (0.22) | 0.93 |
| Wave 2 CES-D-10 | 589 | 12.06 (6.33) | 0.42 (0.10) | -0.36 (0.20) | 0.84 |
| Wave 4 CES-D-10 | 413 | 10.98 (6.78) | 0.47 (0.11) | -0.51 (0.22) | 0.87 |
| Wave 2 Sleep-6 | 590 | 2.93 (1.74) | -0.02 (0.10) | -0.89 (0.20) | 0.66 |
| Wave 4 Sleep-6 | 467 | 1.52 (1.58) | 0.94 (0.11) | 0.14 (0.23) | 0.72 |

*Note.* CAS = Composite Abuse Scale; PCL = PTSD-Checklist; CES-D-10 = Center for Epidemiological Study of Depression Scale Short Form; Sleep-6 = Sleep problems due to abuse questionnaire.

## 3. RESULTS

3.1 Hypothesis #1 – survivors of IPV health service use is predicted independently by sleep problems due to abuse when controlling for the effect of demographic characteristics, psychopathology, health status, and abuse experiences

Hierarchical multiple regression was used to assess the ability of one control measure (Sleep Problems Due to Abuse) to predict frequency of health service access, after controlling for the influence of demographic characteristics, psychopathology, health status, and abuse experiences. Demographic characteristics (age, cultural background, working status, education level, having children living in the home, and experiences of childhood abuse) were entered into the first block. Health status (injury and self-report health) was entered into the third block. Abuse experiences (Composite Abuse Scale score) was entered into the fourth block, and sleep problems due to abuse was entered into the fifth block. Self-report frequency of access to health services was the dependent variable. Multicolinearity was assessed using correlation, tolerance, and variance inflation factor scores provided by SPSS. Correlations between factors are considered satisfactory if less than 0.80 (Field, 2009). Tolerance is considered satisfactory when close to 1, and variance inflation factor is satisfactory when below 6 (Keith, 2006). The correlation matrix to this regression equation is presented in Table 3. Results of the regression analysis and multicolinearity statistics are presented in Tables 3, 4, and 5.

Table 3

*Correlation matrix pertaining to regression equation predicting frequency of health service access*

|  | Serv. Use | Age | Culture | Working | Gr. 12 | Child | Ch. Ab. | PTSD | Depr. | Injury | Health | IPV | Sleep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Serv. Use | 1 | | | | | | | | | | | | |
| Age | 0.11* | 1 | | | | | | | | | | | |
| Culture | 0.03 | 0.01 | 1 | | | | | | | | | | |
| Work | -0.16** | 0.03 | 0.06 [a] | 1 | | | | | | | | | |
| Gr. 12 | 0.01 | 0.10* | -0.04 | 0.32*** | 1 | | | | | | | | |
| Child | -0.04 | -0.25*** | 0.05 | -0.03 | 0.09* | 1 | | | | | | | |
| Ch. Ab. | -0.03 | -0.09* | 0.01 | -0.08 | 0.02 | 0.04 | 1 | | | | | | |
| PTSD | 0.19*** | 0.08 [a] | 0.06 | -0.08 [a] | -0.08 [a] | -0.10* | -0.01 | 1 | | | | | |
| Depr. | 0.07 [a] | 0.02 | 0.01 | -0.15** | -0.05 | -0.08* | 0.00 | 0.70*** | 1 | | | | |
| Injury | 0.11* | -0.14** | -0.01 | -0.08* | -0.08 [a] | 0.01 | 0.03 | 0.13** | 0.11* | 1 | | | |
| Health | -0.11* | -0.14** | -0.03 | 0.15** | 0.11* | 0.05 | 0.01 | -0.37*** | -0.38*** | -0.07 | 1 | | |
| IPV | 0.13** | -0.14** | 0.08 [a] | -0.02 | -0.07 [a] | 0.01 | -0.02 | 0.25*** | 0.11* | 0.05 | -0.12** | 1 | |
| Sleep | 0.15** | 0.08 [a] | 0.05 | 0.04 | -0.03 | -0.04 | -0.05 | 0.34*** | 0.20*** | 0.08* | -0.14** | 0.39*** | 1 |

Notes: $n = 412$; Serv. Use = Frequency of health service access; Culture = Cultural background (either Aboriginal or Non-Aboriginal); Gr. 12 = Completed grade 12 or equivalent; Ch. Ab. = Participant experienced child abuse; Depr. = Reports symptoms of depression; IPV = Levels of IPV on Composite Abuse Scale

[a] = approaching significance, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 4

*Regression analysis for dependent variable (health service use frequency) predicted by demographics, psychopathology, health, abuse, and sleep problems due to abuse*

| Model | $R^2$ | Std Error of the estimate | $R^2$ Change | $F$ statistics for the model |
|---|---|---|---|---|
| 1 (Demographics) | 0.04 | 52.31 | 0.04** | $F_{6, 405} = 2.98**$ |
| 2 (Demographics, Psychopathology) | 0.08 | 51.32 | 0.04** | $F_{8, 403} = 4.54***$ |
| 3 (Demographics, Psychopathology, Health) | 0.09 | 51.17 | 0.01 | $F_{10, 401} = 4.09***$ |
| 4 (Demographics, Psychopathology, Health, IPV) | 0.10 | 51.00 | 0.01* | $F_{11, 400} = 4.08***$ |
| 5 (Demographics, Psychopathology, Health, IPV, Sleep) | 0.10 | 51.00 | 0.00 | $F_{12, 399} = 3.84***$ |

*Note.* Demographics = age, cultural background, working, education, children, abuse in childhood; Psychopathology = PTSD, depression; Health = injuries, health status; IPV = Composite Abuse Scale; Sleep = sleep problems due to abuse measure.

[a] = approaching significance, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 5

*Regression coefficients for health service frequency use*

|  | B | Std. Error | Beta | Partial correlation | Tolerance | VIF |
|---|---|---|---|---|---|---|
| **Block 1:** | | | | | | |
| Constant | 35.48 | 13.02 | | | | |
| Age | 0.48 | 0.27 | 0.09 | 0.09 [a] | 0.91 | 1.09 |
| Culture | 0.31 | 2.82 | 0.04 | 0.04 | 0.99 | 1.01 |
| Work | -19.60 | 5.27 | -0.18 | -0.17*** | 0.88 | 1.13 |
| Gr. 12 | 6.89 | 6.19 | 0.06 | 0.06 | 0.87 | 1.16 |
| Children | -3.33 | 5.24 | -0.03 | -0.03 | 0.92 | 1.09 |
| Child Abuse | -0.32 | 5.65 | 0.03 | -0.03 | 0.98 | 1.01 |
| **Block 2:** | | | | | | |
| Constant | 25.08 | 13.17 | | | | |
| Age | 0.39 | 0.27 | 0.08 | 0.08 | 0.91 | 1.10 |
| Culture | 0.21 | 2.53 | 0.03 | 0.03 | 0.98 | 1.02 |
| Work | -19.97 | 5.27 | -0.19 | -0.18*** | 0.86 | 1.16 |
| Gr. 12 | 8.65 | 6.06 | 0.09 | 0.08 | 0.87 | 1.16 |
| Children | -2.16 | 5.46 | -0.02 | -0.02 | 0.91 | 1.10 |
| Child Abuse | -0.32 | 2.20 | -0.03 | -0.03 | 0.99 | 1.02 |
| PTSD | 1.04 | 0.25 | 0.29 | 0.19** | 0.49 | 2.02 |
| Depression | -1.31 | 0.54 | -0.15 | 0.07* | 0.49 | 2.03 |

Table 5 (continued)

|  | B | Std. Error | Beta | Partial correlation | Tolerance | VIF |
|---|---|---|---|---|---|---|
| Block 3: |  |  |  |  |  |  |
| Constant | 27.13 | 15.45 |  |  |  |  |
| Age | 0.43 | 0.27 | 0.09 | 0.08 | 0.87 | 1.15 |
| Culture | 0.21 | 2.59 | 0.03 | 0.03 | 0.98 | 1.02 |
| Work | -19.11 | 5.19 | -0.18 | -0.17** | 0.85 | 1.17 |
| Gr. 12 | 9.27 | 6.18 | 0.08 | 0.08 | 0.86 | 1.17 |
| Children | -2.14 | 5.46 | -0.02 | -0.02 | 0.91 | 1.10 |
| Child Abuse | -0.34 | 4.47 | -0.03 | -0.03 | 0.99 | 1.03 |
| PTSD | 0.97 | 0.26 | 0.26 | 0.19*** | 0.48 | 2.09 |
| Depression | -1.39 | 0.57 | -0.16 | -0.11* | 0.48 | 2.10 |
| Injuries | 2.30 | 1.13 | 0.10 | 0.10* | 0.95 | 1.05 |
| Health | -2.09 | 2.60 | -0.04 | -0.04 | 0.81 | 1.24 |
| Block 4: |  |  |  |  |  |  |
| Constant | 16.09 | 16.91 |  |  |  |  |
| Age | 0.52 | 0.29 | 0.10 | 0.10 [a] | 0.85 | 1.18 |
| Culture | 0.17 | 2.43 | 0.02 | 0.02 | 0.98 | 1.02 |
| Work | -19.09 | 5.19 | -0.18 | -0.17** | 0.85 | 1.17 |
| Gr. 12 | 9.50 | 6.16 | 0.09 | 0.08 | 0.86 | 1.17 |
| Children | -2.07 | 5.46 | -0.02 | -0.02 | 0.91 | 1.10 |
| Child Abuse | -0.31 | 4.60 | -0.03 | -0.03 | 0.99 | 1.01 |
| PTSD | 0.84 | 0.26 | 0.23 | 0.15** | 0.45 | 2.22 |

Table 5 (continued)

| | B | Std. Error | Beta | Partial correlation | Tolerance | VIF |
|---|---|---|---|---|---|---|
| Block 4: (continued) | | | | | | |
| Depression | -1.25 | 0.57 | -0.14 | -0.10* | 0.47 | 2.13 |
| Injuries | 2.33 | 1.12 | 0.10 | 0.10* | 0.95 | 1.05 |
| Health | -1.71 | 2.56 | -0.03 | -0.03 | 0.80 | 1.25 |
| IPV | 0.17 | 0.12 | 0.10 | 0.10 | 0.89 | 1.12 |
| Block 5: | | | | | | |
| Constant | 15.41 | 16.97 | | | | |
| Age | 0.48 | 0.29 | 0.11 | 0.09 [a] | 0.84 | 1.12 |
| Culture | 0.17 | 2.42 | 0.02 | 0.02 | 0.98 | 1.02 |
| Work | -19.55 | 5.15 | -0.18 | -0.18** | 0.85 | 1.18 |
| Gr. 12 | 9.64 | 6.10 | 0.09 | 0.09 | 0.85 | 1.17 |
| Children | -2.12 | 5.44 | -0.02 | -0.02 | 0.91 | 1.10 |
| Child Abuse | 0.29 | 4.64 | -0.03 | -0.03 | 0.98 | 1.02 |
| PTSD | 0.78 | 0.28 | 0.21 | 0.14** | 0.43 | 2.31 |
| Depression | -1.24 | 0.57 | -0.14 | -0.10* | 0.47 | 2.13 |
| Injuries | 2.25 | 1.14 | 0.09 | 0.10* | 0.95 | 1.05 |
| Health | -1.70 | 2.57 | -0.01 | -0.03 | 0.80 | 1.25 |
| IPV | 0.14 | 0.12 | 0.08 | 0.07 | 0.79 | 1.27 |
| Sleep | 1.78 | 1.71 | 0.06 | 0.06 | 0.77 | 1.31 |

*Note*. VIF = variance inflation factor; Culture = Cultural background (either Aboriginal or Non-Aboriginal); Work = currently working; Gr. 12 = completed grade 12 or equivalent; Children = children living in the home; Child Abuse = experienced abuse in childhood; IPV = Composite Abuse Scale; Injuries = number of injuries in past 12 months due to any cause; Health = overall health status; Sleep = sleep problems due to abuse [a] = approaching significance, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Multicolinearity statistics were found to be within acceptable ranges. Demographics (age, cultural background, working, education, children in the home, abuse during childhood) were entered at Step 1 and were significant, with an $R^2 = 0.04$. After entry of psychopathology (PTSD, depression) at Step 2, the total variance explained by the model as a whole at step 2 was 7.3%, $F (8, 403) = 4.54$, $p < 0.001$. The $R^2$ change after the Mod. PCL measure was added was significant, after controlling for demographics, $R^2$ change $= 0.04$, $F$ change $(2, 403) = 8.86$, $p < 0.01$.

