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Identifying a History of Nonfatal Strangulation: What Impacts Screening by Healthcare, Law Enforcement and Advocates?

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IDENTIFYING A HISTORY OF NONFATAL STRANGULATION: WHAT IMPACTS
SCREENING BY HEALTHCARE, LAW ENFORCEMENT AND ADVOCATES?

by

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ABSTRACT

IDENTIFYING A HISTORY OF NONFATAL STRANGULATION: WHAT IMPACTS
SCREENING BY HEALTHCARE, LAW ENFORCEMENT AND ADVOCATES?

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Marquette University, 2019

Intimate partner violence (IPV) is a pervasive social epidemic in the United
States, affecting as many as one in four women in their lifetime (CDC, 2010). Nonfatal
strangulation (NFS) is one type of IPV, in which the application of external pressure on
the neck of the victim results in interruption of blood or oxygen flow (Shields et al.,
2010). Research has indicated that a history of nonfatal strangulation for victims of IPV
can indicate an increased risk for worsening violence, medical complications, or death.

Despite the identification of increased vulnerability for victims with a history of
nonfatal strangulation, there is a gap in practice and research regarding identification of
nonfatal strangulation cases by those who may care for victims. Victims may have
contact with healthcare team members, advocates, or law enforcement officials. A lack of
identification of cases can contribute to continued low reporting of this problem, low
help-seeking rates by victims, and failure to identify a victim's increased vulnerability for
adverse outcomes.

A nonexperimental, descriptive, correlational, cross-sectional design guided by
the Theory of Planned Behavior was used to identify what factors influence
professionals' intention to screen for NFS in IPV cases. Validity and reliability testing of
the newly developed Delwiche Intention to screen for Nonfatal Strangulation (DINS) was
completed. Two hundred professionals in law enforcement, healthcare, and domestic
violence advocacy were recruited from a Midwestern state. The study included measures
of professionals' background factors, antecedents to intention, and intention to screen for
NFS.

The DINS demonstrated acceptable validity and reliability for this sample.
Intention scores could be predicted from attitude, perceived behavioral control, and
subjective norm. Attitude was the strongest predictor of intention. Healthcare team
members had significantly lower intention to screen. There were non-significant
differences in the influence of background factors and antecedents to intention between
the professional groups. Overall, findings suggested that antecedents to intention can be
used to predict intention, but additional factors affecting screening decisions for this
population need to be evaluated. Confirmatory reliability and validity testing of the DINS
is needed.

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CHAPTER ONE

Introduction

Nonfatal strangulation (NFS) is a little-studied form of severe intimate partner violence (IPV). Strack and Gwinn (2011) described NFS as one of the most lethal types of violence a partner can inflict in IPV cases, placing the victim on the edge of homicide. The findings of one study indicated that the odds of becoming a victim of attempted homicide increase seven-fold with a history of NFS (Glass et al., 2008). In addition to physical harm, NFS is psychologically traumatic; the perpetrator literally holds the victim's life in their hands (Carlson, 2014).

Despite the severity of this form of IPV, it is often not identified or screened for by healthcare professionals who serve victims of violence. An estimated 76% of victims do not seek medical attention in NFS cases, underscoring the importance that law enforcement or advocates identify NFS to promote victim safety planning or to encourage medical intervention (Agnew, 2015). For those who do seek healthcare, there may be no visible signs of strangulation; 67% to 93% of reported NFS cases were noted to have no reported signs or symptoms (Strack et al., 2001; Holbrook & Jackson, 2013). Despite calls for screening every victim of IPV for NFS as best practice for identification of these violent cases (Sheridan & Nash, 2007; Faugno et al., 2013), it is still not done routinely. There is a gap in professional practice related to NFS history identification, with a resulting gap in the literature about screening, making it difficult to ascertain the incidence and prevalence, as well any barriers to (or support for) screening for NFS by

professionals who serve victims of IPV. With this study, I seek to identify what factors influence professionals' intention to screen for NFS in IPV cases.

