

A meta-analysis of risk factors for intimate partner homicide: Examining male perpetration and female victimization

by

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B.S., Kansas State University, 2013
M.S., Kansas State University, 2016

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

School of Family Studies and Human Services
College of Human Ecology

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2018

Abstract

Intimate partner homicide (IPH) is a serious problem throughout the world. Research has identified a history of intimate partner violence (IPV) as a risk factor for IPH (Campbell et al., 2007). However, we know that not all individuals who perpetrate IPV end up perpetrating IPH, and not all victims of IPV end up becoming victims of IPH. There is a need to identify additional risk factors for IPH in order to potentially help identify individuals who may be at a greater risk for IPH perpetration or victimization. In this study, we conducted a meta-analysis on risk factors for male IPH perpetration and female IPH victimization. This meta-analysis examined results from 17 studies, which included 148 effect sizes to be used in the analysis. The overall sample size included in the study was 10,143. This study compared IPV samples and IPH samples as a means to aid in identifying risk factors that may place individuals who are victims or perpetrators of IPV at a greater risk for IPH perpetration or victimization. Results of our analyses indicated that the strongest risk factors for male IPH perpetration were the perpetrator having direct access to a gun, perpetrator's previous threats with a weapon, perpetrator's previous non-fatal strangulation, perpetrator's previous rape of the victim, perpetrator's demonstration of controlling behaviors, perpetrator's previous threats to harm the victim, and the perpetrator's previous stalking of the victim. We found that the strongest risk factors for female IPH victimization were the victim being abused by the perpetrator while pregnant, the victim's substance abuse, the victim having less than a high school education, being separated from the perpetrator, and having children from a previous relationship (not with the perpetrator). Implications for law enforcement personnel, victim advocates, mental health professionals, as well as other professionals who may be in contact with potential IPH perpetrators and victims are discussed.

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Acknowledgements

I would like to acknowledge the Family Process Institute for funding this dissertation. I would also like to acknowledge and thank my major professor, Dr. Sandra Stith, who has provided immeasurable guidance and support throughout my time at Kansas State University – I could not have asked for a better mentor. It is also important for me to acknowledge all of my professors and committee members who have encouraged me throughout this process. Lastly, I would like to acknowledge my family (my mom, dad, grandma, grandpa, and brother) and my friends, who have always believed in my ability to achieve my goals.

Chapter 1 - Introduction

Intimate partner homicide (IPH) is a serious problem throughout the world.

Approximately 13.5% of all homicides world-wide are committed by a current or former intimate partner (Stöckl, Devries, Rotstein, Abrahams, Campbell, Watts & Moreno, 2013). When examining gender differences in global IPH victimization, approximately 38.6% of homicides committed against women and 6.3% of homicides committed against men are committed by an intimate partner (Stöckl et al., 2013). Examining rates of IPH in the United States, in 2010, 39% ($n = 1,192$) of homicides committed against women and 3% ($n = 305$) against men were committed by an intimate partner (Catalano, 2013) – which is similar to global rates of IPH. The Centers for Disease Control and Prevention recently released a report that examined homicides from 18 states from 2003-2014 and found that over half (55.3%) of the homicides committed against women in the United States involved an intimate partner (Petrosky et al., 2017). These high rates of IPH highlights the importance of examining risk factors related to intimate partner homicides. It is important to note that these prevalence rates are of completed homicides and information on attempted homicides is missing from these rates – which would undoubtedly increase the number of individuals who have experienced this type of extreme violence.

One of the most recognized predictors of attempted or completed IPH is a previous history of IPV (Block et al., 2000, Campbell et al., 2007; Campbell et al., 2003; Garcia et al., 2007). There has been a growing body of research that examines risk markers for IPV perpetration and victimization (e.g., Cafferky, Mendez, Anderson & Stith, 2018; Spencer, Cafferky & Stith, 2016; Spencer, Mallory, Cafferky, Kimmes, Beck & Stith, 2017; Stith, Smith, Penn, Ward & Tritt, 2004), yet less is known about the risk factors for IPH. Although previous IPV is regarded as the number one risk factor for IPH (Campbell et al., 2007), research has

highlighted the importance of examining risk factors for IPH extensively in order to aid in identifying IPV victims who may be at a greater risk for IPH (Campbell, 1986; Campbell et al., 2003; Nicolaidis et al., 2003; Sheehan, Murphy, Moynihan, Dudley-Fennessey & Stapleton, 2015). Examining IPH risk factors can help professionals in the community (i.e., first responders, medical personnel, victim advocates, therapists, and those working at domestic violence shelters) identify victims of IPV who are at an increased risk for IPH, which can ultimately aid in the reduction or prevention of IPH from occurring.

This study sought to systemically integrate findings on risk factors for IPH through the use of a meta-analysis. There have been literature reviews on the topic of risk factors for IPH (Campbell, Glass, Sharps, Laughon, & Bloom, 2007), but there has yet to be a meta-analytic review of quantitative data on the topic of risk factors for IPH. There has been a growing body of meta-analytic research that has aided in the synthesizing the field's current knowledge of risk markers for IPV perpetration and victimization (Spencer, Cafferky & Stith, 2016; Spencer et al., 2017; Stith et al., 2004). However, this has not been done for risk factors for IPH perpetration and victimization, which can be difficult to predict. With less research published on the topic of IPH, due to it being a rarer phenomenon than IPV, it is important to synthesize these results in one comprehensive meta-analysis. Through the use of a meta-analysis, research can “overcome limits of size or scope in individual studies to obtain more reliable information” (Berman & Parker, 2002, pg. 1). Since IPH is considered to be a rare event, sample sizes in studies that examine risk factors for IPH perpetration and victimization are often small, thus highlighting the importance of using a meta-analysis to integrate all findings of risk factors for IPH in one, comprehensive study. The purpose of this study is to aid in synthesizing our current knowledge of risk factors for IPH, which can ultimately aid in the identification of, and intervention with,

individuals who have been victims or perpetrators of IPV and may be at a greater risk for IPH
perpetration or victimization.

Chapter 2 - Background

Trends in IPH

It is clear from the literature and the IPH prevalence rates, that IPH is a gendered phenomenon. When looking at global homicide rates in general, males make up 80% of homicide victims (UNODC, 2013). However, when examining IPH victimization, females make up approximately two thirds of IPH victims (UNODC, 2013). Research has also found that women are six times more likely to be murdered by an intimate partner than are men (Stöckl et al., 2013). This highlights the importance of examining IPH through a gendered lens, separating males and females and perpetrators and victims.

Research focusing on homicides has historically failed to separate IPH from other types of homicide, although recent research on the topic has recognized the importance of examining IPH as a separate phenomenon (Ioannou & Hammond, 2015). This shift may explain why the majority of the literature examining IPH trends over time begins in the 1990's. When examining homicide in general, global homicide rates drastically increased between 1970 and 1990, but have continued to decline since the 1990's (Caman, Kristianson, Granath, Sturup, 2017; Lappi-Seppälä & Lehti, 2014; UNODC, 2013). However, when examining global IPH trends, it has been found that the decline in IPH does not follow the overall homicide trends, as rates of IPH remain relatively stable (UNODC, 2013). Several studies have reported a decline in IPH in the United States and other Western countries (Corradi & Stöckl, 2014; Fox & Zawitz, 2007). However, in both the United States and Canada, the overall decline reflects a steady decline in female-perpetrated IPH, but not in male-perpetrated IPH (Dawson, Bunge, & Balde, 2009; Fox & Zawitz, 2007). Some researchers have suggested that the increase in domestic violence resources aided in this decrease of female-perpetrated IPH, but not male-perpetrated IPH

(Browne & Williams, 1989; Dugan, Nagin, & Rosenfeld 1999). This suggests that these resources designed to help women leave violent relationships may have contributed to a context where women do not have to resort to murdering abusive intimate partners. This further highlights the gendered nature of IPH and the importance of examining risk factors for IPH perpetration and victimization separately for both males and females.

Theory

Two theories have guided this research. First, male sexual proprietariness Theory, in addition to previous studies that have clearly indicated that men are more likely to kill their female intimate partners than women are to kill their male intimate partners, lead to our choice to focus this study of male IPH perpetration and female victimization. The second theory that guided this research was exposure reduction hypothesis which emphasizes the importance of identifying the most important risk factors for IPH so that victims can be alerted, policies can be changed and exposure to potential IPH can be reduced. Exposure reduction hypothesis guided our decision to include studies comparing individuals who experienced violence in their relationship and cases of IPH. This was decided in order to gain a better understanding of risk factors that may differentiate individuals who experience IPV in their relationship from those who also have a history of experiencing IPV but eventually perpetrate or become victims of IPH. This may aid in identifying individuals in violent relationships who may be at a greater risk for IPH.