After entry of health (injuries and overall health status) at Step 3, the total variance explained by the model as a whole was 9.2%, $F (10, 401) = 4.09$, $p < 0.001$. The $R^2$ change after this control measure was added was not significant, after controlling for demographics and psychopathology, $R^2$ change $= 0.01$, $F$ change $(2, 401) = 2.18$, $p = 0.11$. After entry of IPV at Step 4, the total variance explained by the model as a whole was 10.1%, $F (11, 400) = 4.08$, $p < 0.001$. The $R^2$ change after this control measure was added was approaching significance, after controlling for demographics, psychopathology, and health, $R^2$ change $= 0.01$, $F$ change $(1, 400) = 3.71$, $p = 0.55$. After entry of sleep problems at Step 5, the total variance explained by the model as a whole was 10.4%, $F (12, 399) = 3.84$, $p < 0.001$. The $R^2$ change after this control measure was added was not significant, after controlling for demographics, psychopathology, health, and abuse, $R^2$ change $< 0.00$, $F$ change $(1, 399) = 1.21$, $p = 0.27$.

In the first model, working status was statistically significant (beta $= -0.18$, $p < 0.01$), where working was associated with less health service use. In the second model, working status, PTSD symptoms, and depression symptoms were statistically significant, where working status and depression symptoms were associated with less health service

use and PTSD symptoms were associated with greater health service use. PTSD symptoms recorded the highest beta value (beta = 0.29, $p < 0.001$) followed by working status (beta = -0.19, $p < 0.001$) and depression symptoms (beta = -0.15, $p < 0.05$). In the third model, working status, PTSD symptoms, depression symptoms, and number of injuries were statistically significant, where working status and depression symptoms were associated with less health service use and PTSD symptoms and injuries were associated with more health service use. PTSD symptoms recorded the highest beta value (beta = 0.26, $p < 0.01$), followed by working status (beta = -0.18, $p < 0.01$), depression symptoms (beta = -0.14, $p < 0.05$), and injuries (beta = 0.10, $p < 0.05$). The same pattern was repeated in the fourth and fifth models without any additional statistically significant variables.

3.2 Hypothesis #2 – when women are no longer in abusive relationships, they continue to report sleep problems due to abuse

3.2.1 Frequency counts to compare Wave 2 and 4 sleep problems due to abuse

Frequency counts on sleep problems due to abuse were conducted using participants who at Wave 4 reported no longer being in an abusive relationship since Wave 2 ($n = 205$) using the individual items from the Sleep-6 as well as three additional items not included in the Sleep-6 due to reliability issues. These frequency counts were visually compared to determine if there were changes in reported sleep problems. Participants at Wave 2 reported more sleep problems of all kinds than participants at Wave 4. These results are displayed in Table 6.

Table 6

*Sleep problem frequency*

| Sleep Question | Wave 2 - $N$ (%) | Wave 4 – $N$ (%) |
|---|---|---|
| My sleep was affected by the abuse | 203 (99.5%) | 146 (71.2%) |
| My sleep was disrupted by my partner's angry outburst.* | 119 (58.0%) | 27 (13.2%) |
| I had nightmares about the abuse.* | 124 (60.5%) | 84 (41.0%) |
| I was awakened by pain from the injuries due to the abuse.* | 69 (33.7%) | 27 (13.2%) |
| I could not sleep if anyone else was in the room.* | 67 (32.7%) | 34 (16.6%) |
| My partner would deprive me of sleep as a method of control.* | 102 (49.8%) | 27 (13.2%) |
| I found it difficult to stay asleep or fall asleep because I was nervous or tense.* | 172 (83.9%) | 118 (57.6%) |
| My children awakened frequently in the night. | 71 (34.6%) | 36 (17.6%) |
| I had to sleep with the light on. | 58 (28.3%) | 51 (24.9%) |

Note: *Item included in Sleep-6 measure

Overall Wave 2 and 4 sleep problems were compared to sleep problems in the general population. At Wave 2, 99.5% report disruption to sleep due to the abuse. At Wave 4, 71.2% report disruption to sleep due to the abuse. Statistics Canada (2008) reports 35% of women in the general Canadian population experience difficulty initiating or maintaining sleep. This sample reports higher levels of sleep problems than the general population, even after being out of the abusive relationship.

3.2.2 T-test to compare Wave 2 and 4 sleep problems due to abuse

In women at Wave 4 reporting no longer being in an abusive relationship since Wave 2 ($n$ = 205), a repeated measures t-test was conducted to evaluate the effect of not experiencing violence from an intimate partner on sleep problems due to abuse. There was a statistically significant difference in sleep problems due to abuse scores from Wave 2 ($M = 3.20$, $SD = 1.79$) to Wave 4 ($M = 1.60$, $SD = 1.52$), $t(197) = 12.86$, $p < 0.001$ (two-tailed). The magnitude of the difference in the means (mean difference = 1.60, 95% CI: 1.36 to 1.84) was large (eta squared = 0.46).

3.2.3 Hierarchical multiple regression to test Hypothesis 2

Hierarchical multiple regression was used to assess the ability of one control measure (Most Recent Experience of IPV) to predict frequency of sleep problems due to abuse after being out of the abusive relationship, when controlling for the influence of demographic characteristics and psychopathology. Demographic characteristics (age, cultural background, working status, education level, having children living in the home, experiences of childhood abuse) were entered into the first block, and psychopathology (PTSD, depression) was entered into the second block. Abuse experiences (Composite Abuse Scale score) was entered into the third block. Sleep problems due to abuse was the

81

dependent variable. Multicolinearity was assessed using correlation, tolerance, and variance inflation factor scores provided by SPSS. Correlations between factors are considered satisfactory if less than 0.80 (Field, 2009). Tolerance is considered satisfactory when close to 1, and variance inflation factor is satisfactory when below 6 (Keith, 2006). The correlation matrix to this regression equation is presented in Table 7. Results of the regression analysis and multicolinearity statistics are presented in Tables 7, 8, and 9.

Multicolinearity statistics were found to be within acceptable. Demographics (age, cultural background, working, education, children in the home, abuse during childhood) were entered at Step 1 and were not significant, with an $R^2 = 0.04$. After entry of psychopathology (PTSD, depression) at Step 2, the total variance explained by the model as a whole at step 2 was 37%, $F(8, 160) = 11.53$, $p < 0.001$. The $R^2$ change after the Mod. PCL measure added was significant, after controlling for demographics, $R^2$ change $= 0.33$, $F$ change $(2, 160) = 41.43$, $p < 0.001$. After entry of most recent IPV (Composite Abuse Scale at Wave 2) at Step 3, the total variance explained by the model was 40%, $F(9, 159) = 11.87$, $p < 0.001$. The $R^2$ change after this control measure was added was significant, after controlling for demographics and psychopathology, $R^2$ change $= 0.04$, $F$ change $(1, 156) = 9.60$, $p < 0.01$. No predictors were statistically significant in the first model. In the second model, only PTSD symptoms was significant (beta $= 0.63$, $p < 0.001$). In the third model, PTSD symptoms and IPV were statistically significant, with PTSD symptoms recording a greater beta value (beta $= 0.55$, $p < 0.001$) than IPV (beta $= 0.21$, $p < 0.01$).

Table 7

*Correlation matrix pertaining to regression equation predicting sleep problems out of abusive relationship*

|  | Sleep | Age | Working | Gr. 12 | Child | Ch. Ab. | Culture | PTSD | Depr. | IPV |
|---|---|---|---|---|---|---|---|---|---|---|
| Sleep | 1 | | | | | | | | | |
| Age | -0.063 | 1 | | | | | | | | |
| Work | -0.13* | -0.11 [a] | 1 | | | | | | | |
| Gr. 12 | -0.07 | -0.06 | 0.35*** | 1 | | | | | | |
| Child | -0.04 | -0.29*** | -0.01 | 0.24** | 1 | | | | | |
| Ch. Ab. | 0.09 | 0.02 | -0.30*** | -0.21** | -0.08 [a] | 1 | | | | |
| Culture | -0.01 | -0.19** | -0.25** | -0.28*** | 0.04 | 0.31*** | 1 | | | |
| PTSD | 0.60*** | -0.03 | -0.15* | -0.10 [a] | -0.13* | 0.12 [a] | -0.04 | 1 | | |
| Depr. | 0.45*** | -0.03 | -0.19 ** | -0.19** | -0.12 [a] | 0.12 [a] | -0.10 | 0.78*** | 1 | |
| IPV | 0.38*** | -0.08 | -0.01 | 0.02 | 0.01 | -0.07 | -0.12 *** | 0.34*** | 0.22** | 1 |

Notes: $n = 412$; Culture = Cultural background (either Aboriginal or Non-Aboriginal); Gr. 12 = Completed grade 12 or equivalent

Child. Ab. = Participant experienced child abuse; IPV = Composite Abuse Scale scores at Wave 2

[a] = approaching significance, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 8

*Regression analysis for dependent variable (sleep problems due to abuse) predicted by demographics, psychopathology, and IPV*

| Model | $R^2$ | Std Error of the estimate | $R^2$ Change | $F$ statistics for the model |
|---|---|---|---|---|
| 1 (Demographics) | 0.04 | 1.55 | 0.04 | $F_{6, 159} = 1.04$ |
| 2 (Demographics, Psychopathology) | 0.37 | 1.26 | 0.33*** | $F_{8, 160} = 11.53***$ |
| 3 (Demographics, Psychopathology, IPV) | 0.40 | 1.23 | 0.04** | $F_{9, 159} = 11.87***$ |

*Note.* Demographics = age, cultural background, working, education, children, and abuse in childhood; Psychopathology = PTSD, depression; IPV = Composite Abuse Scale scores.