Violence

Violence in the world is pervasive, resulting in 530,000 million deaths per year. It is projected that unless actions to prevent violence are initiated in countries around the world, violence as a cause of death will rise from the 21st cause in 2008 to the 16th leading cause of death by 2030 (World Health Organization [WHO], 2014). These findings may not be entirely accurate as a history of violence in childhood has been linked to adverse health outcomes in adulthood, including substance abuse, depression, cardiovascular disease, diabetes, cancer, and premature mortality (Centers for Disease Control [CDC], 2010). If the deaths attributed to any of these listed causes were to be classified as a death resulting from violence, the numbers would be exponentially larger. Approximately 16 million nonfatal violent injury cases that were severe enough to warrant medical attention, allowing for tracking of data at the time of care, have been reported (WHO, 2014).

Violence is defined as "the intentional use of force or power, threatened or actual, against … another person … that either results in or has the high likelihood of resulting in injury, death, or psychological harm, maldevelopment or deprivation" (WHO, 2002, p. 4). Intimate partner violence (IPV) is defined as "physical, sexual, or psychological harm by a current or former partner or spouse" (CDC, 2010). IPV is a serious, preventable form of violence that affects millions of Americans (CDC, 2015). Nonfatal strangulation (NFS) is one type of violence seen in IPV and is an important indicator of severe IPV in which the victim is at elevated risk for future homicide.

Focusing on documented deaths and persons presenting for healthcare related to issues of violence does not give the full picture of the pervasiveness of the issue. Many victims do not report violence nor seek treatment for injuries sustained. Some of the most difficult injuries for victims are psychological in nature, not physical, further decreasing the number of reported injuries as a result of violence. When looking only at IPV, worldwide, 15 to 71% of women report a history of physical and/or sexual violence at the hands of an intimate partner at some point in their lives (WHO, 2014). While we do not have a complete picture of exactly how many persons are affected by IPV across our world, it is clear that the issue is widespread and deserving of attention and intervention.

Intimate Partner Violence

IPV remains a social epidemic in the United States, with 1 in 3 women reporting a history of rape, stalking, or physical violence in their lifetime (Black et al., 2011). IPV results in great cost to the victim and to society. The physical costs to the victims include such direct short term effects as fractures, head trauma, and internal organ damage. The psychological and physical long term effects include higher levels of depression, Post-Traumatic Stress Disorder (PTSD), indigestion, hearing loss, suicidality, generalized anxiety disorder, and substance abuse, among other effects (Nicolaidis & Leibshutz, 2009). The reported financial costs of intimate partner rape, physical assault, and stalking exceeded $5.8 billion (in 2003 dollars), nearly $4.1 billion of which is for direct medical and mental health care services (National Center for Injury and Prevention Control, 2003). These findings are based on financial information over a decade old. It can be assumed that the financial implications of IPV continue to grow.

IPV victims are at risk for homicide. A study performed by researchers with the World Health Organization (WHO) reported that 35% of global female homicides are committed by an intimate partner. Approximately 5% of male homicides are attributed to IPV (WHO, 2012). In the United States, researchers reviewing data from the National Violent Death Reporting System found that over half (55.3%) of all reported female homicides between 2003 through 2014 were IPV related (Petrosky et al., 2017). It is believed that these numbers are conservative owing to poor reporting or missing data.

Nonfatal strangulation

Nonfatal strangulation (NFS) is a serious, violent form of IPV. NFS is defined as a form of asphyxia characterized by closure of the blood vessels or air passages of the neck as a result of external pressure on the neck (Shields, Corey, Weakley-Jones, & Stewart, 2010). This external pressure may be applied by hands, arms, forearms, as well as objects (ropes, cords).

Nonfatal strangulation was initially identified as a risk factor for increased severity and lethality of IPV in the Chicago Women's Health Risk Study that examined those factors that would place an abused woman or her partner at immediate danger for death or life threatening injury (Block, 2000). This seminal work identified that past violence was predictive of homicide (85%) with recency (51% within one month), frequency of abuse, and use of weapon (26% gun, 28% knife) or NFS (18%) as the highest predictors (Block, 2000). Research towards verifying the incidence of NFS, NFS as a risk factor for homicide, and identification of signs and symptoms of NFS followed this preliminary work.