Male Sexual Proprietariness Theory

Male sexual proprietariness theory is an evolutionary psychological perspective that has attempted to explain the gendered nature of IPH (Daly & Wilson, 1988; Wilson & Daly, 1993). According to this theory, the likelihood of violence, as well as IPH, increases when men believe

they have a right to control, and believe that they are at risk of losing control, over their female partners' reproductive capacities (Daly & Wilson, 1988; Serran & Firestone, 2004). Wilson and Daly (1993) state that "cues of an imminent threat of loss of sexual exclusivity may be manifested in violent action" (p. 283). This threat of losing sexual exclusivity, or entitlement over their partner's reproductive capacities, could be through suspicions or actual events of infidelity, or the woman wishing to end the relationship entirely. Male sexual proprietariness theory would suggest that risk factors for IPH would be factors related to sexual jealousy and the risk of losing control over one's partner. Previous research has found that sexual jealousy, desire for control over one's partner, estrangement in the relationship, and young age (which is linked to reproductive capabilities) have all been found to be risk factors for male-perpetrated IPH (Serran & Firestone, 2004).

Exposure Reduction Hypothesis

The exposure reduction hypothesis refers to the idea that IPH is the most extreme form of IPV, and IPH often occurs after prolonged violence in a relationship (Reckdenwald & Parker, 2012). Exposure reduction hypothesis views IPH as the end result on a continuum of escalating violent behaviors. This suggests that by shortening the duration in which someone is in contact with a violent partner, decreases the likelihood that IPH will occur (Dugan, Nagin & Rosenfeld, 2003). According to this theory, providing resources that allow victims of IPV to leave abusive relationships, such as protection orders and domestic violence resources, may aid in decreasing rates of IPH (Dugan, Nagin, & Rosenfeld, 2003; Reckdenwald & Parker, 2012).

Previous violence in a relationship is a documented risk factor for IPH (Campbell, Glass, Sharps, Laughon, & Bloom, 2007; Garcia, Soria, & Hurwitz, 2007), which corresponds with the exposure reduction hypothesis. However, one critique of this theory is that leaving an abusive

relationship has also been found to put individuals at an increased risk for escalated violence and IPH (Campbell et al., 2007; Dutton, 2002; Garcia, Soria & Hurwitz, 2007; Johnson & Hotton, 2003; Stout, 1993; Wilson & Daly, 1993). Proponents of this theory have urged policy changes that would help protect victims leaving a relationship, and have found that “more aggressive arrest policies is related to fewer deaths of unmarried intimates” (Dugan, Nagin & Rosen, 2003, p. 191). This suggests that although leaving an abusive relationship may put individuals at risk for increased violence, with proper resources to protect victims from retaliation, a victim’s decision to leave an abuser could lead to a decrease in IPH rates.

Background on Risk Factors for IPH

Previous research has highlighted the importance of continued focus and attention on identifying risk factors for IPH (Campbell, 1986; Campbell et al., 2003; Nicolaidis et al., 2003; Sheehan et al., 2015). According to Campbell and colleagues (2007), approximately 67-75% of cases of IPH had a history of IPV in the relationship. Although there is a need for continued research on risk factors for IPH, several risk factors have been identified that appear to warrant serious attention when investigating what puts an individual at risk for IPH victimization or perpetration. Two prominent risk assessments for danger or future violence are the Danger Assessment (Campbell, Webster, & Glass, 2008) and the Spousal Assault Risk Assessment (SARA; Kropp, Hart, Webster, & Eaves, 1995). Several risk factors that overlap between the two risk assessments include escalation of violence (i.e., increased frequency, increased severity of violence, such as strangulation), stalking/violating no contact orders, relationship problems/separation, jealousy, the perpetrator’s substance abuse, and the perpetrator’s mental health issues/threaten or attempted suicide.

Non-fatal strangulation. Non-fatal strangulation can be seen as an escalation in type of violence. In Campbell and colleagues' (2007) literature review, nonfatal strangulation was listed as one of the major risk factors for IPH, although further research is needed. Glass and colleagues (2007) conducted a study comparing female victims of completed IPH, attempted IPH, and IPV. In this study, they found that victims of attempted IPH were 6.70 times more likely to have been strangled by the perpetrator compared to victims of IPV, and that victims of completed IPH were 7.48 times more likely to have been strangled by the perpetrator compared to victims of IPV. This suggests that non-fatal strangulation should be examined as a risk factor of IPH that could possibly aid in the identification of IPV victims who may be at risk for IPH.

Stalking. Stalking has been hypothesized to be a stronger risk factor for IPH than other types of IPV (Campbell et al., 2007). McFarlane and colleagues (1999) examined stalking behaviors experienced by 208 women who had been murdered or who had experienced attempted murder by an intimate partner. This study found that 76% of IPH victims and 85% of victims of attempted IPH were previously stalked by the perpetrator. In another study, McFarlane, Campbell and Watson (2002) compared victims of completed and attempted IPH with women who had been abused, and found that victims of completed or attempted IPH were more than two times more likely to have been stalked by the perpetrator than were women who were abused by their partners.

Separation/Estrangement. It has been established in the literature that relationship estrangement, or separation, is a risk factor for IPH (Campbell et al., 2007; Dutton, 2002; Garcia, Soria & Hurwitz, 2007; Johnson & Hotton, 2003; Stout, 1993; Wilson & Daly, 1993). It is important to note that the risk of an occurrence of IPH is for the time period shortly after the separation, with studies reporting that the majority of IPH murders, where estrangement was a

factor, occurred the day of the separation or within the first three months after the separation (Barnard, Vera, Vera & Newman, 1982; Wilson & Daly, 1993). Although the victim leaving the perpetrator may increase the immediate risk of IPH, research guided by the exposure reduction hypothesis (Reckdenwald & Parker, 2012) suggests that leaving an abusive relationship will decrease the risk of IPH overall (Dugan, Nagin & Rosenfeld, 2003).

Jealousy. Jealousy, especially sexual jealousy, has been identified as a motive for IPH perpetration (Aldridge & Browne, 2003; Belgrave & Rying, 2004; Campbell et al., 2003). The impact of male jealousy on IPH is guided by male sexual proprietariness theory (Daly & Wilson, 1988; Wilson & Daly, 1993). Jealousy may be related to the offender believing that the victim has been involved in a perceived or actual affair (Christakos, 1995; Chimbos, 1998) or due to the victim wanting to leave the relationship (Crawford & Gartner, 1992; Wilson & Daly, 1993). Dobash and colleagues (2007) conducted a study comparing men who had perpetrated IPH to men who perpetrated IPV and found that male perpetrators of IPH were approximately five times more likely to have been jealous or possessive at the time of the event compared to men who perpetrated non-lethal violence.

Mental illness. A history of mental illness by male IPV perpetrators has been linked to IPH (Belgrave & Rying, 2004; Dobash et al., 2004; Dutton & Kerry, 1999; Kivisto, 2015; Sharps et al., 2001). Belgrave and Rying (2004) found that 95% of their sample of 164 male IPH perpetrators had at least one mental illness diagnosis, with the most common diagnoses being personality disorders. It is also important to note that when the perpetrator of IPH commits suicide after the murder, it may be more difficult for researchers to examine retrospectively whether or not the perpetrator could be diagnosed with a mental illness.

Substance abuse. Research has linked IPH perpetration with both alcohol and drug abuse/use (Campbell et al., 2003; Oram et al., 2013). Campbell and colleagues (2003) found that drug use was a stronger predictor of IPH perpetration than alcohol use. However, Dobash and colleagues (2004) found that 37.9% of IPH perpetrators in their sample had problems with alcohol and 14.7% had problems with drug use. Although it may be unclear if drug use or alcohol use are stronger predictors of IPH perpetration, the literature has found a connection between substance abuse and IPH perpetration.