[a] = approaching significance, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 9

*Regression coefficients for health service frequency use at Wave 4*

|  | B | Std. Error | Beta | Partial correlation | Tolerance | VIF |
|---|---|---|---|---|---|---|
| Block 1: | | | | | | |
| Constant | 2.55 | 0.85 | | | | |
| Age | -0.02 | 0.01 | -0.12 | -0.11 | 0.85 | 1.17 |
| Work | -0.42 | 0.29 | -0.13 | -0.12 | 0.79 | 1.27 |
| Gr. 12 | -0.09 | 0.35 | -0.03 | -0.02 | 0.77 | 1.29 |
| Children | -0.20 | 0.30 | -0.06 | -0.06 | 0.84 | 1.19 |
| Child Abuse | 0.27 | 0.31 | 0.08 | 0.07 | 0.84 | 1.19 |
| Culture | -0.31 | 0.28 | -0.10 | -0.09 | 0.79 | 1.26 |
| Block 2: | | | | | | |
| Constant | 0.61 | 0.65 | | | | |
| Age | -0.01 | 0.01 | -0.07 | -0.08 | 0.85 | 1.18 |
| Work | -0.14 | 0.23 | -0.05 | -0.05 | 0.77 | 1.30 |
| Gr. 12 | -0.04 | 0.28 | -0.01 | -0.01 | 0.76 | 1.32 |
| Children | 0.06 | 0.23 | 0.02 | 0.02 | 0.82 | 1.21 |
| Child Abuse | 0.06 | 0.26 | 0.02 | 0.02 | 0.83 | 1.20 |
| Culture | -0.06 | 0.24 | -0.02 | -0.02 | 0.78 | 1.29 |
| PTSD | 0.06 | 0.01 | 0.63 | 0.44*** | 0.39 | 2.59 |
| Depression | -0.01 | 0.03 | -0.05 | -0.04 | 0.38 | 2.62 |

Table 9 (continued)

|  | B | Std. Error | Beta | Partial correlation | Tolerance | VIF |
|---|---|---|---|---|---|---|
| **Block 3:** | | | | | | |
| Constant | 0.03 | 0.61 | | | | |
| Age | -0.01 | 0.01 | -0.05 | -0.06 | 0.84 | 1.19 |
| Work | -0.13 | 0.23 | -0.04 | -0.05 | 0.77 | 1.30 |
| Gr. 12 | -0.03 | 0.27 | -0.01 | -0.01 | 0.76 | 1.32 |
| Children | 0.05 | 0.23 | 0.02 | 0.02 | 0.83 | 1.21 |
| Child Abuse | 0.12 | 0.24 | 0.03 | 0.04 | 0.83 | 1.21 |
| Culture | 0.01 | 0.24 | 0.00 | 0.00 | 0.77 | 1.30 |
| PTSD | 0.06 | 0.01 | 0.55 | 0.39*** | 0.36 | 2.79 |
| Depression | -0.01 | 0.03 | -0.03 | -0.03 | 0.38 | 2.63 |
| IPV | 0.01 | 0.00 | 0.21 | 0.24** | 0.86 | 1.17 |

*Note*. VIF = variance inflation factor; Culture = Cultural background (either Aboriginal or Non-Aboriginal); Work = currently working; Gr. 12 = completed grade 12 or equivalent; Children = children living in the home; Child Abuse = experienced abuse in childhood; IPV = Composite Abuse Scale; Injuries = number of injuries in past 12 months due to any cause; Health = overall health status; Sleep = sleep problems due to abuse. [a] = approaching significance, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

3.3 Hypothesis #3 - when women are no longer in abusive relationships, longer-term health service use for victims of IPV is predicted independently by sleep problems due to violence when controlling for the effect of demographic characteristics, psychopathology, abuse experiences, and health status

Hierarchical multiple regression was used to examine longitudinal sleep and health service use relationship when women were no longer in an abusive relationship. Hierarchical multiple regression assessed the ability of one control measure (Sleep Problems Due to Abuse at Wave 4) to predict frequency of health service access (controlling for the influence of Wave 4 demographic characteristics, psychopathology, health status, and abuse experiences, in a sample of women reporting not being in an abusive relationship for an extended period of time). Wave 4 demographics (age, cultural background, working status, education, children living in the home, childhood abuse) were entered into the first block. Psychopathology at Wave 4 (PTSD, depression) was entered into the second block. Health status at Wave 4 (injury, self-report health) was entered into the third block. Abuse experiences at Wave 2 (Composite Abuse Scale score) were entered into the fourth block. Sleep problems due to abuse at Wave 4 was entered into the fifth block. Wave 4 self-report frequency of access to health services was the dependent variable. Multicolinearity was assessed using correlation, tolerance, and variance inflation factor. Correlations between factors are considered satisfactory if less than 0.80 (Field, 2009). Tolerance is considered satisfactory when close to 1. Variance inflation factor is satisfactory when below 6 (Keith, 2006). Correlation matrix to this regression equation is presented in Table 10. Results of the regression analysis and multicolinearity are presented in Tables 10, 11, and 12.

Table 10

*Correlation matrix pertaining to regression equation predicting Wave 4 frequency of health service access using Wave 2 IPV*

| | S. Use | Age | Culture | Working | Gr. 12 | Child | Ch. Ab. | PTSD | Depr. | Injury | Health | IPV | Sleep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. Use | 1 | | | | | | | | | | | | |
| Age | 0.17* | 1 | | | | | | | | | | | |
| Culture | -0.03 | -0.21** | 1 | | | | | | | | | | |
| Work | -0.25** | -0.13 [a] | -0.25 | 1 | | | | | | | | | |
| Gr0. 12 | 0.08 | -0.04 | -0.32*** | 0.38*** | 1 | | | | | | | | |
| Child | 0.03 | -0.27** | -0.01 | 0.04 | 0.28*** | 1 | | | | | | | |
| Ch0. Ab0. | 0.03 | -0.02 | 0.31*** | -0.29*** | -0.22** | -0.10 | 1 | | | | | | |
| PTSD | 0.20** | -0.01 | 0.05 | -0.15* | -0.11 [a] | -0.14 [a] | 0.13 [a] | 1 | | | | | |
| Depr0. | 0.19* | -0.05 | 0.14* | -0.18* | 0.13* | -0.14 [*] | 0.13 [a] | 0.78*** | 1 | | | | |
| Injury | 0.16* | 0.08 | -0.03 | -0.05 | -0.06 | -0.09 | 0.08 | 0.14 [a] | 0.09 | 1 | | | |
| Health | -0.22** | -0.11 [a] | -0.11 [a] | 0.28*** | 0.07 | -0.04 | -0.08 | -0.23** | -0.34*** | -0.19* | 1 | | |
| IPV | -0.11 [a] | -0.08 | -0.06 | -0.02 | -0.02 | 0.02 | -0.08 | 0.30*** | 0.22** | -0.01 | -0.14 [a] | 1 | |
| Sleep | 0.04 | -0.06 | 0.10 | -0.10 | -0.12 [a] | -0.01 | 0.08 | 0.57*** | 0.45*** | 0.13 [a] | -0.27** | 0.40*** | 1 |

Notes: $n = 412$; All variables Wave 4 except IPV; S. Use = Frequency of health service access; Culture = Cultural background (either Aboriginal or Non-Aboriginal); Gr0. 12 = Completed grade 12 or equivalent Ch. Ab. = Participant experienced child abuse; Depr. = Reports symptoms of depression; IPV = Levels of IPV on Composite Abuse Scale

[a] = approaching significance, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 11

*Regression analysis for dependent variable (health service use frequency) predicted by demographics, psychopathology, health, past abuse, and sleep problems due to abuse after being out of abusive relationship*

| Model | $R^2$ | Std Error of the estimate | $R^2$ Change | $F$ statistics for the model |
|---|---|---|---|---|
| 1 (Demographics) | 0.12 | 50.78 | 0.12** | $F_{6, 133} = 3.04$** |
| 2 (Demographics, Psychopathology) | 0.16 | 49.96 | 0.04* | $F_{8, 131} = 3.15$** |
| 3 (Demographics, Psychopathology, Health) | 0.18 | 49.69 | 0.02 | $F_{10, 129} = 2.90$** |
| 4 (Demographics, Psychopathology, Health, IPV) | 0.21 | 48.94 | 0.03* | $F_{11,128} = 3.17$** |
| 5 (Demographics, Psychopathology, Health, IPV, Sleep) | 0.22 | 49.03 | 0.00 | $F_{12, 127} = 2.94$** |

*Note0.* Demographics = Wave 4 age, cultural background, working, education, children, and abuse in childhood; Wave 4 Psychopathology = Wave 4 PTSD, depression; Wave 4 Health = injuries, health status; IPV = Wave 2 Composite Abuse Scale; Sleep = Wave 4 sleep problems due to abuse.

[a] = approaching significance, *$p < 0.05$, **$p < 0.01$,   ***$p < 0.001$

Table 12

*Regression coefficients for health service frequency use*

|  | B | Std. Error | Beta | Partial correlation | Tolerance | VIF |
|---|---|---|---|---|---|---|
| Block 1: | | | | | | |
| Constant | 11.56 | 21.76 | | | | |
| Age | 0.70 | 0.47 | 0.14 | 0.14 | 0.84 | 1.19 |
| Culture | -1.99 | 9.18 | -0.02 | -0.02 | 0.77 | 1.29 |
| Work | -.33.24 | 9.49 | -0.31 | -0.28** | 0.77 | 1.29 |
| Gr. 12 | 22.89 | 11.50 | 0.19 | 0.17[a] | 0.73 | 1.36 |
| Children | 3.09 | 9.50 | 0.03 | 0.03 | 0.84 | 1.20 |
| Child Abuse | -1.65 | 10.45 | -0.01 | -0.01 | 0.85 | 1.18 |
| Block 2: | | | | | | |
| Constant | -14.62 | 23.74 | | | | |
| Age | 0.79 | 0.48 | 0.16 | 0.16[a] | 0.84 | 1.20 |
| Culture | -2.30 | 9.06 | -0.02 | -0.02 | 0.76 | 1.31 |
| Work | -30.13 | 9.79 | -0.29 | -0.26** | 0.76 | 1.31 |
| Gr0. 12 | 24.18 | 11.08 | 0.20 | 0.19* | 0.73 | 1.38 |
| Children | 6.49 | 9.73 | 0.06 | 0.06 | 0.82 | 1.22 |
| Child Abuse | -3.44 | 10.23 | -0.03 | -0.03 | 0.84 | 1.19 |
| PTSD | 0.34 | 0.38 | 0.10 | 0.07 | 0.39 | 2.58 |
| Depression | 0.97 | 1.07 | 0.12 | 0.08 | 0.39 | 2.66 |

Table 12 (continued)

|  | B | Std0. Error | Beta | Partial correlation | Tolerance | VIF |
|---|---|---|---|---|---|---|
| Block 3: | | | | | | |
| Constant | -2.53 | 27.43 | | | | |
| Age | 0.71 | 0.47 | 0.14 | 0.14 | 0.82 | 1.20 |
| Culture | -2.00 | 9.36 | -0.02 | -0.02 | 0.76 | 1.31 |
| Work | -28.06 | 9.62 | -0.27 | -0.24** | 0.73 | 1.31 |
| Gr0. 12 | 24.10 | 10.83 | 0.20 | 0.19[*] | 0.72 | 1.38 |
| Children | 6.18 | 10.00 | 0.06 | 0.06 | 0.81 | 1.24 |
| Child Abuse | -4.25 | 10.41 | -0.04 | -0.04 | 0.84 | 1.19 |
| PTSD | 0.32 | 0.39 | 0.09 | 0.06 | 0.38 | 2.62 |
| Depression | 0.78 | 1.18 | 0.09 | 0.06 | 0.35 | 2.89 |
| Injuries | 2.00 | 1.51 | 0.12 | 0.13[*] | 0.94 | 1.07 |
| Health | -4.19 | 5.20 | -0.08 | -0.07[a] | 0.78 | 1.29 |
| Block 4: | | | | | | |
| Constant | 20.71 | 25.56 | | | | |
| Age | 0.61 | 0.45 | 0.12 | 0.12 | 0.81 | 1.24 |
| Culture | -3.95 | 9.49 | -0.04 | -0.04 | 0.75 | 1.33 |
| Work | -28.07 | 9.99 | -0.27 | -0.25* | 0.72 | 1.37 |
| Gr0. 12 | 22.87 | 10.82 | 0.19 | 0.18[*] | 0.72 | 1.39 |
| Children | 6.55 | 10.07 | 0.06 | 0.06 | 0.81 | 1.24 |
| Child Abuse | -6.50 | 10.71 | -0.06 | -0.06 | 0.83 | 1.20 |
| PTSD | 0.55 | 0.40 | 0.16 | 0.11 | 0.36 | 2.77 |