The importance of NFS as a risk factor for increased violence and possible death has been supported in published literature (Block, 2000; Glass et al., 2008; Shields et al., 2010; Strack & Gwinn, 2011). However, due to the lack of reporting by victims as well as lack of identification of cases by professionals serving victims in a variety of capacities, from legal to medical, the true incidence of the problem cannot be determined from available literature. The reported incidence of NFS in IPV cases ranges from 10% to 68% (Taliaferro, Hawley, McClane, & Strack, 2009). The available literature is dated and sparse, contributing to the difficulty in assessment of true incidence of the problem.

Problem

Screening for IPV and NFS

The purpose of screening is to identify victims who have a history of, or are currently experiencing, IPV. There are differences between universal assessment (asking all women a standardized question about IPV) and case-finding (asking questions if certain signs or symptoms are present) (O'Doherty et al., 2015). Despite calls for universal assessment by the American Medical Association (AMA), the American Congress of Obstetrician Gynecologists (ACOG), and the American Nurses Association (ANA) there continues to be a lack of assessment for IPV in general for those victims presenting to healthcare providers (de Boinville, 2013). There were no publications found indicating the rate of screening (or case finding) for advocates or law enforcement officers. In most publications, a history of NFS is only asked about if the circumstances of a case warrant such investigation. This contributes to under identification of NFS as 67% to 93% of reported strangulation cases had no reported signs or symptoms (Strack et

al., 2001; Holbrook & Jackson, 2013) and victims of NFS may have issues with memory and recall (Smith, Mills, & Taliaferro, 2001).

The U.S. Preventive Services Task Force (USPSTF) recommends universal IPV screening by healthcare providers for all women of childbearing age, giving the recommendation a "B" rating, indicating the benefits of screening outweigh risks and that IPV intervention can help to decrease violence, abuse, physical and mental harm (Moyer, 2013). Researchers performing a systematic review (O'Doherty et al., 2015) found that screening did increase the number of identified cases of IPV by twofold. However, there was no evidence that increased identification led to increased referral behavior of healthcare professionals, increased uptake of specialist services, nor examination of financial cost-effectiveness of screening. These findings were noted to be impacted by study shortcomings and a dearth of identified studies matching inclusion criteria for the systematic review (O'Doherty et al., 2015).

Identified barriers to assessment for IPV included lack of provider education regarding IPV, lack of time, lack of comfort with the topic, and lack of protocol regarding IPV (Alvarez, Fedock, Grace, & Campbell, 2017; Sprague et al., 2012; Waalen, Goodwin, Spitz, Petersen, & Saltzman, 2000). There were no identified articles regarding barriers to screening for NFS history specifically. If a history of IPV is not being assessed, it follows that NFS will not be identified despite the importance of this history for predicting worsening violence or death. The WHO recommended training professionals for increased surveillance and assessment for IPV, including recognition of risk factors (such as NFS history), as among the best approaches to ending IPV homicide (2012).

Human behavior is complex and multifaceted. Implementing new professional practices requires behavior change by professionals. To facilitate this, identification of factors that may influence a behavior of interest (in this study, to screen for a history of NFS) would allow for targeted intervention. Behavioral theory can assist in identifying those components that influence actual behavior, and in some cases can identify which factors influence the behavior of interest the most. For this study, Ajzen's Theory of Planned Behavior (TPB) was chosen as the theoretical framework to guide the assessment of the impact of various factors on professionals' intention to perform a particular behavior. There was no identified survey instrument available in the literature to assess professionals' intention to screen for a history of NFS. The Delwiche Intention to screen for Nonfatal Strangulation history (DINS) Survey was developed for the specific purpose of assessing the factors that impact professionals' intention to screen for a history of NFS in IPV cases.

DINS Survey to Assess Intention to Screen for Nonfatal strangulation

The DINS survey focuses on the impact of professionals' background variables (knowledge, prior training, and professional group affiliation) and antecedents to intention (attitude, perceived behavioral, and subjective norm) related to IPV and NFS on their intention to screen for NFS in IPV cases. Lack of knowledge or experience (background factors), fear of offending or endangering someone (attitude), time constraints or lack of protocol (control), and victims who do not disclose (subjective norm) were identified in systematic reviews as factors that contribute to healthcare providers' failure to screen for IPV (Sprague et al., 2012; Waalen et al., 2000). Ajzen's Theory of Planned Behavior (TPB) was used as the theoretical framework to explore the

focus of interest for this study, intention to screen victims of IPV for NFS and the impact of background factors, and antecedents to intention on that intention (Ajzen, 2005).