The Present Study

The present study aims to build off of previous literature examining risk factors for IPH by systematically integrating quantitative findings of risk factors through the use of a meta-analysis. Previous research has identified IPV as a major risk factor for IPH (Campbell et al., 2007), yet many cases of IPV do not end up in homicide. This meta-analysis examines risk factors for IPH that may help identify individuals at the greatest risk for IPH. This study compares IPV samples and IPH samples as a means to aid in identifying risk factors that may place individuals who are victims or perpetrators of IPV at a greater risk for IPH perpetration or victimization. Another unique contribution of this study is the calculation of overall odds ratios for the risk factors for IPH, which can allow for knowledge on how much these risk factors increase the likelihood of IPH. This study examined IPH risk factors for male perpetration and female victimization due to the gendered nature of IPH as informed by the male sexual proprietariness theory (Daly & Wilson, 1988; Wilson & Daly, 1993) which guided this study, as well as the lack of studies examining male victimization and female perpetration of IPH.

Chapter 3 - Method

Literature Search

Studies used in this analysis were identified using standard procedures for gathering bivariate effect sizes for risk factors for IPH perpetration and victimization (Borenstein, Hedges, Higgins, & Rothstein, 2009; Card, 2012). Our search ultimately yielded 17 unique studies and 148 effect sizes. The overall sample size included in the meta-analysis was 10,143. Studies were found through database searches (PsychInfo, ERIC, Proquest, Sociological Abstracts, Social Sciences Citation Index, Social Services Abstracts, Proquest Dissertations and Theses, and PubMed) using search terms related to intimate relationships (marital, spouse, husband, intimate partner, wife, dating, boyfriend, girlfriend, or same-sex partner), homicide (homicide, femicide, murder, fatality, intimate partner homicide, or kill), and risk factors (predictor, risk, factor, marker, pathway, or correlate). The search examined studies from 1980 – May 2017.

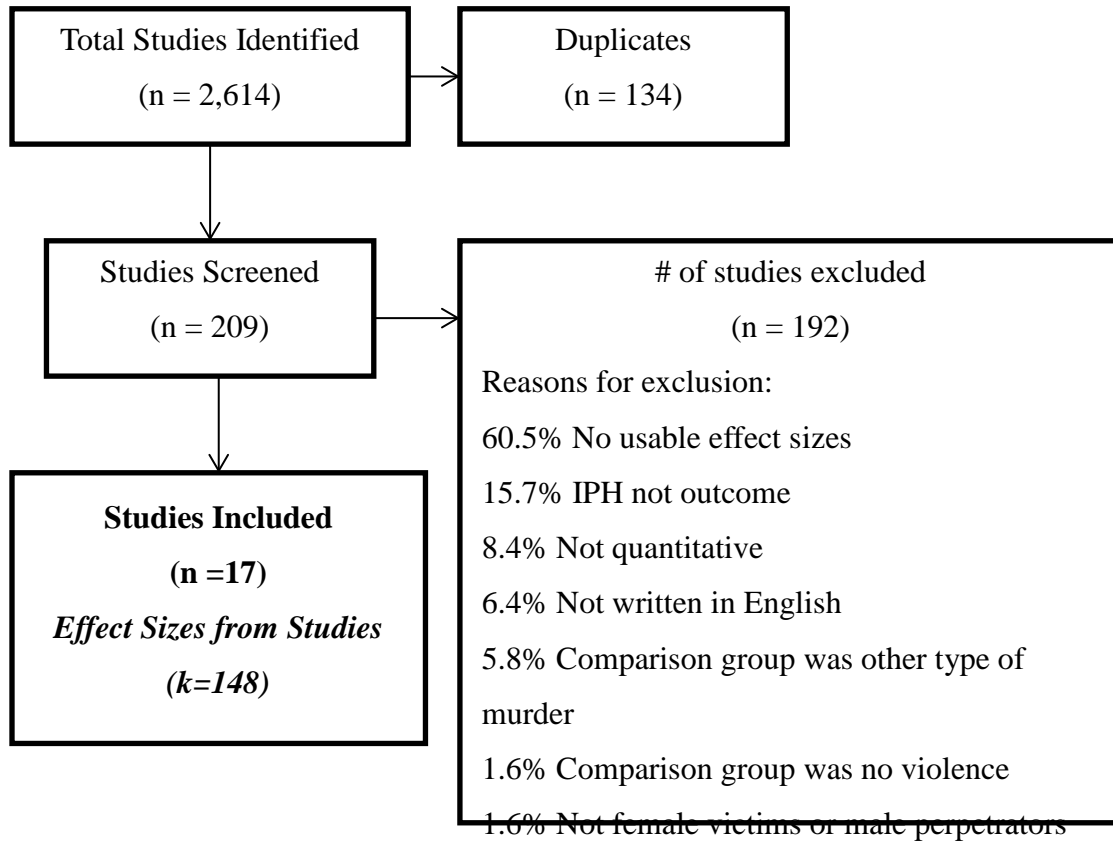
Included Studies

Studies were included if they met the following criteria: (a) the outcome variable measured completed or attempted IPH victimization or perpetration, (b) statistical information allowing the calculation of one or more bivariate effect sizes was reported in the study, and (c) the study was written in English. Studies were excluded if the comparison group in the study were non-IPH murders or non-abuse comparison samples.

A total of 2,614 studies were identified through database searches (See Figure 1). In the first round of screening, 2,271 studies were excluded based on the original inclusion criteria. This provided 343 studies for further examination. There were a total of 134 duplicates, leaving a total of 209 studies for further screening. Ultimately, 192 of these studies were excluded. Of these studies, 60.5% of studies were excluded because no usable effect sizes were included in the

study ($n = 116$), 15.7% were excluded because IPH or attempted IPH was not the outcome ($n = 30$), 8.4% were excluded because they were not quantitative ($n = 16$), 6.4% were excluded because they were not written in English ($n = 12$), 5.8% were excluded because the comparison group in the study were other types of murders ($n = 11$), 1.6% were excluded because they used individuals who experienced no violence as comparison samples ($n = 3$), and 1.6% were excluded because they examined male victimization or female perpetration of IPH ($n = 3$). The decision to exclude studies where the comparison group in the study were either individuals who had murdered individuals who were not intimate partners, or who were murdered by individuals other than their intimate partners, was due to our goal to compare risk factors between IPH and community samples, where murder was not the outcome. Only male IPH perpetration and female IPH victimization were examined due to the gendered nature of IPH, as well as the lack of studies examining male victimization and female perpetration of IPH. The final sample included 17 unique studies, with 79 effect sizes examining male IPH perpetration and 69 effect sizes examining female IPH victimization. The sample size of all studies included in the analysis was 10,143.

Figure 1: Flow Chart of Study Selection



Coding Procedures

Recommended coding procedures were followed in this study (Card, 2012; Hunter & Schmidt, 2004). A 19-item code sheet was used by the research team in order to gather information from each study included in the analysis (See Appendix A). Information gathered from the study included: the sample size from the study, the gender of the perpetrator and/or victim, the country where the data were collected, if the study examined homicide and/or attempted homicide, who was the comparison sample in the study, if homicides in the study were described as self-defense, as well as statistical information that allowed for the calculation of bivariate effect sizes. All studies included in the analysis were cross-coded by two separate research team members, one of whom was the project leader, with a 99.24% agreement rate. When there were discrepancies in the coding, the research team members met and discussed the discrepancy in order to gain a deeper understanding of that particular study, and came to an agreement on the correct coding (Hawkins, Blanchard, Baldwin, & Fawcett, 2008). Comprehensive Meta-Analysis 3.0 software (Borenstein, Hedges, Higgins, & Rothstein, 2014) was used to enter data and analyze effect sizes for IPH perpetration and victimization.

Statistical Approach and Analyses

A random-effects approach was used in this meta-analysis. A random-effects approach is used when it would seem theoretically appropriate to assume that there were real population differences between studies (Borenstein, Hedges, Higgins & Rothenstein, 2010). The samples in the studies used in this meta-analysis came from different countries around the world, came from different time periods, and had different samples; thus, it would be theoretically sound to assume that there were population differences between studies. The random-effects approach also

accounts for within-study and between-study variance, which allows for greater generalizability of the results obtained in this meta-analysis (Card, 2012).