Table 12 (continued)

|  | B | Std0. Error | Beta | Partial correlation | Tolerance | VIF |
|---|---|---|---|---|---|---|
| **Block 4: (continued)** | | | | | | |
| Depression | 0.65 | 1.14 | 0.08 | 0.05 | 0.35 | 2.89 |
| Injuries | 1.83 | 1.35 | 0.11 | 0.12[*] | 0.93 | 1.07 |
| Health | -5.49 | 5.41 | -0.10 | -0.10 | 0.77 | 1.31 |
| IPV | -0.33 | 0.16 | -0.19 | -0.19[*] | 0.87 | 1.15 |
| **Block 5:** | | | | | | |
| Constant | 21.27 | 25.91 | | | | |
| Age | 0.60 | 0.44 | 0.12 | 0.12 | 0.81 | 1.24 |
| Culture | -3.33 | 9.30 | -0.03 | -0.03 | 0.75 | 1.34 |
| Work | -27.65 | 10.08 | -0.26 | -0.24** | 0.73 | 1.38 |
| Gr0. 12 | 22.29 | 10.78 | 0.19 | 0.18[*] | 0.72 | 1.39 |
| Children | 7.03 | 10.16 | 0.06 | 0.06 | 0.80 | 1.25 |
| Child Abuse | -6.44 | 10.74 | -0.05 | -0.06 | 0.83 | 1.20 |
| PTSD | 0.68 | 0.38 | 0.20 | 0.12[a] | 0.31 | 3.20 |
| Depression | 0.62 | 1.13 | 0.08 | 0.05 | 0.35 | 2.89 |
| Injuries | 1.89 | 1.44 | 0.12 | 0.13[*] | 0.93 | 1.08 |
| Health | -6.07 | 5.57 | -0.11 | -0.11 | 0.75 | 1.34 |
| IPV | -0.30 | 0.15 | -0.17 | -0.17[a] | 0.80 | 1.25 |
| Sleep | -2.69 | 3.53 | -0.08 | -0.07 | 0.58 | 1.72 |

*Note*. VIF = variance inflation factor; Culture = Cultural background (either Aboriginal or Non-Aboriginal); Work = currently working; Gr0. 12 = completed grade 12 or equivalent; Children = children living in the home; Child Abuse = experienced abuse in childhood; IPV = Composite Abuse Scale; Injuries = number of injuries in past 12 months due to any cause; Health = overall health status; Sleep = sleep problems due to abuse [a] = approaching significance, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Multicolinearity statistics were found to be within acceptable ranges. Demographics (Wave 4 age, cultural background, working, education, children in the home, abuse during childhood) were entered at Step 1 and were significant, with an $R^2 = 0.12$. After entry of psychopathology (Wave 4 PTSD and depression) at Step 2, the total variance explained by the model as a whole at step 2 was 16%, $F(8, 131) = 3.15$, $p < 0.01$. The $R^2$ change after the Mod. PCL measure was added was statistically significant, after controlling for demographics, $R^2$ change $= 0.04$, $F$ change $(2, 131) = 3.20$, $p < 0.05$. After entry of health (Wave 4 injuries and overall health status) at Step 3, the variance explained by the model as a whole was 18%, $F(10, 129) = 2.90$, $p < 0.01$. The $R^2$ change after this control measure was added was not significant, when controlling for demographics and psychopathology, $R^2$ change $= 0.02$, $F$ change $(2, 129) = 1.74$, $p = 0.18$. After entry of Wave 2 IPV at Step 4, the variance explained by the model as a whole was 21%, $F(11, 128) = 3.17$, $p < 0.01$. The $R^2$ change after this control measure was added was significant, after controlling for demographics, psychopathology, and health, $R^2$ change $= 0.03$, $F$ change $(1, 128) = 4.95$, $p < 0.05$. After entry of sleep problems at Step 5, the variance explained by the model as a whole was 22%, $F(12, 127) = 2.94$, $p < 0.01$. The $R^2$ change after this control measure was added was not significant, after controlling for demographics and psychopathology, $R^2$ change $< 0.00$, $F$ change $(1, 125) = 0.54$, $p = 0.47$.

In the first model, working status was statistically significant (beta $= -0.31$, $p < 0.01$) where working was associated with less health service use. In the second model, working status and education level were statistically significant, with working status recording a higher beta value (beta $= -0.28$, $p < 0.01$) than education level (beta $= 0.20$, $p < 0.05$). In the third model, working status and education level were statistically

significant, with working status recording a higher beta value (beta = -0.27, $p < 0.01$) than education status (beta = 0.20, $p < 0.05$). In the fourth model, working status, education level, and IPV were statistically significant with working status recording the highest beta level (beta = -0.27, $p < 0.01$), followed by education level (beta = -0.19, $p < 0.05$) and then IPV (beta = 0.19, $p < 0.05$). In the fifth model, working status and education level were statistically significant, with working status recording a higher beta value (beta = -0.26, $p < 0.01$) than education status (beta = 0.18, $p < 0.05$).

## 4. DISCUSSION

4.1 Overview

Health service utilization is predicted by health status, which is directly related to sleep (Bonomi et al., 2009; Colten & Altevogt, 2006; Daley, Morin, LeBlanc, Gregoire, & Savard, 2009; Daley, Morin, LeBlanc, Gregoire, Savard & Baillargeon, 2009; Kyle, Morgan, & Espie 2010; Moorcroft, 2005; Rosa, 2006; Siverstein et al., 2013; Soares, 2005). Researchers have demonstrated that IPV appears to be related to sleep problems, where IPV increased sleep disruption (Brokaw et al., 2002; Hathaway et al., 2000; Himelfarb et al., & Raj, 2006; Humphreys et al., 1999; Humphreys & Lee, 2005; Humphreys, Lowe, & Williams, 2009; Krishnan & Cutler, 2005; Lowe, Humphreys, & Williams, 2007; Rauer et al., 2010; Scheffer, Lindgren, & Renck, 2008; R. Walker, Shannon, & Logan, 2010; Rasmussen, 2007; M. A. Woods & Hampton, 2008; S. J. Woods, Kozachik, & Hall, 2010). It is therefore conceivable that health service utilization would increase as a result of sleep problems in survivors of IPV (Rivera et al., 2007). However, the findings of the current study do not support this expected relationship. Although women in the current study report that IPV negatively impacts their sleep even after leaving the abusive relationship, these chronic sleep problems do not predict frequency of health service use in this sample in the short or long term. The findings do support previous trends in the literature that psychopathology, health status, injury, and violence while in an abusive relationship are associated with health service use (Bonomi et al., 2009; Deykin et al., 2001; Kapur et al., 2002; Kendall-Tackett, 2005; Soares, 2005; Stapleton et al., 2006).

Meanwhile, previous research has demonstrated the impact of current IPV on sleep but has not thoroughly explored the long term impact of IPV on sleep (Brokaw et

al., 2002; Himelfarb et al., 2006; Krishnan & Cutler, 2005; Scheffer, Lindgren, & Renck 2008). Women in the current study reported that their sleep problems due to abuse were less than they were when experiencing abuse; however, as expected they still report higher levels of sleep problems than women in the general population (Colten & Altevogt, 2006; Soares, 2005; Statistics Canada, 2001). Also, abuse experiences after being out of the relationship as measured by the Composite Abuse Scale predicted sleep disruption due to abuse after controlling for demographic characteristics and psychopathology. These results were expected considering previous findings (Brokaw et al., 2002; Humphreys et al., 1999; Humphreys & Lee, 2005; Rasmussen, 2007; Scheffer, Lindgren, & Renck 2008). Please see below for further interpretation of these findings. While a causal relationship inference cannot be based upon these findings, it appears that experiencing abuse may be related to sleep disruption in victims of IPV. These findings have implications for our conceptualization of the longitudinal effects of IPV on victims.

4.2 Hypothesis #1– Survivors of IPV health service use is predicted independently by sleep problems due to abuse when controlling for the effect of demographic

It was expected that sleep problems due to abuse would independently contribute to health service use frequency when controlling for these additional variables. This hypothesis was not supported. Although sleep problems due to abuse did not predict health service use frequency, several factors did contribute to health service utilization. Specifically, being employed predicted decreased health service utilization. Meanwhile, psychopathology symptoms and injuries (both due and not due to abuse) predicted increased health service utilization.

The study was designed to ensure that information was reported accurately by employing trained interviewers to record participants' responses. The measures used for

this study have been proven to be valid and reliable, and hence appropriate for use to investigate the relationship between abuse experiences and sleep disturbances. Therefore, it is unlikely that the results are due to inaccurate measurement of the constructs in question. The sample included in the study was diverse in age, employment status, and having children living at home, which decreases the likelihood that the results are due to a sampling bias.

4.3 Hypothesis #2 - When women are no longer in abusive relationships, they continue to report sleep problems due to abuse

It was expected that women would report lower levels of sleep disruption at Wave 4 compared to Wave 2, but that their levels of sleep disruption would still be greater than that reported by women in the general population. This hypothesis was supported. A Wave 4 subsample of 205 participants reported not being in an abusive relationship since Wave 2. Meanwhile, frequencies of reported sleep problems in this sample at Wave 4 were found to be higher than reported sleep problems in the general population, as reported by Statistics Canada (2008). According to Statistics Canada (2008), 35% of Canadian women have problems going to sleep or staying asleep. Meanwhile, 71.2% of current sample endorsed some form of sleep disruption due to abuse, which is much higher than sleep disruption reported by women in the general population.

It is probable that these findings are valid and are not the result of bias or flawed study design. The study was designed to ensure that information was reported accurately by employing trained interviewers to record the participant's responses. The frequency of sleep problems reported was determined using the original sleep measure, which has been proven to be less reliable in terms of measuring abuse experiences due to violence;

however, these items likely have good face validity in terms of measuring general sleep disturbances (DeVillis, 2003).

It is possible that the level of sleep disturbances reported by this sample is higher than in the general population because of the type of sleep experiences being measured; however, because the sleep disturbances measured in the current study are specific to abuse, whereas the sleep disturbances measured in the general population are general types of sleep disturbances or due to insomnia, it is likely that the sleep disturbances reported in the current study are even more specific than those reported in the general population. Specifically, general sleep was assessed in the general population while a specific type of sleep was assessed in the current sample. Because the sleep problems measured in the current study are a sub-category of the general sleep problems assessed in the general population, it would be expected that the sleep problems reported in the current sample are less than those reported in the general population. Therefore, error in the conclusion that the participants experience higher rates of sleep disturbances than the general population is likely not due to an error caused by a discrepancy in the measures used to assess sleep disturbances.