Intention is theorized to be the direct antecedent of actual behavior, and is measured in studies where observation of an actual behavior is difficult to perform (Ajzen, 2013). According to the TPB, the antecedents to intention are: attitude (i.e. a disposition to respond favorably or unfavorably towards the behavior); perceived behavioral control (i.e. sense of self-efficacy or ability to perform the behavior); and subjective norm (i.e. social pressure to perform the behavior of interest). These measures of attitude, perceived behavioral control, and subjective norm are considered direct measures in the TPB. Collectively and individually the direct measures may impact intention, thus impacting behavior. Each of these direct measures will be referred to as antecedents to intention for the remainder of this document. Greater explanation of each factor follows in Chapter 2.

In the TPB, indirect measures include belief measures (behavioral, normative, and control beliefs) that explore *why* people hold those identified attitudes, perceptions of control and perceptions of subjective norm over a behavior and will not be assessed in this study.

Background factors include a multitude of variables that may be related to, or influence intention and behavior (Ajzen, 2005). The background factors included for this study were profession, prior training, and knowledge. Each of these factors will collectively be referred to as background factors for the duration of this study. Further description of these factors will also follow in Chapter 2.

Professionals Screening for IPV/Nonfatal strangulation

Victims of IPV and NFS are often first seen by professionals in law enforcement, healthcare, and/or victim advocacy. Due to the likely contact with victims of IPV and/or NFS, each of these professionals should be participating in identification of NFS cases with the intent of proper referral for higher level of care as needed.

Ideally, these professions must come together to address the issue of IPV and NFS as a coordinated response. Interprofessional collaboration by law enforcement, legal system representatives, healthcare providers, and advocates for the care of victims of IPV has been researched following the advent of coordinated community response (CCR) teams to cases of sexual assault and domestic violence (Greeson & Campbell, 2012). Lack of interprofessional collaboration may result in uncoordinated care for victims of IPV, including role confusion or conflicts among those responding to victims. Lack of interprofessional care and lack of knowledge regarding best practices for screening and responding to victims of IPV both individually and in combination contribute to the low rates of reporting and help-seeking among victims of IPV (Greeson & Campbell, 2012).

Study Purpose

The overall purpose of this study was to identify what factors (background factors and antecedents to intention) influence professionals' intention to screen for NFS in IPV cases. The differences in intention between professional groups was also measured. In order to assess the influence of factors on intention, validity and reliability testing of the newly developed DINS was completed. Therefore, the first aim of the study was the psychometric evaluation of the DINS. The second aim of the study was to identify the

influence of factors on intention to perform NFS screening for victims of IPV. Identification of factors influencing intention to screen for NFS in IPV cases may allow for future creation of targeted interventions to enhance screening, case finding, and referral for victims.

The professionals most likely to come into contact with victims of IPV and NFS include law enforcement, advocates (through shelters and other victim advocacy groups), and healthcare team members in emergency departments. In healthcare, professionals working in emergency care settings see a "disproportionately high prevalence of IPV" and can be a frequent point of contact for victims of abuse (Choo et al., 2012, p. 83). Advocates are people who work for organizations that provide help to IPV victims and receive specialized training in services related to IPV. Law enforcement professionals (police officers and sheriff deputies), victim advocates, and healthcare team members in emergency departments were recruited for participation.

Significance for Nursing

Nursing's response to victims of violence included the advent of forensic nursing in an attempt to bridge the medical and legal needs of victims (Lynch, 1995). Forensic nurses provide specialized care to victims and/or perpetrators of violence based on knowledge of the legal system, and training in injury identification, evaluation, and documentation (Forensic Nurses, 2017). While this specialization has provided a link in the interprofessional care of victims of violence, it does not take away the onus of screening for IPV and NFS by the clinical nurses in the course of their patient care provision. In fact, the case must be identified before the proper referral to a specialized forensic nurse, law enforcement, or advocate can take place.