One potential problem that all meta-analyses face is the “file drawer problem,” which refers to the fact that insignificant studies often go unpublished, and thus are not able to be used in the study (Hunter & Schmidt, 2004). In order to combat this limitation, standard tests were conducted to evaluate the potential impact that publication biases could have on our effect sizes. Comprehensive Meta-Analysis 3.0 software (Borenstein, Hedges, Higgins, & Rothstein, 2014) was used to conduct these tests. First, Duval and Tweedie’s (2000) trim and fill test was conducted in order to analyze any asymmetrical distributions of effect sizes included in the current meta-analysis. Next, fail-safe N ’s for each risk factor were calculated in order to determine the number of potential missing studies with insignificant findings needed to pull the mean effect size above the significance level of $p < .05$ (Rosenthal, 1979). Lastly, Orwin’s fail-safe N ’s were calculated in order to test the number of potential missing studies with an effect size of $r = .00$ that would be needed in order to reduce the mean effect size of each risk factor in the study below the lower limit of what is considered a small effect size of $r = .10$ (Cohen 1992; Orwin, 1983).

Comprehensive Meta-Analysis 3.0 software (Borenstein, Hedges, Higgins, & Rothstein, 2014) was used to analyze the effect sizes for male IPH perpetration and female IPH victimization. Only bivariate effect sizes were used in the analysis (such as unadjusted odds ratios, correlations, and independent groups means and standard deviations) Unadjusted odds ratios were calculated in order to determine which risk factors increased the odds of IPH at the highest level. For studies that examined a risk factor in more than one way (i.e., problematic drinking behaviors and frequency of drinking), mean effect sizes were combined for that

particular study to include one effect size per risk factor per study. Unadjusted odds ratios were calculated for the following risk factors for male IPH perpetration that had three or more effect sizes: Controlling behaviors, direct access to guns, having less than a high school education, jealousy, mental health issues, previously strangled the victim, previously raped the victim, previously stalked the victim, prior criminal charges, substance abuse, threatened the victim with a weapon, threatened to harm the victim, unemployment, violence toward non-family members, and young age. The unadjusted odds ratios were calculated for risk factors of female IPH victimization that had three or more effect sizes: abused while pregnant, children from a previous relationship, children with the perpetrator, employed, higher level of income, having less than a high school education, length of relationship with the perpetrator, married to the perpetrator, separation from the perpetrator, substance abuse, and young age. In addition to the odds ratios, the confidence intervals were calculated for each risk factor, which provides the range in which the mean effect size could fall 95% of the time within the studies in the analysis. The prediction intervals were also calculated for each risk factor, which is considered to be the most accurate measure of heterogeneity between studies (Borenstein, Higgins, Hedges & Rothstein, 2017; Graham & Moran, 2012; IntHout, Ioannidis, Rovers & Goeman, 2016). The prediction intervals provide the range in which the true effect size will fall in 95% of all populations (Borenstein, Higgins, Hedges & Rothstein, 2017).

Chapter 4 - Results and Discussion

Results

Study Characteristics

A total of 17 studies with 148 effect sizes were included in the current analysis (see Appendix B for details). Studies included in the analysis examined risk factors for male IPH perpetration or female IPH victimization of attempted or completed IPH. From all studies, there was a combined sample size of 10,143. The majority of studies were from peer-reviewed academic journals ($n = 15$) and the other studies were dissertations ($n = 2$). The majority of the studies were located in the United States ($n = 11$) and the rest were from international samples ($n = 6$), which included Canada, Portugal, Spain, and Britain. For most of the studies, the outcome was IPH ($n = 14$) and in the rest of the studies the outcome was a combined sample of IPH and attempted IPH ($n = 6$). All studies examined either female victims of IPH or male perpetrators of IPH.

Analyses of Publication Bias

In order to combat the “file drawer problem” that impacts all meta-analyses (Hunter & Schmidt, 1990), Duval and Tweedie’s trim and fill test (Duval & Tweedie, 2000), the classic fail-safe N test (Rosenthal, 1979), and Orwin’s fail-safe N test (Orwin, 1983) were utilized to evaluate the possibility of publication biases impacting the significant results in this meta-analysis (See Table 1). First, Duval and Tweedie’s trim and fill test was conducted (Duval & Tweedie, 2000). If there was no publication bias present, the studies included in the analysis would be symmetrically distributed on a funnel plot. Duval and Tweedie’s trim and fill test uses a funnel plot in order to evaluate if there was an asymmetrical distribution in the studies included in the meta-analysis, and then imputed and plotted any potential missing studies onto the funnel

plot (Duval & Tweedie, 2000). For male IPH perpetration, the Duval and Tweedie's trim and fill test imputed zero potential missing studies for direct access to guns, substance abuse, and employment. One potential missing study was imputed for age, education, jealousy, mental health issues, threatened to harm the victim, and raped victim/perpetrated forced sex. There were two potential missing studies imputed for perpetrated controlling behaviors, non-fatal strangulation, perpetrated stalking, and threatened victim with a weapon. For IPH victimization, there were zero potential missing studies plotted/imputed for separation and, one potential missing study imputed for abused while pregnant and children from a previous relationship, two potential missing studies for substance abuse, and three potential missing studies for education. For all significant risk factors for IPH perpetration and IPH victimization in the analysis, the impact of the imputed potential missing studies was trivial (Borenstein, Hedges, Higgins & Rothstein, 2009).

The classic fail-safe N was used to evaluate how many non-significant studies would be required to nullify the current effect, thus bringing the significance above $p < .05$ (Rosenthal, 1979). The recommended number of studies for the classic fail-safe N was determined by multiplying the number of effect sizes by five, and then adding ten to that number (Rosenthal, 1979). If the classic fail-safe N exceeded this number, it can be determined that the effect size for that particular risk factor was robust against publication bias. For male IPH perpetration, age, controlling behaviors, direct access to guns, education, jealousy, perpetrated non-fatal strangulation, perpetrated stalking, raped victim/perpetrated forced sex, substance abuse, threatened to harm victim, and threatened victim with a weapon were all robust against possible publication bias. The perpetrator's employment and mental health issues were not found to be robust against possible publication bias according to the classic fail-safe N test (Rosenthal,

1979). This was predominately due to the low number of effect sizes, as well as the fact that these two risk factors were found to be weaker risk factors for male IPH perpetration compared to the other significant risk factors examined in the meta-analysis. For female IPH victimization, all risk factors were found to be robust against possible publication bias.

Lastly, Orwin's fail-safe N was calculated in order to determine the number of potential missing studies with an effect size of $r = .00$ that would be needed to pull the mean effect size of the risk factor down to the trivial level of $r = .10$ (Cohen, 1992). For male IPH perpetration, all risk factors were robust against publication bias according to Orwin's fail-safe N test, except for employment and mental health issues. Again, this was predominately due to the fact that these risk factors were weaker than the other risk factors examined in this meta-analysis, making them more vulnerable to potential publication bias. For female IPH victimization risk factors, all risk factors were robust against potential publication bias.

Table 1: Duval and Tweedie’s Trim and Fill (Random Effects), Classic Fail-Safe N, and Orwin’s Fail-Safe N Tests for Risk Factors for IPH

Risk Factor	k	Trim and Fill Imputed Studies	Classic Fail-Safe N	Orwin’s Fail-Safe N <i>r to .10</i>
<i>Male Perpetration</i>				
Age (Young Age)	5	1	36	3
Controlling Behaviors	4	2	187	15
Direct Access to Guns	5	0	263	22
Education (Low)	6	1	48	5
Employed ♦	8	0	10	4
Jealousy	5	1	91	9
Mental Health Issues ♦	5	1	10	0
Perpetrated Non-Fatal Strangulation	5	2	395	23
Perpetrated Stalking	4	2	184	9
Raped Victim/Perpetrated Forced Sex	4	1	208	15
Substance Abuse	6	0	206	9
Threatened to Harm Victim	8	1	1041	27
Threatened Victim with a Weapon	5	2	295	20
<i>Female Victimization</i>				
Separated from Partner	9	0	527	15
Children from Previous Relationship	4	1	35	7
Abused while Pregnant	4	1	93	11
Education (Low)	9	3	399	13
Substance Abuse	4	2	219	12

♦ = Indicates risk factors were not robust against possible publication bias

Risk Factors for Male IPH Perpetration

The risk factor that increased the odds of IPH occurring the greatest was the perpetrator's direct access to guns ($OR = 11.17, p < .001$; See Table 2). This means that the perpetrator had direct access to guns in their home, or could readily access a gun. This suggests that a perpetrator's direct access to guns increased the likelihood of IPH compared to IPV by eleven times. If the perpetrator had previously threatened the victim with a weapon ($OR = 7.36, p < .001$) or if the perpetrator had previously non-fatally strangled the victim ($OR = 7.23, p < .001$), the likelihood of IPH was increased by approximately seven times. If the perpetrator had forced the victim to have sex with him ($OR = 5.44, p < .001$) the likelihood of IPH was increased by over five times. Other significant risk factors for IPH included the perpetrator's controlling behaviors ($OR = 4.25, p < .001$), if the perpetrator previously threatened to harm the victim ($OR = 4.83, p < .001$), if the perpetrator had stalked the victim ($OR = 3.13, p < .001$), and if the perpetrator exhibited jealous behaviors ($OR = 2.58, p < .001$). The perpetrator's substance abuse, which includes both drug and alcohol use increased the likelihood of IPH by 85% ($OR = 1.85, p < .001$). If the perpetrator had less than a high school education ($OR = 1.70, p < .05$), it increased the likelihood of IPH by 70%. If the perpetrator was younger in age ($OR = 1.68, p < .01$) it increased the likelihood of an IPH by 68%, and if the perpetrator had a history of mental health problems ($OR = 1.30, p < .01$) the likelihood of IPH increased by 30%. If the male was employed, the likelihood of IPH was decreased by 50% ($OR = 0.50, p < .001$). Having a history of violence towards non-family members and prior criminal charges were not significant risk factors for male IPH perpetration.