Participants may have still been experiencing ongoing abuse from a past partner or other person in their life, which may also impact abuse. Any ongoing abuse may also account for the ongoing problems with sleep disruption due to abuse. This information was not measured in the current study but should be considered as an additional explanation of the findings regarding sleep problems due to abuse after being out of the abusive relationship.

4.4 Hypothesis #3 when women are no longer in abusive relationships, longer-term health service use for victims of IPV is predicted independently by sleep problems due to violence when controlling for the effect of demographic characteristics, psychopathology, abuse experiences, and health status

In order to determine if participants experienced high levels of health service utilization when no longer in an abusive relationships, participants were excluded if they reported experiencing any IPV from an intimate partner at Waves Three or Four. Using this sub-sample, hierarchical multiple regression was used to determine if Wave 4 frequency of health service utilization was predicted by Wave 4 sleep problems due to abuse when controlling for the effect of demographic characteristics, psychopathology, health status, and Wave 2 (most recent) IPV on frequency of health service utilization. It was expected that sleep problems due to abuse contributed independently to health service use frequency when controlling for these additional variables. This hypothesis was not supported. Working status predicted health service utilization when no longer in the relationship, where being employed reduced frequency of health service utilization. PTSD symptoms, education level, and injuries were all associated with increased health service utilization. As mentioned previously, it is reasonable to believe these results are valid.

4.5 Explanation of findings

Researchers have found that victims of IPV report higher levels of health service use than the general population (Bonomi et al., 2009; Fishman et al., 2010; Rivara et al., 2007; Wisner et al., 1999). Bonomi and colleagues (2009) specifically found that recency of abuse was statistically associated with increased health service utilization in a sample of 3,333 female survivors of IPV. Meanwhile, those experiencing sleep problems have

also reported sleep problems and associated health problems resulting in higher health service use (Brokaw et al., 2002). As survivors of IPV indicate that their sleep is disrupted by the IPV (Brokaw et al., 2002; Hathaway et al., 2000; Himelfarb et al., 2006; Humphreys et al., 1999; Humphreys & Lee, 2005; Humphreys, Lowe, & Williams, 2009; Krishnan & Cutler, 2005; Rauer et al., 2010; Scheffer, Lindgren, & Renck, 2008; R. Walker, Shannon, & Logan, 2010; Rasmussen, 2007; M. A. Woods & Hampton, 2008; S. J. Woods, Kozachik, & Hoall, 2010), it was expected that sleep problems due to IPV would play a significant role in the increased health service utilization reported by women who have experienced IPV. However, this finding was not demonstrated in the current study. Other factors, including working status, psychopathology, physical health, and current violence, were predictive of health service utilization in both the short and long-term, which is consistent with previous findings (Deykin et al., 2001; Kapur et al., 2002; Kendall-Tackett, 2005; Soares, 2005; Stapleton et al., 2006).

Researchers have demonstrated sleep disruption following IPV occurs both due to psychopathology involving sleep problems, such as PTSD and depression (S. J. Woods, Kozachik, & Hall, 2010) as well as due to the violence, such as injuries from abuse causing pain that makes it difficult to sleep (M. A. Woods & Hampton, 2008). However, few studies have examined the long term patterns of sleep problems due to abuse (Brokaw et al., 2002; Humphreys et al., 1999; Humphreys & Lee, 2005; Rasmussen, 2007; Scheffer, Lindgren, & Renck 2008). The current study demonstrated that even when no longer in an abusive relationship women still experience sleep problems due to abuse and still report higher sleep problems than the general population (Colten & Altevogt, 2006; Soars, 2005; Statistics Canada, 2001). This finding is consistent with previous research that suggests survivors of IPV continue to experience sleep problems

when no longer in an abusive relationship (S. J. Woods, Kozachik, & Hall, 2010). It is clear that IPV has long lasting effects on its victims by causing them to experience sleep disruption even when they are no longer in the relationship.

These findings have important implications for survivors of IPV. IPV clearly plays an important role in disrupting the survivor's sleep. Further, IPV has a long-term impact on a victim's wellbeing after the relationship has ended in that the abuse is still affecting survivor's sleep. Despite survivors of IPV reported problems with sleep due to the abuse, this type of sleep disruption is not playing a role in victims' access to health services. Instead, health service utilization during the relationship is predicated by psychopathology, physical health, working status, and abuse. When not in the relationship, health service utilization is predicted by all of the same predictors except for abuse. Evidence indicates survivors of IPV use health services more than the general population, but that sleep problems due to abuse are not playing a clear role in this relationship (Bloom, Curry, & Durham, 2007; Fishman et al., 2010; Jones et al., 2006; Kendall-Tackett, 2005; Ulrich et al., 2002; Wisner et al., 1999). This model provides a partial explanation for health service use in victims of IPV, but much of the variance was not accounted for, even in the context of long-term sleep problems. Future research should involve further testing of this model and exploring other variables that contribute to health service utilization, such as sleep problems not due to abuse (S. J. Woods, Kozachik, & Hall, 2010). As more information becomes available regarding the effects of IPV on victims' lives and functioning, a call for increased activism to end IPV and violence against women becomes apparent.

Researchers have repeatedly demonstrated that sleep is an essential aspect of functioning and is necessary in order to work, fulfill responsibilities, maintain safety, and

101

preserve physical and psychopathology (Colten & Altevogt, 2006; Kendall-Tackett, 2005; Kendall-Tackett, 2007; Pilcher & Huffcutt, 1996). These relationships have been well established in the literature, and the effects of IPV clearly extend beyond the behavioural experiences of violence into all aspects of the victim's functioning, including work, safety, and health, which are all highly sensitive to sleep loss. Add to this relationship well established findings that abuse experiences contribute to development of psychopathology, especially PTSD, and it becomes clear that victims of IPV are suffering deficits in their functioning that are beyond the immediate abuse trauma (Carlson et al., 2002; Weaver & Clum, 1995).

4.6 Clinical relevance of findings

These findings have clinical relevance in terms of treatment implications for victims of IPV with both health and psychopathology professionals. Research demonstrates that chronic sleep problems can easily develop as a result of conditioning the sleep environment to be an unsafe place to sleep (Colten & Altevogt, 2006; Stepanski, 2006). As mentioned previously, sleep difficulties are not easily resolved for victims of IPV when being asleep renders them vulnerable to attack (Lowe, Humphreys, & Williams, 2007). For women out of the abusive relationship who still fear ongoing abuse from their ex-partner, many sleep problems such as being unable to sleep when someone else in the room represent safety strategies. These issues need to be considered when conceptualizing a treatment plan as safety planning and protection must be addressed (Colten & Altevogt, 2006; Kendall-Tackett, 2005; Kendall-Tackett, 2007; Pilcher & Huffcutt, 1996). Treatment may need to address offsetting the impact of sleep problems on functioning if traditional sleep treatments such as medication or improving sleep hygiene are not feasible for victims of IPV if they would decrease her safety.

Although sleep problems have been demonstrated to cause many problems for people (Ellsberg & Heise, 2005; Kendall-Tackett, 2005; Staggs & Riger, 2005) and have been demonstrated to be more prevalent in this population, survivors of IPV are not using health services directly or indirectly due to sleep. However, sleep problems should still be considered when conceptualizing treatment of other issues that individuals may present for. Health care providers should also be aware that IPV places individuals at risk for sleep problems and may wish to include discussion of these issues with the woman when called for. Further, as sleep deprivation is associated with a number of psychopathology consequences, including impaired cognitive functioning, increased risk of depression, and increased risk of suicide (Colten & Altevogt, 2006; Kendall-Tackett, 2005; Kendall-Tackett, 2007; Pilcher & Huffcutt, 1996; Weaver & Clum, 1995), clients' reports of IPV should alert psychopathology professionals to the possibility that the client is at risk of developing these other problems as an impact of being a victim of IPV. These findings also emphasize that clinicians need to be aware of the long-term recovery involved in healing from IPV, evidenced by the reported problems with sleep disruption several months after no longer being in an abusive relationship. Clinicians may wish to continue to assess for the ongoing consequences of IPV that may still be impacting the woman after leaving the relationship.

4.7 Relevance of findings to feminist theory

Four important feminist issues are implicated in the current findings, including focusing on women's health in the research dialogue, increased vulnerability of oppression due to sleep problems, feminist clinical reactions to sleep problems in relation to IPV, and contextualizing sleep disruption in comparison to torture. As mentioned previously, women's health experiences have not traditionally been included in the health

research dialogue, and feminists have highlighted the importance of including research that focuses on the women's health experiences in order to better understand women's unique needs (L. E. A. Walker, 2000). The current study contributes to this research dialogue about the uniqueness of women's health as it has been demonstrated that women are more susceptible to sleep disturbances and subsequent health problems because they are significantly more likely to experience IPV than men (Statistics Canada, 2004). Feminist researchers have emphasized the importance of focusing specifically on women's health in order to highlight the current findings where women experience greater health risks than men due to a social inequality that leads to greater risk of IPV for women. The goal of the present study is not to devalue men's problems; however, the disproportionate experiences of men and women lend support to the fact that IPV continues to be a concern for women and may lead to health problems that are unique to women (Sampselle et al., 1992).

The findings highlighted in the current study also suggest that women are likely to face impairment in other aspects of their functioning that are sensitive to sleep, and that such impairments can be linked to the greater likelihood that women are experiencing IPV due to systemic social inequalities (Kirk & Okazawa-Rey, 2004; Sampselle et al., 1992). As mentioned previously, in Canadian society women continue to hold less power than men, and specifically, men continue to hold more economic power as they have access to scarce valuable resources. These inequalities prevent women from attaining equal status with men culturally, economically, and politically, thus making them second class citizens. One consequence of these inequalities is that women are at significantly greater risk of experiencing IPV. The findings of the current study suggest that these inequalities may contribute to further power imbalances for women due to the

consequences of experiencing IPV, such as sleep disruption. As demonstrated by previous researchers, sleep disruption is linked to poorer functioning, including poorer work performance and increased injury (Colten & Altevogt, 2006; Kendall-Tackett, 2005; Kendall-Tackett, 2007; Pilcher & Huffcutt, 1996). Political and economic equality women face may be related to sleep problems due to IPV, which is in turn more likely due to structural inequalities.

The clinical implications of the findings from the current study are particularly important to feminist theory. Feminist researchers have hypothesized that psychopathology following experiences of IPV should not be viewed as abnormalities that require treatment, but rather as understandable reactions to an abnormal experience or environment (Kirk & Okazawa-Rey, 2001; Lips, 2003). Traditional models of psychopathology emphasize explaining symptoms by labelling the sufferer as abnormal; however, feminist models of psychopathology emphasize the need to understand this as the victim's rational reaction to an unsafe, unhealthy, painful environment and experience. This feminist model fits well with the findings from the current study, where although survivors are experiencing sleep problems, they are not presenting at health services to address these or sleep related issues. If clinicians were to treat these issues that women are not identifying as reasons to attend health services, women may receive unnecessary and unhelpful health services, which may in turn impact their faith in the utility of the health care system when needed. Sleep disruption is not the problem, but is an understandable reaction to the unsafe situation victims of IPV exist in.