Nurses are uniquely positioned to identify cases of IPV and NFS through care provision and screening opportunities. Nurses also can bridge the needs of victims through referral to specialized providers in a variety of professional settings. Before interventions to improve nursing care for victims of violence can be developed, understanding of factors that influence nurses' intention to screen for IPV & NFS is needed.

Significance to Vulnerable Populations

Risk Factors for Victimization

IPV is an issue of power and control. Individual risk factors, relationship factors, community factors, and societal factors all contribute to the likelihood of IPV, and consequently, strangulation (CDC, 2015). Prior victimization and being a female are some examples of individual factors that are associated with becoming an IPV victim. Community factors such as poverty, weak community sanctions against IPV and norms that shape communities' social interactions all contribute to IPV. Larger societal norms of traditional gender norms with women in a subservient role also contribute to IPV. For NFS, all factors making one vulnerable to IPV also make one vulnerable to strangulation. The population most vulnerable to being strangled is female, with a prior history of IPV (Strack, McClane, & Hawley, 2001). The estimated prevalence ratio determined with findings from the National Intimate Partner and Sexual Violence Survey (NISVS, 2011) indicated that NFS is thirteen times higher in women than men, representing significant gender disparity for this form of IPV (Campbell, Reed, & Patch, 2017).

Vulnerability to Worsening Violence. Nonfatal strangulation victims are vulnerable to worsening violence that if not stopped, has the potential to lead to death. History of NFS is a greater risk factor for attempted and completed homicide for white and Latina women than for African American women (Glass et al., 2008). A history of NFS was noted in 18% of intimate partner (IP) homicides in one US study (Block, 2000). Prior NFS was associated with greater than sevenfold odds of homicide in comparison to abused (but not strangled) women (Glass et al., 2008). Victims with a history of NFS were also more vulnerable to sexual assault by the same partner (Shields et al., 2010; Wilbur et al., 2001). Finally, victims rarely suffer strangulation only, but frequently suffer blunt trauma (97%) at the same time (Shields et al., 2010).

Vulnerability to Medical Complications. Nonfatal strangulation victims are also vulnerable to medical complications. It has been documented that only 5 to 29% of NFS victims seek medical help (Strack et al., 2001; Wilbur et al., 2001). Even for those who do seek treatment, victims can be vulnerable to poor screening and misdiagnosis of findings (McClane, Strack, & Hawley, 2001). There may be no visible signs of strangulation; 67% to 93% of reported NFS cases were noted to have no reported signs or symptoms (Strack et al., 2001; Holbrook & Jackson, 2013). When present, the signs and symptoms most identified included scratches, red linear marks on the neck, sore throat, edema, pain, difficulty swallowing, difficulty speaking, voice changes, dizziness, lightheadedness, headache, memory loss, vision changes, tinnitus, eyelid droop, weakness, facial droop, paralysis, loss of sensation, muscle spasms, personality changes, depression, nightmares, insomnia, suicidal ideation, anxiety, and diagnosed PTSD (Smith et al., 2001). Wilbur et al. (2001) added nose bleed, difficulty breathing, heartburn/acid

reflux, miscarriage, and incontinence (bladder and bowel). While signs may be present, injuries are often too minor to photograph (Strack, 2007). Anoxic encephalopathy is a risk that can also be seen in NFS cases (Hawley, McClane, & Strack, 2001). The longer term development of depression, PTSD, and anxiety may make the victim vulnerable to poor health outcomes.

Vulnerability to Poor Legal Outcomes. Victims of NFS are also vulnerable to poor legal outcomes. There is documented poor prosecution rates for perpetrators of NFS (Strack et al., 2001), making the victim vulnerable to continued exposure to the perpetrator (and thus, potential continued abuse) and decreased likelihood of satisfactory outcomes (conviction rates) in the legal arena. Some of the problems contributing to the poor outcomes include lack of healthcare following NFS, lack of physical evidence, poor documentation of injuries when present, subjective descriptions of the attack, and poor clinical evaluation due to insufficient knowledge (McClane et al., 2001; Strack, 2007; Turkel, 2007).