Table 2: Risk Factors for Male Perpetration of Intimate Partner Homicide

Risk Factor	<i>k</i>	<i>OR</i>	95% CI	95% PI
<i>Male Perpetration</i>				
Direct Access to Guns	5	11.17***	[4.31, 28.94]	[1.07, 128.74]
Threatened Victim with a Weapon	5	7.36***	[2.99, 18.11]	[1.37, 39.54]
Perpetrated Non-Fatal Strangulation	5	7.23***	[4.61, 11.34]	[1.61, 32.36]
Controlling Behaviors	4	5.60***	[4.41, 7.13]	[3.30, 9.52]
Raped Victim/Perpetrated Forced Sex	4	5.44***	[2.79, 10.61]	[0.70, 42.38]
Threatened to Harm Victim	8	4.83***	[2.61, 8.97]	[0.54, 42.49]
Perpetrated Stalking	4	3.13***	[2.58, 3.81]	[1.76, 5.60]
Jealousy	5	2.58***	[1.81, 3.70]	[0.88, 7.55]
Substance Abuse	6	1.85***	[1.19, 2.86]	[0.43, 8.03]
Less than High School Education	6	1.70*	[1.11, 2.62]	[0.43, 6.79]
Young Age	5	1.68***	[1.25, 2.25]	[0.67, 4.18]
Violent Towards Non-Family Members	3	1.53	[0.94, 2.48]	[0.38, 6.14]
Prior Criminal Charges	6	1.32	[0.84, 2.05]	[0.33, 5.15]
Mental Health Issues	5	1.30*	[1.06, 1.61]	[0.92, 1.84]
Employed	8	0.50***	[0.36, 0.70]	[0.33, 0.76]

Note: *k* = number of effect sizes; *OR* = Odds Ratio of the effect size; CI = confidence interval; PI = prediction interval.

* $p < .05$. ** $p < .01$. *** $p < .001$ (two-tailed).

Risk Factors for Female IPH Victimization

When examining risk factors for female IPH victimization, it was found that being previously abused by the perpetrator while pregnant ($OR = 3.93, p < .001$; See Table 3), increased the likelihood of IPH by nearly four times. If the victim used substances ($OR = 2.56, p < .001$), if the victim had less than a high school education ($OR = 2.45, p < .001$), if the victim was separated from the perpetrator ($OR = 2.33, p < .001$), and if the victim had children from a previous relationship/not sired by the abuser ($OR = 2.29, p < .001$) the likelihood of IPH increased by over two times. Having children with the perpetrator, the victim being younger in age, the length of the relationship with the perpetrator, being married to the perpetrator, having a high level of income, and the victim being employed were not significant risk factors for female IPH victimization.

Table 3: Risk Factors for Female Victimization of Intimate Partner Homicide

Risk Factor	<i>k</i>	<i>OR</i>	95% CI	95% PI
<i>Female Victimization</i>				
Abused While Pregnant	4	3.93***	[2.99, 5.18]	[2.16, 7.18]
Substance Abuse	4	2.56***	[1.78, 3.67]	[0.86, 7.59]
Less than a High School Education	9	2.45***	[2.02, 2.99]	[1.44, 4.16]
Separated from Perpetrator	9	2.33***	[1.64, 3.30]	[0.71, 7.63]
Children from Previous Relationship	4	2.29***	[1.48, 3.53]	[0.44, 11.90]
Young Age	9	1.30	[0.96, 1.77]	[0.46, 3.69]
Children with Perpetrator	5	1.17	[0.80, 1.71]	[0.42, 3.22]
Length of Relationship with Perpetrator	4	1.17	[0.89, 1.54]	[0.05, 25.46]
Married to Perpetrator	8	0.84	[0.52, 1.38]	[0.32, 2.20]
Employed	10	0.82	[0.65, 1.04]	[0.42, 1.51]
Higher Income Level	3	0.71	[0.48, 1.03]	[0.25, 2.00]

Note: *k* = number of effect sizes; *OR* = Odds Ratio of the effect size; CI = confidence interval; PI = prediction interval.

* $p < .05$. ** $p < .01$. *** $p < .001$ (two-tailed).

Discussion

This meta-analysis examined risk factors for male IPH perpetration and female IPH victimization. This study compared IPH perpetrators and victims versus IPV perpetrators and victims as a means to examine risk factors that may put individuals who have experienced violence in their relationship at a greater risk for IPH. The risk factor that increased the likelihood of IPH the highest was if the male perpetrator had direct access to guns. Other significant risk factors for male IPH perpetration included if he had previously threatened the victim with a weapon, had previously strangled the victim, had perpetrated forced sex, exhibited controlling behaviors, had threatened to harm the victim, previously stalked the victim, was jealous, used substances, had less than a high school education, was younger in age, and had a history of mental health issues. If the perpetrator was employed, it decreased the likelihood of IPH. The perpetrator's history of violence towards non-family members or prior criminal charges were not significant risk factors for IPH perpetration.

If the female victim had been previously abused by the perpetrator while pregnant, used substances, had less than a high school education, was separated from the perpetrator, or had children from a previous relationship the likelihood of IPH was increased. Being younger in age, having children with the perpetrator, the length of the relationship with the perpetrator, being married to the perpetrator, being employed and having a higher income were not significant risk factors for IPH victimization. It is also important to note that overall, perpetrator risk factors were more strongly related to an increase in the odds of an IPH occurring compared to victim risk factors. This may suggest that it may be more important to examine factors related to the perpetrator than the victim when assessing for the potential occurrence of an IPH.

One of the major findings from this study is that when comparing male IPV offenders to male IPH perpetrators, having direct access to a gun increased the likelihood of IPH by more than 11 times, or over 1000%. This number warrants serious attention. Previous research has identified previous IPV as one of the most important risk factors for IPH (Campbell et al., 2007), and results from this study support the importance of making sure IPV perpetrators do not have access to guns. According to 18 U.S.C. § 922(g)(9), an individual who has been convicted of a misdemeanor level crime of domestic violence is prohibited from possessing, shipping, transporting or receiving ammunition or firearms. Results from this study support the necessity of enforcing this law. Results from this study suggest that limiting access to lethal means by enforcing laws prohibiting IPV perpetrators from owning guns, is a possible way to decrease incidences of IPH.

Also, according to exposure reduction theory, providing resources that allow victims of IPV to leave abusive relationships may also aid in decreasing rates of IPH (Dugan, Nagin & Rosenfeld, 2003; Reckdenwald & Parker, 2012). In support of exposure reduction theory, many of the risk factors for IPH that increased the likelihood of IPH by the highest percentages are instances of certain acts of previous violence towards the victims, such as threatening to harm the victim, threatening the victim with a weapon, perpetrating non-fatal strangulation, perpetrating forced sex, perpetrating stalking, and if the victim was previously abused while she was pregnant. Previous research has found that survivors of attempted IPH generally underestimated the dangerousness of the situation (Nicolaidis et al., 2003; Farr, 2002). Many victims of attempted homicide did not think their partner was capable of trying to kill them. These specific IPV-related risk factors for IPH highlight the importance of law enforcement personnel, medical personnel, first responders, victim advocates, and mental health professionals knowing the

seriousness of these risk factors and educating survivors of IPV regarding the dangerousness of the situation they are currently in as means to potentially reduce the likelihood of IPH. Non-fatal strangulation is a risk factor of particular concern, as there may not be any external signs of strangulation (such a bruising) or the victim may not remember what had happened due to a lack of oxygen during the attack (Wilbur et al., 2001). It is necessary that helping professionals who are working with survivors of IPV assess whether or not victims have been strangled, and educate survivors of the seriousness of the situation they are or were in. This also suggests the importance of serious consequences for perpetrators of strangulation, as well as other forms of IPV, who may be escalating in their level and frequency of violence.