The findings that partners at times disruption women's sleep as a method of control raises concerns that women are able to be treated in our society as victims of torture. Researchers have demonstrated purposeful sleep deprivation is used as a method

105

of intimidation of control of detainees (Greenberg & Dratel, 2005). These techniques echo of victims reports that perpetrators of violence use the same techniques in intimate relationships in order to intimidate and control the victim (M. A. Woods & Hampton, 2008). Considering the outcry surrounding the use of torture and the use of sleep deprivation on detainees, the same consideration should be given to victims of IPV experiencing the same inhumane treatment.

4.8 Limitations and Future Directions

4.8.1 Limitations

Several limitations were identified that if addressed in future research may strengthen the findings of the current study. A limitation to the present study is that a control group is not included to compare the victims to the general population on frequency of health service utilization. Being able to compare the participants on this measure would clarify if participants in this sample do in fact report greater health service use than women in the general population.

While there is no reason to expect that the participants in the current study would demonstrate health service utilization differing from patterns reported in the literature of survivors of IPV, being able to compare the current participants to individuals from the general population might elucidate reasons that sleep problems due to abuse did not predict health service utilization.

An additional limitation to the current study is the nature of self-report data. Researchers have indicated that there is a discrepancy between self-report and "objective" measures of sleep, but the size of this discrepancy is debatable. Humphreys and Lee (2005) indicate that there is a very weak relationship between subjective and objective sleep onset latency. However, the nature of the self-report data is valuable in that it

captures the participants' perceptions of their experiences. Further, sleep disruption due to abuse may not be measurable using non-self-report measures. If researchers were to examine this question looking at more general measures of sleep problems, it may be beneficial to conduct future research using a sleep diary if possible where participants kept a detailed record of their sleep during a specific period of time. Detailed information of this nature would allow researched to gain further understanding regarding specific experiences with sleep problems due to IPV.

Meanwhile, a limitation to the current study is the lack of standardized measures of sleep problems.  Including a standardized measure of sleep problems, such as the Pittsburgh Sleep Quality Index (Buysse et al., 1988) would strengthen the findings by allowing the researchers to control for the impact of general sleep quality.  Furthermore, a limitation of the current study may be that additional potential predictors of health service utilization were not included in the analysis.  Including other factors, such as over the counter sleep medication use, may account for a larger portion of health service utilization in this population (Siverstein et al., 2013).

An additional limitation of the current study is that many of the questions used in the current study were designed for another purpose. Specifically, the date from the current study was drawn from the Healing Journey Project, which was designed to provide an overall understanding of the healing process of survivors of intimate partner violence. The current study was designed in order to be based on the information available in the Healing Journey Project. This decision was made considering the benefits offered by accessing the Healing Journey Project.  Specifically, age, length of time between waves, and current relationship status was not collected for the Healing Journey Project with the current study in mind and would better have been collected as birth date,

107

date of interview, and more detailed information about new and old relationships between waves.

Specific benefits of drawing the current study from data collected through the Healing Journey Project include gaining access to a large sample of women typically difficult to recruit, gaining access to expensive and more successful recruitment strategies than would be available for a dissertation because of the funding secured by the larger study, having opportunity to gain experience managing a complex longitudinal study as a research assistant in exchange for access to the data, having opportunity to liaise with community service providers who have existing relationships with academic researchers on the Healing Journey Project team. Further, the community collaboration of the Healing Journey Project team makes the findings more generalizable and valid than a project conducted primarily by academics without similar community experience. However, because the Healing Journey Project was not designed to address all facets of the current study, the information collected as part of the larger study was not at all times ideally suited for the current study.

An additional limitation to the current study is the assessment of psychological functioning in participants when determine if participants meet inclusion criteria for the study. In the current study, participants self-identified if they were experiencing severe psychological problems that would interfere with their participation in the study. Including a standardized questionnaire to provide further information about psychological functioning in order to gather objective information about the psychological functioning of participants when screening for inclusion in the current study. Further, including this same measure in the study at each wave would have made the findings more accurate as a more comprehensive measure of psychopathology may provide more information on the

108

relationship between psychopathology, sleep disruption due to abuse, and health service access.

4.8.2 Future directions

Future directions for research should also look at the relationship between sleep disruption and medication use, prescription and non-prescription, in survivors of IPV (Rasmussen, 2007). If women are choosing to treat their insomnia symptoms, they may report higher use of medication than the general population if they find their sleep problems are dismissed by health practitioners. Survivors of IPV have been suggested to be at higher risk of prescription, non-prescription, and street drugs, and the role of sleep in this pattern should be further explored (El-Bassel, 2005), use of non-prescription medication or street drugs may also relate to problems with sleep. Future research may also involve addressing the purposes of the current study but expanding on the data collected by including more comprehensive measures of sleep problems, health service utilization, relationship status, and psychopathology.

4.9    Conclusions

Interpretations of the findings of this study do not support the hypothesis that sleep problems due to abuse predict health service utilization. However, participants report high levels of sleep problems due to abuse, even after the abusive relationship has ended. Victims' longer term sleep problems due to abuse continue to be predicted by past IPV, as well as psychopathology and age. IPV plays an important role in survivors' health, evidenced by the reported sleep disruption, even if survivors are not accessing health services due to the sleep problems due to abuse. Future research should involve clarifying the factors that predict health service utilization in this population as survivors of IPV have been found in the past to demonstrate higher levels of health service

utilization than women in the general population. While sleep problems due to abuse do not predict health service utilization in the current study, the ongoing effect of IPV on sleep and the previously demonstrated impact of IPV on health service access emphasizes the need to eradicate IPV in order to improve the health and wellbeing of survivors of IPV.

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APPENDIX A: SLEEP, IPV, AND HEALTH SERVICE USE: REVIEWED

STUDIES, STUDY CHARACTERISTICS, AND FINDINGS

| Author | Participants | Results |
|---|---|---|
| Ansara & Hinden, 2011 | 1131 Canadian men and women who experienced IPV and completed the 2004 General Social Survey (GSS) | 15.7% of the female participants and 4.1% of the male participants reported sleeping problems as a result of the violence. The negative impact of IPV was particularly noticeable for women because the abuse they reported was more chronic and severe. |
| Brokaw et al., 2002 | Randomized sample of 108 English speaking women between ages 18 and 50 presenting to a large urban emergency department in Albuquerque, NM. | Women were divided into groups based on never experiencing IPV ($n = 52$), recently experiencing IPV in the past year ($n = 22$), and having a history of IPV later than one year prior to measurement ($n = 34$). Both the recent and remote IPV groups reported higher levels of nightmares than the no IPV group at the time of data collection, with the recent IPV group reporting the highest level of nightmares. The remote IPV group reported the highest median of clinic visits (median 4; range 0 – 60), followed by the current IPV group (median 3; range 1 – 12), and no IPV group (median 2; range 0 – 14). |

| Author | Participants | Results |
|---|---|---|
| Hathaway et al., 2000 | 2043 women participating in the 1998 Massachusetts Behavioral Risk Factor Surveillance System (BRESS) | Quantitative results indicated 6.3% of this sample reported experiencing IPV in the past year. Women who experienced IPV were twice as likely as those who had not experienced IPV to report not getting enough sleep for 14 or more days in the past month. Survivors of IPV also reported more anxiety, depression, and suicidal ideation than women who had not experienced IPV in the past year. While women who had experienced IPV were less likely to have health insurance, they were equally likely to receive routine health care compared to other women in the sample. |
| Himelfarb et al., 2006 | Quantitative data collected from 208 South Asian women residing in Greater Boston, Massachusetts, in relationships with men (qualitative data collected from 23 participants) | Quantitative analysis results suggest that 30% of the overall sample and 40% of the IPV sample reported sleep disruption for more than seven days in the previous 30 days. Qualitative analysis results suggest that sleep disturbances result from fear behaviours associated with living in an abusive relationship as well as ongoing nightmares after the relationship ended. |

| Author | Participants | Results |
|---|---|---|
| Humphreys et al., 1999 | 50 ethnically diverse female victims of IPV living in transitional housing in San Francisco, California | Quantitative analysis results suggest that participants suffered from poorer sleep than non-abused women, with 82% reported experiencing some sort of sleep problem or greater feelings of fatigue, including difficulty falling asleep or early awakening. Having children predicted poorer sleep, likely because parenting involves increased vigilance for children's welfare. |
| Humphreys & Lee, 2005 | 29 ethnically diverse victims of IPV in transitional housing in San Francisco, California | Quantitative results suggest that, compared to controls, battered women had more difficulty falling asleep and spent more time awake at night. PTSD symptoms were correlated with poor sleep quality and fatigue. |
| Humphreys, Lowe, & S. J. Williams, 2009 | 17 ethnically diverse female victims of IPV in San Francisco, California | Qualitative analyses suggests survivors of IPV with children reported children exhibited difficulty sleeping, bedwetting, nightmares, and night panics |
| Krishnan & Cutler, 2005 | Case study of a South Asian female survivor of IPV in Oregon, USA | An immigrant woman who had experienced IPV reported anxiety, depressed mood, and sleep disturbance during and following leaving the abusive relationship. |

| Author | Participants | Results |
|---|---|---|
| Lowe, Humphreys, & Williams, 2007 | 16 female victims of IPV in the United Kingdom | Qualitative analysis results suggest that women report sleep disruption as a result of fear in relation to IPV and because perpetrators purposely disrupt sleep. |
| Rasmussen, 2007 | 30 women in two transition homes or accessing a family counselling center | Quantitative findings suggest 50% of the sample reported experiencing nightmares on a weekly basis. Fifty percent reported using some sort of medication to help them sleep, and 60.0% reported having trouble falling asleep. |
| Rauer et al., 2010 | Random sample of 241 married couples in Tennessee, USA | Quantitative findings indicate psychological abuse was associated with sleep problems at both interviews. Sleep problems mediated by anxiety and depression, especially for the female partners. |

| Author | Participants | Results |
|---|---|---|
| Scheffer, Lindgren, & Renck 2008 | 14 survivors of IPV in Sweden | Qualitative findings suggested women unable to fall asleep due to fear of being killed by the perpetrator. Other participants reported sleeping all day as a result of depression. While some participants reported their sleep returning to normal and being able to sleep as much as they wanted, other participants reported they continued to relive the trauma and to "kick and fight" in their sleep. |
| R. Walker, Shannon, & Logan, 2010 | 609 American survivors of IPV with protection orders against their intimate partners | Quantitative findings indicated participants slept less than 5.5 hours a night, on average. Statistical predictors of sleep disturbance were race, number of children, depression and PTSD symptoms, health status, and severity of IPV experienced. |
| Woods, M. A., & Hampton, 2008 | Quantitative data collected from 181 female survivors of IPV in Saskatchewan, Canada | Quantitative analysis results suggest IPV independently contributes to sleep problems due to abuse when controlling for demographic characteristics and psychopathology |

| Author | Participants | Results |
|--------|--------------|---------|
| Woods, S. J., Kozachik, & Hall, 2010 | 157 female victims of IPV | Quantitative analysis results suggest women experience sleep problems after experiencing IPV that are associated with experiences of PTSD and stress related health symptoms. Childhood maltreatment as well as IPV were also indirectly associated with poor sleep quality and disruptive nighttime behaviours. However, depression, neuromuscular, and gynaecological symptoms were not associated with sleep quality. |