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Conclusion

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Nonfatal strangulation is a serious form of IPV, indicating increasing lethality and vulnerability to poor health outcomes and poor legal outcomes for a victim. If the history of strangulation is not identified by professionals responding to victims of violence, healthcare providers are unable to provide proper medical care secondary to this violent event. Referral of the victim to specially trained professionals capable of assessing the level of danger for the victim and providing resources for protection will not occur. Without identification of the problem, the victims' vulnerabilities cannot be mitigated.

Due to the gap in the literature surrounding screening for NFS, the impact of antecedents of intention (attitude, perceived behavioral control, and subjective norms) and background factors (prior training, professional group affiliation, and knowledge) on professionals' intention to screen for NFS was assessed. Professionals most likely to respond to victims of IPV and/or strangulation were targeted for participation: healthcare team members, advocates, and law enforcement (police officers, sheriff deputies).

Chapter 2

Chapter 2 includes the discussion of the theoretical and philosophical underpinnings of the study, and literature to support the need for the study. The first section of this chapter is the description of the theoretical framework for the study, the Theory of Planned Behavior (TPB). The philosophical underpinnings that guide the study follow. The literature provides a summary of the current state of knowledge about NFS, concepts of behavioral change and intention as they relate to healthcare providers, advocates, and law enforcement officials. This is followed by a discussion of the gaps in the literature, including those that were addressed by this study. A description of the DINS development and feasibility study follows. Study assumptions are presented. The chapter concludes with a restating of the purpose and research questions of the study.

Theoretical Framework

In this study, the TPB provided a framework for the identification of factors that influence professionals' intention to screen for NFS among females who have experienced IPV. The Theory of Planned Behavior (Ajzen, 2005) provides a guiding framework for understanding human behavior and the psychological determinants of behavior.

Theory of Planned Behavior

As introduced in Chapter 1, the TPB focuses on identifying individual factors that impact a person's intention to perform a particular behavior (Francis et al., 2004). The TPB was based on the initial work of Fishbein and Ajzen (1975) in the development of the Theory of Reasoned Action (TRA). Fishbein and Ajzen were interested in

understanding human behavior through identification of the antecedents of behavioral intention (Ajzen, 2005). The TRA was developed in the interest of identifying determinants of behavior in which individuals have sufficient control of said behavior (Ajzen, 2005). Icek Ajzen extended the TRA to include issues of incomplete volitional control by adding an additional construct of perceived behavioral control with the development of the TPB.

Intention. The TPB is based on the assumption that individuals usually behave in a sensible manner after taking account of available information and considering the implications of their actions (Ajzen, 2005). The theorists then postulated that the direct antecedent to actual behavior is the individuals' intent to perform that action. In order to better understand behavior, the researchers identified the direct antecedents of intention (and thus behavior) to include attitude, perceived behavioral control, and subjective norm (Ajzen, 2005).

Antecedents to Intention. According to the TPB, there are three basic direct antecedents to intention to perform a behavior: attitude, perceived behavioral control, and subjective norm (Ajzen, 2005). The first antecedent, attitude (ATT), refers to specific feelings individuals hold (positive or negative) about a specific behavior. The second antecedent, perceived behavioral control (PBC), references the sense of self-efficacy individuals have regarding their ability to successfully perform a particular behavior, as well as their control over performing the behavior. The final antecedent, subjective norm (SN), refers to individuals' personal perception of any social pressure to perform a particular behavior.

Perceived behavioral control encompasses those situations in which a person may have limited volitional control over the performance of the behavior of interest (Ajzen, 2006). It has been noted that there is a difference between perceived self-efficacy and controllability, both of which are identified within perceived behavioral control in the TPB. However, studies have assessed perceived controllability and perceived self-efficacy with separate scale items utilizing structural equation modeling to confirm a two-factor structure for perceived behavioral control (Terry & O'Leary, 1995) or principal components analysis to reveal the expected two factors (Armitage & Conner, 1999a, 1999b; Sparks, Guthrie, & Shepherd, 1997). In the development of the DINS, items were written to identify potential controllability issues in the professional work environment. Ajzen (2002) states that while there has been reliable demonstration of the impact and distinct nature of self-efficacy and controllability, it does not invalidate the unitary nature of the construct of PBC. In this research study, separate measures of the self-efficacy and controllability will be assessed together (as the construct of PBC) to determine the overall impact on intention.