Our results found risk factors associated with male sexual proprietariness theory (Daly & Wilson, 1988; Wilson & Daly, 1993) are also significant risk factors for IPH. If the perpetrator is controlling towards the victim, is sexually jealous of the victim, is stalking the victim, has perpetrated forced sex, if the woman has children from a previous relationship, or if she is separated from the perpetrator, it is important to take the potential for IPH very seriously. This level of control and jealousy may increase the likelihood of the occurrence of IPH, and it is imperative to warn the victim of the potential dangerousness of the situation. Also, it is important for professionals to take these signs seriously when working with or in contact with IPV perpetrators. This also highlights the importance of providing safe ways for women to exit abusive relationships. Although research has found that separation is a risk factor for IPH, as did this study, previous research suggests that the risk of IPH decreases three months after leaving the abuser (Barnard, Vera, Vera & Newman, 1982; Wilson & Daly, 1993). Research also supports that leaving an abusive relationship will decrease the long term risk of IPH (Dugan,

Nagin & Rosenfeld, 2003); thus, providing safe ways to exit abusive relationships is necessary to help protect women leaving abusive relationships.

The factors examined in this meta-analysis that were not significant risk factors for IPH may be just as important for helping professionals to know. Our study found that many of the factors that were related to the relationship between the perpetrator and victim (i.e., length of relationship, if the perpetrator and victim were married, and whether or not the victim and perpetrator had children together) were not significant risk factors for IPH. This suggests that IPH impacts all types of relationships (i.e., short and long term relationships, married and dating relationships, as well as whether or not the couple had children); and it is important that those working with potential perpetrators and victims do not stereotype who may be more at risk due to their relationship characteristics. Although demographic characteristics were significant risk factors for male IPH perpetration, age, employment status, and income level were not significant risk factors for female IPH victimization. This may indicate that examining the perpetrator's demographic factors may be more important than examining the potential female victim's demographic factors, or that IPH impacts women from all social classes and statuses. It is also important to note that the perpetrator's prior criminal charges or violent behaviors toward non-family members were not statistically significant risk factors for IPH. Again, this suggests that law enforcement personnel, medical professionals, victim advocates, or mental health professionals must not believe that an individual is less likely to perpetrate IPH due to a lack of criminal or violent history.

The results from this study offer support for risk factors identified in prominent risk assessments in the field. The Danger Assessment (Campbell, Webster & Glass, 2009) identifies owning a gun, separation, threatening to harm the victim, unemployment, having a child from a

previous relationship, perpetration of forced sex/rape, non-fatal strangulation, perpetrator substance abuse, controlling behaviors, jealousy, perpetrator abusing victim while she was pregnant, and stalking as risk factors to assess for, all of which our meta-analysis found to be significant risk factors for male perpetrated IPH. The Spouse Abuse Risk Assessment (Kropp et al., 1995) identifies relationship problems (which can include separation), employment problems, perpetrator substance abuse, perpetrator mental illness, sexual assault, jealousy, threats of harm or death, escalation of assault (which can include non-fatal strangulation), and past violations of “no contact” orders (which could be considered stalking), all of which were found to be significant risk factors in this meta-analysis.

The results from this meta-analysis can aid in informing practitioners of many different disciplines regarding the risk factors for IPH. However, it is still incredibly important that practitioners and professionals incorporate their own professional judgment when conducting risk assessments (Kropp, 2008). Researchers have also pointed out that there may be risk factors that may be difficult to empirically test, and have not been examined through quantitative studies, which highlights the importance of practitioners and professionals having a balance between empirical support and professional discretion while assessing for risk of violence or homicide (Douglas & Kropp, 2002; Kropp & Cook, 2013). Structured professional judgment has been an approach to risk assessment that combines the importance of professionals and practitioners using their own professional judgment/discretion combined with a focus on empirically supported risk factors/risk assessments (Douglas & Kropp, 2002; Kropp, 2008). The results from this meta-analysis can aid professionals in identifying empirically supported risk factors for IPH, but professional discretion is still needed in risk assessment.

Clinical Implications

Results from this meta-analysis can be used to aid couple and family therapists working with couples who have experienced violence in their relationship. For therapists working with couples where a history of IPV has been reported, it would be imperative to assess for significant risk factors for IPH perpetration and victimization. For example, if a therapist were working with a couple with a history of IPV, it would be necessary for the therapist to assess whether or not there were guns in the home, or if a gun could be readily accessed by a partner who had perpetrated IPV. It has been regarded as a best practice for therapists to emphasize the importance of removing guns from the home when working with suicidal clients (Simon, 2004), and results from this study suggest it is also important to emphasize removing guns from the home when working with couples who have experienced IPV.

It would also be important for therapists to assess for other significant risk factors for IPH as a means to determine if couples therapy is even an appropriate option for the couple they are treating. Risk factors that may indicate couples therapy as an unsuitable treatment option may include if the perpetrator has threatened the victim with a weapon, if the perpetrator had non-fatally strangled the victim, or if the perpetrator had previously raped the victim/forced the victim to have sex with them. If a couple and family therapist is working with a couple who they deem to be suitable for couples treatment, it would still be important to assess for risk factors for IPH and educate the couple of the seriousness or dangerousness of these behaviors (i.e., jealousy, threats, controlling behaviors, if the IPV occurred while the victim was pregnant, or substance abuse).

Results from this meta-analysis may also aid therapists who work individually with victims of IPV. Research has found that survivors of attempted IPH generally underestimated or

minimized the danger they were truly in (Nicolaidis et al., 2003; Farr, 2002). If a therapist is working with a victim of IPV, it may be important or helpful for the therapist to provide information and educate the victim of the potential dangerousness of the situation and the behaviors the perpetrator is exhibiting. If a victim of IPV has left an abusive relationship, it may also be important for the therapist to continue to assess if the perpetrator is continuing to threaten, stalk, or exhibit jealous behaviors toward the victim. By assessing for significant risk factors for IPH, therapists may aid in identifying individuals at an increased risk of IPH, and offer resources to help prevent escalated violence from occurring. Lastly, it is also important to note the necessity of therapists using their own professional discretion in conjunction with empirical evidence when assessing for risk of danger or homicide (Douglas & Kropp, 2002; Kropp & Cook, 2013).

Limitations and Future Research

The major limitation of this study is the lack of studies that were able to be included in this meta-analysis, as well as the limited number of effect sizes found for each risk factor. The lack of effect sizes that were identified for each risk factor led to the high level of variability in the prediction intervals in this study. If there were more effect sizes for each risk factor in the analysis, it could provide a more focused understanding of the risk associated with the factors examined in this study. This suggests that there is a continued need to research risk factors for IPH. The majority of the studies excluded in our analysis were excluded because they did not use comparison groups in their studies, which did not allow for us to examine true risk factors of IPH. Future research would benefit from the use of comparison samples in order to truly examine what would put individuals at a greater risk of IPH, rather than reporting solely on prevalence rates. Also, there were several risk factors of interest identified for this meta-analysis that we

were not able to be included in the meta-analysis, due to not having three or more effect sizes to analyze. For example, we did not find enough effect sizes for neighborhood-level risk factors for IPH. This suggests that future research may benefit from examining less-known risk factors for IPH to determine if there are other possible important risk factors missing from the current literature.

There were also several risk factors included on the Danger Assessment (Campbell, Webster & Glass, 2009) and the Spouse Assault Risk Assessment (Kropp et al., 1995) that we did not include in the analysis because we did not find enough effect sizes, which would be of interest to examine in future research. For example, we did not find enough effect sizes to examine if the perpetrator was suicidal, if the victim was suicidal, if the perpetrator had threatened to harm the children, if the violence had escalated in frequency, and if the perpetrator held attitudes that condoned IPV were significant risk factors for IPH in this meta-analysis. Lastly, this analysis only examined bivariate relationships between risk factors and IPH. Future research would benefit from continued examination of covariates and how risk factors may relate to one another, or how certain combinations of risk factors may increase the risk of IPH perpetration or victimization.