APPENDIX B:  QUESTIONS FOR THE CURRENT STUDY

1. How old are you?                                                        _____
*asked at Wave 1 only

2. Are you currently working?
       1.  Yes, full-time
       2.  Yes, part-time
       3.  Yes, casual
       4.  No [If no, skip to 12]
*asked at all waves

3. What is the highest level of education you have completed?        _____
*updated at Wave 2

4. Do you have children? (Including biological, step, adopted, and foster children)
       1.  Yes
       2.  No
*asked at all waves

5. How many of your children live with you?
      1. All       2. Some      3. None
*asked once at Wave 1

6. As the last interview you indicated that _____ children lived with you, has that changed?
      1. Yes – how many of your children now live with you?
      2. No
*asked waves 2 - 4

7. What is your cultural background?  (For example: Aboriginal, Asian, African-Canadian, Polish, Ukrainian, etc…)
*asked at Wave 1

8. Were you abused as a child or adolescent? (Check ALL that apply)
    1. Physical abuse
    2. Sexual abuse
    3. Emotional/psychological/verbal abuse
    4. Witnessed violence between parents or other family members
    5. Neglect
    6. Not abused
*asked at Wave 1, collapsed into abused and not abused

9. What is the current relationship that you have with your most recent abusive partner?
*(What is the status of the relationship?)*
    1. Married            5. Ex common-law
    2. Separated          6. Boyfriend/girlfriend
    3. Divorced           7. Ex boyfriend/girlfriend
    4. Common-law         8. Other
*asked at all waves

10. Have you become involved in a relationship with another partner since the last time we spoke?      1. Yes  2. No
*asked at all waves but Wave 1

13. In general, would you say your health is …….

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Poor | Fair | Good | Very Good | Excellent |

*asked at all waves but Wave 1

14. In the past 12 months have you been injured?
    1. No
    2. Yes as a direct result of intimate partner abuse
    3. Yes as an indirect result of intimate partner abuse
    4. Yes, but not as a result of intimate partner abuse
*asked at all waves but Wave 1

15. If yes, how many times in the past 12 months have you been injured?
    1. As a direct result of intimate partner abuse       _____
    2. As an indirect result of intimate partner abuse    _____
    3. Not as a result of intimate partner abuse          _____
*asked at all waves but Wave 1

## Composite Abuse Scale
*asked at all waves

I would like to know if you experienced any of the actions/threats below and how often it happened in the last 12 months that you were with your abusive ex/partner. The following items are worded as if you were directly responding to them. Please indicate the number that matches the frequency over the 12 month period.

| Never | Only Once | Several times | Once a month | Once a week | Daily |
|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 |

| | | Never | Only Once | Several Time | Once a month | Once a week | Daily |
|---|---|---|---|---|---|---|---|
| 16. | Told me that I wasn't good enough. | 0 | 1 | 2 | 3 | 4 | 5 |
| 17. | Kept me from medical care. | 0 | 1 | 2 | 3 | 4 | 5 |
| 18. | Followed me. | 0 | 1 | 2 | 3 | 4 | 5 |
| 19. | Tried to turn my family, friends and children against me. | 0 | 1 | 2 | 3 | 4 | 5 |
| 20. | Locked me in the bedroom. | 0 | 1 | 2 | 3 | 4 | 5 |
| 21. | Slapped me. | 0 | 1 | 2 | 3 | 4 | 5 |
| 22. | Raped me. (definition: physically forced sexual act) | 0 | 1 | 2 | 3 | 4 | 5 |
| 23. | Told me that I was ugly. | 0 | 1 | 2 | 3 | 4 | 5 |
| 24. | Tried to keep me from seeing or talking to my family. | 0 | 1 | 2 | 3 | 4 | 5 |
| 25. | Threw me. | 0 | 1 | 2 | 3 | 4 | 5 |
| 26. | Hung around outside my house. | 0 | 1 | 2 | 3 | 4 | 5 |
| 27. | Blamed me for causing their violent behaviour. | 0 | 1 | 2 | 3 | 4 | 5 |
| 28. | Harassed me over the telephone. | 0 | 1 | 2 | 3 | 4 | 5 |
| 29. | Shook me. | 0 | 1 | 2 | 3 | 4 | 5 |
| 30. | Tried to rape me. | 0 | 1 | 2 | 3 | 4 | 5 |

|     |                                                                                          | Never | Only Once | Several Time | Once a month | Once a week | Daily |
| --- | ---------------------------------------------------------------------------------------- | ----- | --------- | ------------ | ------------ | ----------- | ----- |
| 31. | Harassed me at work.                                                                     | 0     | 1         | 2            | 3            | 4           | 5     |
| 32. | Pushed, grabbed or shoved me.                                                            | 0     | 1         | 2            | 3            | 4           | 5     |
| 33. | Used a knife or gun or other weapon.                                                     | 0     | 1         | 2            | 3            | 4           | 5     |
| 34. | Became upset if dinner/housework wasn't done when they thought it should be.             | 0     | 1         | 2            | 3            | 4           | 5     |
| 35. | Told me I was crazy.                                                                     | 0     | 1         | 2            | 3            | 4           | 5     |
| 36. | Told me no one would ever want me.                                                       | 0     | 1         | 2            | 3            | 4           | 5     |
| 37. | Took my wallet and left me stranded.                                                     | 0     | 1         | 2            | 3            | 4           | 5     |
| 38. | Hit or tried to hit me with something.                                                   | 0     | 1         | 2            | 3            | 4           | 5     |
| 39. | Did not want me to socialize with my female friends.                                     | 0     | 1         | 2            | 3            | 4           | 5     |
| 40. | Put foreign objects in my vagina.                                                        | 0     | 1         | 2            | 3            | 4           | 5     |
| 41. | Refused to let me work outside the home.                                                 | 0     | 1         | 2            | 3            | 4           | 5     |
| 42. | Kicked me, bit me or hit me with a fist.                                                 | 0     | 1         | 2            | 3            | 4           | 5     |
| 43. | Tried to convince my family, friends, or children that I was crazy.                      | 0     | 1         | 2            | 3            | 4           | 5     |
| 44. | Told me that I was stupid.                                                               | 0     | 1         | 2            | 3            | 4           | 5     |
| 45. | Beat me up.                                                                               | 0     | 1         | 2            | 3            | 4           | 5     |

47. How was your sleep affected by the abuse you experienced? (Please check all that apply)
*asked at Waves 2 and 4

_____ My sleep was not affected
_____ My sleep was disrupted by my partner's angry outbursts
_____ I had nightmares about the abuse
_____ I was awakened by pain from injuries due to the abuse
_____ I could not sleep if anyone else was in the room
_____My partner would deprive me of sleep as a method of control
_____ I found it difficult to fall or stay asleep because I was nervous or tense
_____ My children awakened frequently in the night
_____ I had to sleep with the light on
_____ Other (specify) _____

<u>Center for Epidemiological Study of Depression Scale – 10</u>
*asked at all waves but Wave 1

Below is a list of some of the ways you may have felt or behaved. Please indicate how often you have felt this way during the PAST WEEK. (Interviewer, use Scale Package #2-HP)

0-    Rarely or none of the time (less than 1 day)
1-    Some or a little of the time (1-2 days)
2-    Occasionally or a moderate amount of time (3-4 days)
3-    All of the time (5-7 days)

During the past week……
48. I was bothered by things that usually don't bother me.
49. I had trouble keeping my mind on what I was doing.
50. I felt depressed.
51. I felt that everything I did was an effort.
52. I felt hopeful about the future.
53. I felt fearful.
54. My sleep was restless.
55. I was happy.
56. I felt lonely.
57. I could not "get going".

<u>PTSD Checklist</u>
*asked at all waves but Wave 1

I will read a list of problems or difficulties that people sometimes have in response to stressful life experiences, such as being assaulted or abused. Please answer using the following 5-point scale with 0 being 'Not at all' and 4 being 'Extremely'.
(Interviewer, use Scale Package #1-HP)

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

In the past month how much have you ……
58. Been bothered by repeated, disturbing memories, thoughts, or images of abuse or violence?
59. Been bothered by repeated disturbing dreams about abuse?
60. Suddenly acted or felt as if abuse was happening again [as if you were reliving it]? Been bothered by feeling very upset when something reminded you of abuse?

In the past month how much have you ……
61. Been bothered by having physical reactions when something reminded you of abuse, (e.g., your heart pounding, trouble breathing, sweating)?
62. Avoided thinking about or talking about abuse?
63. Avoided activities or situations because they reminded you of abuse?
64. Had trouble remembering important parts of abuse?
65. Felt a loss of interest in activities that you used to enjoy?

In the past month how much have you ……
66. Experienced feeling distant or cut off from other people?
67. Felt emotionally numb or unable to have loving feelings for those close to you?
68. Experienced feeling as if your future will somehow be cut short?
69. Had trouble falling asleep or staying asleep?
70. Experienced feeling irritable or having angry outbursts?

In the past month how much have you ……
71. Had difficulty concentrating?
72. Experienced being "super-alert" or watchful or on guard?
73. Felt jumpy or easily startled?

## Health Service Use Information
### *asked at Waves 2 and 4

In the past 12 months, have you….? (Respond to all that apply)…

| Have you ……? | If Yes, many times? |
|---|---|
| 74. Had a routine, general check-up without having a specific health problem | |
| 75. Had a dental check-up or treatment | |
| 76. Conducted a breast self-examination or had a mammogram | |
| 77. Been admitted to hospital as a patient for overnight or longer | |
| 78. Gone to a hospital emergency department | |
| 79. Used a treatment program for drug or alcohol problems | |
| 80. Visited a personal or family counselor, social worker, or psychologist | |
| 81. Visited a family doctor or nurse (other than for a regular check-up) | |
| 82. Visited a specialist such as a surgeon, allergist, orthopedist, psychiatrist, gynecologist | |
| 83. Visited an homeopath, naturopath, acupuncturist, massage therapist, chiropractor, physiotherapist | |
| 84. Visited an Indigenous traditional healer | |
| 85. Visited a walk-in medi-centre without an appointment | |
| 86. Used home care services | |
| 87. Talked to an elder, priest, minister, or other religious counselor | |
| 88. Participated in a health-related Self-help group | |

APPENDIX C:  FORM OF CONSENT AND CONFIDENTIALITY

The Healing Journey: A Long-Term Study of Women Affected by Intimate Partner

Violence

PURPOSE OF THE STUDY: This fall community agencies like (name of agency recruited from) and researchers from the University of Regina will be doing a long-term study of women who have experienced violence in their intimate partner relationship. We are interested in women's health, wellbeing, support, self-perceptions, parenting issues and service utilization of women who have experienced violence by an intimate partner. This study will help to inform services providers and policy makers about effective programming and gaps in services for these women. It will also help us to understand the factors involved in women's survival and healing from partner violence.