Background variables. Also influencing behavior are "background variables" (Ajzen, 2005; Francis et al., 2004). These variables are described as personal, social, and information factors that may influence beliefs that people hold. Beliefs, in turn, may indirectly influence the three identified antecedents of behavioral intention: attitude; subjective norm; and perceived behavioral control. Beliefs are considered an indirect measure of the antecedents of behavioral intention and will not be measured in this study. However, background factors including prior training, professional group, and knowledge all will be measured and assessed for impact on the intention of the professionals

surveyed. The figure below presents a model of the study variables and their proposed

relationship to one another.

Figure 1. Measurement model. Model depicting how research questions will test the theoretical model.
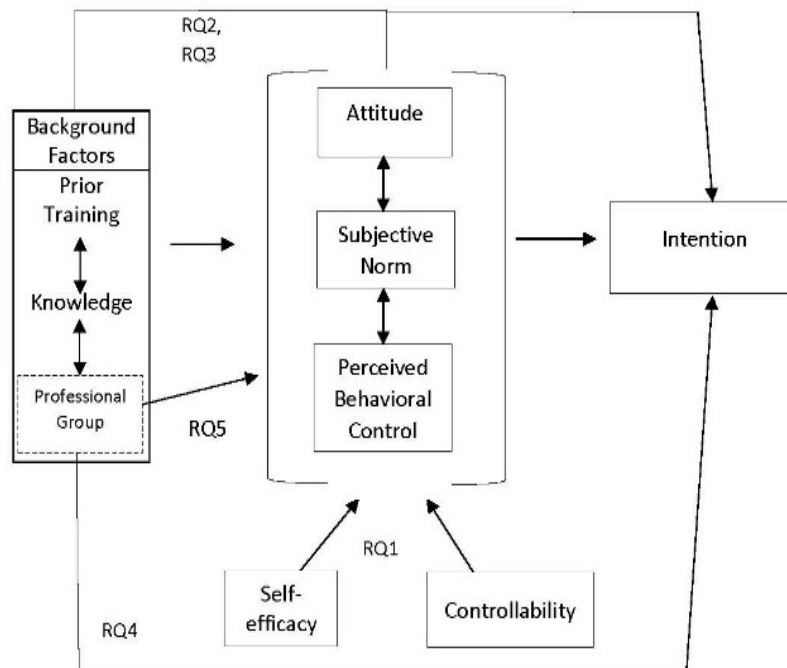
The above depicted measurement model illustrates the measurement of the

secondary aim of this research, the examination of the influence of background factors

(prior training, professional group, knowledge) and antecedents to intention (ATT, SN,

PBC) on intention to screen for NFS history in IPV cases.

Philosophical Underpinnings

The proposed research to identify what influences professionals' intention to

screen for NFS in IPV cases has post-positivist foundations. The paradigm of inquiry

called post-positivism was developed in response to criticism of positivism which has

been prevalent in science for hundreds of years. Post-positivism is a move away from positivist beliefs to recognize the need to be critical about our ability to know reality with certainty (Trochim, 2006).

Post-positivism

Post-positivist ontology is one of critical realism in which there is belief in an assumed reality which cannot be known with certainty due to flawed human scientific procedures and thinking, and fallibility of measurement (Trochim, 2006; Guba & Lincoln, 1994). Following post-positivist ideals, our goals as researchers should still be to attempt to understand reality with recognition that it is impossible to do so perfectly. Science is not believed to be simply what is observable or able to be directly perceived (Clark, 1998). Based on this ontology, objectivity remains as an important aspect of inquiry. In addition, replication is important with the knowledge that findings may be true but are always subject to falsification (Guba & Lincoln, 1994). Additionally, a post-positivist view recognizes that there is no neutral knowledge, that knowledge cannot be removed from personal experience (Ryan, 2006).

A post-positivist paradigm guided this nonexperimental, correlational, descriptive study. For this study, a quantitative design best allowed for data collection to fulfill the purpose and aims. To allow for expression of personal experience and knowledge as it relates to the screening for a history of NFS in victims of IPV, open-ended questions were also asked within the DINS.