Conclusion

This was the first meta-analysis conducted examining risk factors for male IPH perpetration and female IPH victimization. Results from this study found that the perpetrator's direct access to guns was the risk factor that increased the likelihood of IPH by the highest percent. Other significant risk factors of male IPH perpetration included: threatening the victim with a weapon, perpetrating non-fatal strangulation, perpetrating forced sex, controlling behaviors, threatening to harm the victim, stalking, jealousy, substance abuse, having less than a

high school education, perpetrator's young age, and a history of mental health issues. Significant risk factors for IPH victimization were if the victim was abused while pregnant, substance abuse, having less than a high school education, separation, and having children from a previous relationship. The victim being employed decreased the likelihood of IPH. Overall, it is necessary for policy makers who determine gun-related laws when there has been an IPV conviction, law enforcement personnel, first responders, medical professionals, mental health professionals, and victim advocates to understand the risk factors for IPH. This may aid in identifying individuals who have experienced IPV in their relationship and may be at a greater risk for perpetrating or being victims of IPH and may prevent future IPH.

Chapter 5 - References

*indicates the study was used in the meta-analysis.

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Appendix A - Meta-Analysis Code Sheet

This is the official (corrected) code sheet: NO YES

Coding discrepancies on these items _____

Total number if coding discrepancies _____

01) Coder ID Number _____

02) Date Coded ___/___/___ (mm/dd/yy)

03) Study ID Number _____

Source Characteristics

Page:

04) Last names of Author(s)

Page:

05) Year of printed Publication _____

Page:

06) Type of Publication ____ (#)

1. Journal Article
2. Book Chapter
3. Dissertation/Thesis
4. Conference Presentation
5. Other _____

Page:

07) Journal/Book Title

Page:

08) Article/Chapter Title

- Page:** 09) What is the name of this data set (or brief description of data set)?

- Page:** 10) What was the combined sample size for this particular study? N = _____
- Page:** 11) What is the N for each racial/ethnic group in the study?
White/Caucasian _____ Black/African American _____ Latino/Hispanic _____
Asian _____ Native American _____ Other _____
- Page:** 12) From where was the sample collected? _____ (#)
1. International
2. United States
3. Both
- Page:** 13) From which international country was the sample collected? _____
- Page:** 14) Does this study examine: _____
1. Homicide 2. Homicide/Suicide
- Page:** 15) Were the perpetrators and victims: _____
1. In a Current Relationship
2. In a Previous Relationship
3. Unknown
- Page:** 16) Were the perpetrators: _____
1. Male 2. Female 3. Both
- Page:** 17) Were the victims: _____
1. Male 2. Female 3. Both
- Page:** 18) Did the study examine: _____
1. Only homicide 2. Homicide & Attempted Homicide
- Page:** 19) Did the study explicitly report homicide as self-defense? _____
1. Yes 2. No
- Page:** 20) What is the comparison group used in the study?
1. IPV
2. No Abuse/Community Sample

Specific # for risk factor _____ & Name of risk factor _____

Brief description of risk factor _____ Page _____

Name of Instrument/Scale _____ [N = _____]

What data will be used for the effect size? ____ (#)

1. Pearson r / Correlation Matrix
2. Hedges' g
3. Cohen's d
4. o (odds ratio)
5. o (odds ratio adjusted)
6. F -ratio
7. T-test
8. Chi-squared (X^2)
9. Z score

Who is the Perpetrator: <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Both Who is the Victim: <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Both Who Has the Risk Factor? <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Both -Is this person a <input type="checkbox"/> Victim <input type="checkbox"/> Perpetrator

<i>Dependent</i> (or) <i>Independent</i>	Group 1 = _____ Mean = _____ SD = _____ N = _____
	Group 2 = _____ Mean = _____ SD = _____ N = _____
	Group 3 = _____ Mean = _____ SD = _____ N = _____
	Group 4 = _____ Mean = _____ SD = _____ N = _____

Specific # for risk factor _____ & Name of risk factor _____

Brief description of risk factor _____ Page _____

Name of Instrument/Scale _____ [N = _____]

What data will be used for the effect size? ____ (#)

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<i>Dependent</i> (or) <i>Independent</i>	Group 1 = _____ Mean = _____ SD = _____ N = _____
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	Group 3 = _____ Mean = _____ SD = _____ N = _____
	Group 4 = _____ Mean = _____ SD = _____ N = _____

Specific # for risk factor _____ & Name of risk factor _____

Brief description of risk factor _____ Page _____

Name of Instrument/Scale _____ [N = _____]

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	Group 3 = _____ Mean = _____ SD = _____ N = _____
	Group 4 = _____ Mean = _____ SD = _____ N = _____

Specific # for risk factor _____ & Name of risk factor _____

Brief description of risk factor _____ Page _____

Name of Instrument/Scale _____ [N = _____]

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	Group 3 = _____ Mean = _____ SD = _____ N = _____
	Group 4 = _____ Mean = _____ SD = _____ N = _____

Specific # for risk factor _____ & Name of risk factor _____

Brief description of risk factor _____ Page _____

Name of Instrument/Scale _____ [N = _____]

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<i>Dependent</i> (or) <i>Independent</i>	Group 1 = _____ Mean = _____ SD = _____ N = _____
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	Group 3 = _____ Mean = _____ SD = _____ N = _____
	Group 4 = _____ Mean = _____ SD = _____ N = _____

Specific # for risk factor _____ & Name of risk factor _____

Brief description of risk factor _____ Page _____

Name of Instrument/Scale _____ [N = _____]

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<i>Dependent</i> (or) <i>Independent</i>	Group 1 = _____ Mean = _____ SD = _____ N = _____
	Group 2 = _____ Mean = _____ SD = _____ N = _____
	Group 3 = _____ Mean = _____ SD = _____ N = _____
	Group 4 = _____ Mean = _____ SD = _____ N = _____

Specific # for risk factor _____ & Name of risk factor _____

Brief description of risk factor _____ Page _____

Name of Instrument/Scale _____ [N = _____]

What data will be used for the effect size? ____ (#)

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<i>Dependent</i> (or) <i>Independent</i>	Group 1 = _____ Mean = _____ SD = _____ N = _____
	Group 2 = _____ Mean = _____ SD = _____ N = _____
	Group 3 = _____ Mean = _____ SD = _____ N = _____
	Group 4 = _____ Mean = _____ SD = _____ N = _____

Specific # for risk factor _____ & Name of risk factor _____

Brief description of risk factor _____ Page _____

Name of Instrument/Scale _____ [N = _____]

What data will be used for the effect size? ____ (#)

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<i>Dependent</i> (or) <i>Independent</i>	Group 1 = _____ Mean = _____ SD = _____ N = _____
	Group 2 = _____ Mean = _____ SD = _____ N = _____
	Group 3 = _____ Mean = _____ SD = _____ N = _____
	Group 4 = _____ Mean = _____ SD = _____ N = _____

Appendix B - Study Characteristics

Risk Factor	Study	Sample Size	Homicide Only or Combined Attempted & Completed Homicide	Odds Ratio
Perpetrator Risk Factors				
Controlling Behaviors				
	Campbell et al., 2003	1126	Homicide Only	5.96
	Dobash et al., 2007	228	Homicide Only	5.09
	Glass et al., 2008	76	Homicide Only	4.10
	Koziol-McLain et al., 2006	575	Homicide Only	5.59
Direct Access to Guns				
	Alford, 1995	98	Homicide Only	2.95
	Campbell et al., 2003	1126	Homicide Only	68.06
	Glass et al., 2008	76	Homicide Only	30.55
	Koziol-McLain et al., 2006	575	Homicide Only	5.56
	Wiltsey, 2008	218	Homicide Only	9.79
Employed				
	Campbell et al., 2003	1126	Homicide Only	0.31
	Campbell, Webster & Glass, 2009	828	Combined	0.34
	Cunha & Goncalves, 2016	172	Homicide Only	1.36
	Cunha & Goncalves, 2016b	187	Combined	1.51
	Dobash et al., 2007	228	Homicide Only	0.53
	Koziol-McLain et al., 2006	575	Homicide Only	0.32
	Sharps et al., 2001	2280	Combined	0.38
	Wiltsey, 2008	218	Homicide Only	0.80

Jealousy

Alford, 1995	98	Homicide Only	0.58
Campbell et al., 2003	1126	Homicide Only	3.05
Echeburua et al., 2009	1081	Combined	2.58
Glass et al., 2008	76	Homicide Only	3.08
Koziol-McLain et al., 2006	575	Homicide Only	3.40