ROLE OF THE PARTICIPANTS:  Participation involves a 2 hour interview twice a year over a period of 3 1/2 years. However, the first interview might be somewhat longer, about 2 ½ hours. Two different interviews will be done, each given once a year. The first interview will take place in the fall/winter of 2005. It will consist of questions about your employment, occupation, history of abuse, the services you have used and your satisfaction with them, your sources of support, coping strategies, and your perceptions of yourself and your life. The second interview will be conducted in the winter/spring of 2006. It will consist of questions on various aspects of physical and psychopathology, parenting issues, and an update on some of the questions asked in the first interview. Interviews will rotate along this pattern with questions on demography, revictimization in new relationships, service utilization, coping strategies, and support being done in the fall/winter of each year and the health and parenting questions being done in the

winter/spring of each year until 2008. Brief update questions on the previous set of interview questions will be done at each interview. Some of the women will also be chosen to participate in more open interviews that would take place at the beginning of the study and again at the end of the study. In these interviews we would ask you general questions about your experiences with intimate partner violence, its effect on your life and your journey in dealing with these experiences. Each interview would take about 2 hours. We would tape record these interviews to make sure we record your responses accurately without having to interrupt you as you talk. If you think you might be interested in participating in these more open interviews, you can indicate your interest at the end of this form. Not everyone who is interested will be chosen to take part in these interviews. We are looking for about 20 women from Saskatchewan. Also just because you indicate that you are interested, does not mean that you can't change your mind. If we contact you to take part in the interview, you can always decide not to do it.

POTENTIAL BENEFITS:  You will be getting a $50 honorarium for every interview.

POTENTIAL RISKS AND DISCOMFORT:  Your participation is voluntary, so you may choose not to participate without any effect on the services you receive from any shelter or service provider agency.

CONFIDENTIALITY OF THE DATA: The information in the interviews is personal. All of this information will be kept very confidential and your name will not be placed on your interviews. The interviews are number coded and placed in a computer file under a number code rather than your name. All of the taped open interviews will be transcribed into a locked computer file and these interviews will also be number coded. In the transcriptions we will remove any references to names so anyone reading the transcript will not be able to identify the person by any names they mention. The tapes will be

securely locked at the University of Regina offices. They will be sent to our colleagues in Alberta and Manitoba for analysis. We will send them via courier and they will be securely stored at the offices of our colleagues. These colleagues are situated at universities in these provinces and have to abide by the same ethical standards as we have so all the information will be kept very confidential. When they have completed their analysis, the tapes will be returned to the University of Regina where they will be kept locked in a cabinet and then destroyed at the end of the study along with the other interviews.

Other than the sharing of tapes of the open interviews with colleagues in other provinces, the information you give will be kept locked in a cabinet at the University of Regina offices and the interviews will be stored separately from this consent form. Service providers/probation officers will never have access to your specific responses. Tapes of open interviews will only be shared with academic colleagues and never with service providers in any of the provinces. We will also be asking you for the best method and procedure for contacting you. The contact information you have given us will also be kept in a locked computer file and only myself, the principal investigator and the person supervising my interviews will have access to this information. The interviews, tapes of the open interviews and contact information will be destroyed about 4 months after the end of the project. The tapes and interviews will be shredded and thus completely destroyed. This will be in August 2009 unless funding for the continuation of the study is obtained. If we do obtain funding but you do not want to continue with the project then your interviews and contact information will be destroyed in August 2009.

***Please note that we are required by law to report current and past unreported child abuse or situations dangerous to children to the legal authorities. Also if you reveal to***

*us that you are planning to harm yourself someone else we are obligated to report this to the authorities as well.*

You are volunteering to participate so you may stop at any time and you are free not to answer any questions you don't want to.

<u>WITHDRAWAL FROM THE STUDY:</u> Your decision to participate in this research is completely voluntary. You are free to withdraw your consent at any time. If you have any reservations at all about participating in this research process, please feel free to withdraw from the study. Furthermore, you are free to refrain from answering any questions.

<u>OFFER TO ANSWER QUESTIONS:</u> This consent form may contain words or phrases that you do not understand. Please ask a member of the research team to explain the information that is not clear to you. If you have any questions regarding this research, the procedures and/or goals of this study, please feel free to ask before or during the interview. If you have any concerns or inquiries after the interview, please contact any of the research team members. After each interview period, research reports and presentations will be prepared, but your name will never be attached to any piece of information. If you like we will send you a copy of these progress reports and invitations to community presentations and conferences. If you do want the progress reports, we will be asking you about your preferred methods of obtaining this information and making notes of any changes to these instructions over time. Information about the study will be put into progress reports. Progress reports will be available about three to four months after each time we interview you. All of your preferred methods of contact including contact between interviews will be respected.

*This project was approved by the Research Ethics Board, University of Regina. If research subjects have any questions or concerns about their rights or treatment as*

*subjects, they may contact the Chair of the Research Ethics Board at 585-4775 or by e-mail: research.ethics@uregina.ca.*

**Researchers:** Drs. Mary Hampton (University of Regina ph: 585-4826), Darlene Juschka (University of Regina, 585-5280), Wendee Kubik (University of Regina, 585-4668); Bonnie Jeffery (University of Regina,), Stephanie Martin (University of Saskatchewan,)

If you agree to participate in this interview, please place your name and signature in the appropriate spaces below.

I _____ (print name) understand what the interview is about and what I will have to do and the signature below means that I agree to participate.

_____          _____

(Signature)                                                                    (Date)

_____          _____

(Signature of interviewer)                                              (Date)

I would like a copy of the progress report  _____Yes    _____No

I would like to receive the report in the following way:

I would like to be considered for the open interviews. _____Yes    _____No

**UNIVERSITY OF REGINA**

OFFICE OF RESEARCH SERVICES

**MEMORANDUM**

DATE:     July 14, 2009

TO:        Dr. Mary Hampton
           Luther College

FROM:     Dr. Bruce Plouffe
           Research Ethics Board

RE:        **Annual Research Status Report**

---

Thank you for submitting the required Annual Research Status Report on your project entitled, **"The Healing Journey: A Longitudinal Study of Women Affected by Intimate Partner Violence."** *File # 01R0506.*

This memo confirms ethical clearance for an additional 12 months, beginning August 15, 2009.

Sincerely,
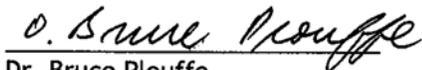
Dr. Bruce Plouffe
Research Ethics Board

Research and Innovation Centre, Room 109
Phone: (306) 585-4775
Fax: (306) 585-4893
www.uregina.ca/research

University of Saskatchewan
Behavioural Research Ethics Board (Beh-REB)

10-Apr-2006

## Certificate of Approval
### Study Revisions

| PRINCIPAL INVESTIGATOR | DEPARTMENT | BEH# |
|---|---|---|
| Stephanie (Lin) L. Martin | Educational Psychology and Special Education | Beh 05-207 |

INSTITUTION(S) WHERE RESEARCH WILL BE CONDUCTED (STUDY SITE)

SPONSOR
SOCIAL SCIENCES AND HUMANITIES RESEARCH COUNCIL OF CANADA (SSHRC)

TITLE
The Healing Journey: A Longitudinal Study of Women Affected by Intimate Partner Violence

| CURRENT APPROVAL DATE | CURRENT RENEWAL DATE |
|---|---|
| 27-Sep-2005 | 01-Sep-2006 |

| CERTIFICATION UPDATE | APPROVED ON |
|---|---|
| Revised Questionnaires | 10-Apr-2006 |

**CERTIFICATION**

The University of Saskatchewan Behavioural Research Ethics Board has reviewed the proposed revisions to your study. The revisions were found to be acceptable on ethical grounds.

The principal investigator has the responsibility for any other administrative or regulatory approvals that may pertain to this research project, and for ensuring that the authorized research is carried out according to the conditions outlined in the original protocol submitted for ethics review. This Certificate of Approval is valid for the above time period provided there is no change in experimental protocol or consent process or documents.

Any significant changes to your proposed method, or your consent and recruitment procedures should be reported to the Chair for Research Ethics Board consideration in advance of its implementation.

**ONGOING REVIEW REQUIREMENTS**

The term of this approval is five years, but the approval must be renewed on an annual basis. In order to receive annual renewal, a status report must be submitted to the REB Chair for Board consideration within one month of the current expiry date each year the study remains open, and upon study completion. Please refer to the following website for further instructions:

*http://www.usask.ca/research/ethical.shtml*

APPROVED.

Valerie Thompson., Chair
Behavioural Research Ethics Board
University of Saskatchewan

ase send all correspondence to:

Ethics Office
University of Saskatchewan
Room 306, Kirk Hall, 117 Science Place
Saskatoon, SK S7N 5C8
Phone: (306) 966-2084  Fax: (306) 966-2069

# APPENDIX F: UNIVERSITY OF CALGARY ETHICS RENEWAL EMAIL

From: Bonnie Scherrer <blwebber@ucalgary.ca>
Date: March 20, 2007 4:24:57 PM MDT (CA)
To: Lorraine Radtke <radtke@ucalgary.ca>
Cc: "Dr. Leslie M. Tutty" <tutty@ucalgary.ca>
Subject: Re: File NO. 4450 - revision to existing protocol

Dear Dr. Radtke:

This is just a quick note to advise you that Dr. Dickin (Chair, Conjoint Faculties Research Ethics Board) has signed a memo approving the proposed modification to your study, as outlined in your e-mail below. Copies of the memo will be sent to you and your co-investigator by campus mail shortly, but in the meantime, you are cleared to implement the change.

Best wishes for continued success with your project.

Kind Regards,

Bonnie Scherrer
for the CFREB

Lorraine Radtke wrote:

Dear Bonnie:

I am writing to request permission for a revision to the existing protocol for the Healing Journey project (file no. 4450). This is a longitudinal study with a sample of relatively mobile participants. A small number of them have moved outside the prairie provinces where we have on-site interviewers (to British Columbia so far), but they are willing to continue with the study. We would like to be able to interview them by phone for as long as they're willing to participate. In each case, the interviewer would be the same person who has already interviewed them in person. In addition, we would ensure that they are in contact with local service providers, who could provide counselling should they require it.

Thank you in advance for your consideration of this request.

Regards,

Lorrie

**RENEWAL APPROVAL**

09 September 2009

**TO:**       **Jane Ursel**
               **Jocelyn Proulx**
               Principal Investigators

**FROM:**     **Bruce Tefft, Chair**
               Psychology/Sociology Research Ethics Board (PSREB)

**Re:**        **Protocol #P2006:026**
               **"The Healing Journey:  A Longitudinal Study of Women**
               **Affected by Intimate Partner Violence"**

Please be advised that your above-referenced protocol has received approval for renewal by the **Psychology/Sociology Research Ethics Board**. This approval is valid for one year only.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

**Please be advised that this is the final renewal allowed. Subsequently a full application must be submitted.**

**Criteria**

All participants must meet the following criteria to be considered for the study.

☐ *You experienced intimate partner violence and the last incident happened since January 2000.*
☐ *The last incident happened before 3 months ago and you don't feel like you are in crisis.*
☐ *You are willing to stay in the study for the next 3 1/2 years.*
☐ *You are not getting any treatment or on any medication that you feel might interfere with your ability to do a two-hour interview.*

*Interest in Participating*

*If you are interested in participating in the study please print your name, a phone number and a time we can call you in the spaces below and return this form to agency staff or mail to the address listed below. If you would prefer we contact you some other way, please tell us how you would like to be contacted. Please print clearly.*

_____
*(print name)*
_____
*(phone number or other form of contact)*
_____
*(day and time when you can be reached)*
_____
*(agency where you heard about the project)*

*Mail to:*

Dr. Mary Hampton
Professor of Psychology
Luther College, University of Regina
*Regina, SK S4S OA2*

*Or call: 337-2629*

Your participation is voluntary, so you may choose not to participate without any effect on the services you receive from any shelter or service provider agency. If you have any reservations at all about participating in this research process, please feel free to withdraw from the study. Furthermore, you are free to refrain from answering any questions.