Less than High School Education

Cunha & Goncalves, 2016	172	Homicide Only	1.05
Cunha & Concalves, 2016b	187	Combined	1.38
Dobash et al., 2007	228	Homicide Only	1.04
Echeburua et al., 2009	1081	Combined	1.27
Koziol-McLain et al., 2006	575	Homicide Only	3.58
Sharps et al., 2001	2280	Combined	2.37

Mental Health Issues

Cunha & Goncalves, 2016	172	Homicide Only	0.96
Dutton & Kerry, 1999	140	Homicide Only	0.72
Echeburua et al., 2009	1081	Combined	1.45
Eke et al., 2011	146	Homicide Only	1.47
Koziol-McLain et al., 2006	575	Homicide Only	1.38

Perpetrated Non-Fatal Strangulation

Campbell et al., 2003	1126	Homicide Only	11.77
Dobash et al., 2007	228	Homicide Only	3.27
Glass et al., 2008	76	Homicide Only	4.36
Glass et al., 2008b	737	Homicide Only	7.48
Koziol-McLain et al., 2006	575	Homicide Only	9.92

Perpetrated Stalking

Campbell et al., 2003	1126	Homicide Only	4.19
Koziol-McLain et al., 2006	575	Homicide Only	3.94
McFarlane et al., 2002	687	Combined	3.23
McFarlane, Campbell & Watson, 2002	821	Combined	2.62

Prior Criminal Charges

Alford, 1995	98	Homicide Only	1.66
Campbell et al., 2003	1126	Homicide Only	2.14
Cunha & Goncalves, 2016	172	Homicide Only	0.88
Dobash et al., 2007	228	Homicide Only	0.41
Eke et al., 2011	146	Homicide Only	1.23
Koziol-McLain et al., 2006	575	Homicide Only	2.00

**Raped
Victim/Perpetrated
Forced Sex**

Campbell et al., 2003	1126	Homicide Only	7.60
Dobash et al., 2007	228	Homicide Only	23.11
Echeburua et al., 2009	1081	Combined	2.72
Koziol-McLain et al., 2006	575	Homicide Only	7.63

Substance Abuse

Campbell et al., 2003	1126	Homicide Only	3.24
Cunha & Goncalves, 2016	172	Homicide Only	0.48
Dobash et al., 2007	228	Homicide Only	0.87
Echeburua et al., 2009	1081	Combined	2.06
Koziol-McLain et al., 2006	575	Homicide Only	3.10
Sharps et al., 2001	2280	Combined	2.61

**Threatened to Harm
Victim**

Alford, 1995	98	Homicide Only	1.46
Campbell et al., 2003	1126	Homicide Only	16.31
Echeburua et al., 2009	1081	Combined	1.71
Glass et al., 2008	76	Homicide Only	9.49
Koziol-McLain et al., 2006	575	Homicide Only	14.71
McFarlane et al., 2002	687	Combined	4.58
McFarlane, Campbell & Watson, 2002	821	Combined	4.56
Wiltsey, 2008	218	Homicide Only	2.08

**Threatened Victim with
a Weapon**

Echeburua et al., 2009	1081	Combined	3.36
Glass et al., 2008	76	Homicide Only	6.71
Koziol-McLain et al., 2006	575	Homicide Only	23.30
McFarlane, Campbell & Watson, 2002	821	Combined	6.74
Wiltsey, 2008	218	Homicide Only	5.67

Violent Towards Others

Cunha & Goncalves, 2016	172	Homicide Only	0.62
Echeburua et al., 2009	1081	Combined	1.66
Koziol-McLain et al., 2006	575	Homicide Only	2.21

Young Age

Campbell et al., 2003	1126	Homicide Only	1.83
Cunha & Goncalves, 2016	172	Homicide Only	2.48
Cunha & Goncalves, 2016b	187	Homicide Only	1.95
Echeburua et al., 2009	1081	Combined	0.92
Koziol-McLain et al., 2006	575	Homicide Only	1.87

Victim Risk Factors

Abused While Pregnant

Campbell et al., 2003	1126	Homicide Only	4.62
Glass et al., 2008	76	Homicide Only	3.24
Koziol-McLain et al., 2006	575	Homicide Only	3.71
McFarlane et al., 2002	687	Combined	3.72

Children with Perpetrator

Campbell, Webster & Glass, 2009	828	Combined	1.49
Cunha & Goncalves, 2016	172	Homicide Only	0.75
Taylor & Nables, 2009	743	Homicide Only	1.09

Children from Previous Relationship

Campbell et al., 2003	1126	Homicide Only	2.98
Koziol-McLain et al., 2006	575	Homicide Only	3.02
Taylor & Nables, 2009	743	Homicide Only	0.95
Wiltsey, 2008	218	Homicide Only	1.49

Employed

Alford, 1995	98	Homicide Only	2.80
Campbell et al., 2003	1126	Homicide Only	0.98
Campbell, Webster & Glass, 2009	828	Homicide Only	0.86
Glass et al., 2008	76	Homicide Only	0.23
Glass et al., 2008b	737	Homicide Only	1.20
Koziol-McLain et al., 2006	575	Homicide Only	1.00
McFarlane et al., 2002	687	Combined	0.58
McFarlane, Campbell & Watson, 2002	821	Combined	0.56
Sharps et al., 2001	2280	Combined	0.84
Taylor & Nables, 2009	743	Homicide Only	0.49

Higher Income Level

Campbell et al., 2003	1126	Homicide Only	0.47
Koziol-McLain et al., 2006	575	Homicide Only	0.87
Taylor & Nables, 2009	743	Homicide Only	0.85

Length of Relationship with Perpetrator

Campbell et al., 2003	1126	Homicide Only	1.63
Cunha & Goncalves, 2016	172	Homicide Only	1.13
McFarlane et al., 2002	687	Combined	1.67
McFarlane, Campbell & Watson, 2002	821	Combined	0.53

Less than a High School Education

Alford, 1995	98	Homicide Only	17.93
Campbell et al., 2003	1126	Homicide Only	2.28
Campbell, Webster & Glass, 2009	828	Combined	2.24
Glass et al., 2008	76	Homicide Only	2.44
Koziol-McLain et al., 2006	575	Homicide Only	2.26
McFarlane et al., 2002	687	Combined	2.26
McFarlane, Campbell & Watson, 2002	821	Combined	2.30
Sharps et al., 2001	2280	Combined	2.40
Taylor & Nables, 2009	743	Homicide Only	2.00

Married to Perpetrator

Alford, 1995	98	Homicide Only	0.55
Campbell, Webster & Glass, 2009	828	Combined	1.40
Cunha & Goncalves, 2016	172	Homicide Only	1.27
Cunha & Goncalves, 2016b	187	Combined	0.96
Dobash et al., 2007	228	Homicide Only	0.79
Eke et al., 2011	146	Homicide Only	2.47

	Koziol-McLain et al., 2006	575	Homicide Only	1.52
	Taylor & Nables, 2009	743	Homicide Only	0.57
Separated from Perpetrator				
	Campbell et al., 2003	1126	Homicide Only	3.09
	Campbell, Webster & Glass, 2009	828	Combined	4.69
	Dobash et al., 2007	228	Homicide Only	2.37
	Echeburua et al., 2009	1081	Combined	1.38
	Glass et al., 2008	76	Homicide Only	1.63
	Koziol-McLain et al., 2006	575	Homicide Only	3.89
	McFarlane et al., 2002	687	Combined	1.65
	McFarlane, Campbell & Watson, 2002	821	Combined	1.54
	Wiltsey, 2008	218	Homicide Only	2.66
Substance Abuse				
	Alford, 1995	98	Homicide Only	6.95
	Campbell et al., 2003	1126	Homicide Only	2.36
	Koziol-McLain et al., 2006	575	Homicide Only	2.30
	Sharps et al., 2001	2280	Combined	2.05
Young Age				
	Alford, 1995	98	Homicide Only	2.02
	Campbell et al., 2003	1126	Homicide Only	1.81
	Glass et al., 2008	76	Homicide Only	0.67
	Glass et al., 2008b	737	Homicide Only	3.19
	Koziol-McLain et al., 2006	575	Homicide Only	1.81
	McFarlane et al., 2002	687	Combined	2.33
	McFarlane, Campbell & Watson, 2002	821	Combined	2.58
	Taylor & Nables, 2009	743	Homicide Only	1.75
	Wiltsey, 2008	218	Homicide Only	1.03