Review of the Related Literature

An integrative review of the literature was conducted to identify what is known about the current state of the science relating to NFS. A summary of the results is presented here with the critical analysis interwoven. There were no studies found that specifically addressed professionals' intention to screen for a history of NFS in IPV cases. Studies relating to the use of the TPB to address professional behavioral intention in other areas have been identified and will be addressed following the review of the state of the science relating to NFS. This section will conclude with gaps in the literature and the ways the current study may address some of the gaps noted.

Definitions

The operational definitions used in this review were:

Intention: A person's subjective probability that they will perform a behavior (Ajzen, 2002)

Background factors: Personal, social, and information factors that may influence beliefs that a person holds, though not necessarily connected to intention or behavior (Ajzen, 1991)

Attitude: The degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior of interest (Ajzen, 1991)

Subjective norm: The perceived social pressure to perform or not perform the behavior of interest (Ajzen, 1991)

Perceived behavioral control: The perceived ability to perform a particular behavior, including cases of incomplete volitional control (Ajzen, 2002). Perceived behavioral control is further subdivided into:

> Self-efficacy: Perceived ease or difficulty of performing the behavior

> Controllability: Perceived extent that performing the behavior is up to the person

Nonfatal strangulation (NFS): the external compression of a person's neck and/or upper torso in a manner that inhibits that person's airway or the flow of blood into or out of the head (Pritchard, Reckdenwald, & Nordham, 2017)

Manual strangulation: the use of bare hands (WCADV, 2008)

Chokehold: Elbow bend compression (WCADV, 2008)

Ligature: Use of a cordlike object, such as a rope, belt, chain, clothing (pantyhose, bra, tie, etc.) (WCADV, 2008)

Hanging: self-inflicted (WCADV, 2008)

Choking: the aspiration of an object resulting in internal blockage of the airway (McClane & Strack, 2001)

A total of 74 articles were identified for possible inclusion in this review of literature. For the purposes of this review, only articles directly addressing strangulation were retained for final analysis, resulting in 37 articles. Nineteen empirical studies were identified, along with lecture notes, commentary, guidelines (for best practice and prosecution), and law reviews. For the following synthesis, the three major findings of the integrative review identified were: identification of risk and prevalence; signs and symptoms; and attempts at danger stratification. The empirical studies were next

evaluated in ascending chronological order using a structured table with five topics: study

objective, sample/characteristics, methodology, analysis, and results (Appendix A). The

literature will be reported and reviewed based on major findings of integrative review and

critical analysis of the empirical literature. A summary of these findings follows.

Integrative Review

      Identification of risk and prevalence. There are many risk factors that place a

victim of IPV at heightened risk for death or life-threatening injury. The most common

risk factor for intimate partner homicide is a prior history of IPV (Block, 2000; Campbell

et al., 2003). Increasing physical violence, firearm possession, drug and/or alcohol use

(Bailey et al., 1997; Block, 2000; Campbell et al., 2003) and cohabitation and

estrangement (Moracco, Runyan, & Butts, 1998) are all identified as risk factors.

      Research support for the identification of NFS as a risk factor for increasing

severity and lethality of violence began with the seminal work of Block (2000). Block's

research utilized a case control, non-experimental design in which researchers begin with

a dependent variable and examine if there is correlation with one or more previously

occurring independent variables in groups of people who have the phenomenon of

interest (cases) and those who do not (controls) (Polit & Beck, 2012, p. 224). This case

control study with 705 participants (497 abused women, 208 non-abused control group,

and 87 homicide victim case reviews) was among the first to determine NFS as one of the

highest predictors of a fatal incident in IPV cases (18%) as well as the use of a weapon

(26% gun, 28% knife) and the aforementioned history of violence (85%).

      In a second case control study by Glass et al. (2008), women who were victims of

attempted or completed homicide were far more likely (7 times) to have a history of NFS

compared to an abused control group. 310 completed homicide cases, 194 attempted homicide cases, and 427 abused controls were included (Glass et al., 2008).

Additional identified risk factors specific to NFS include being female, cohabitating with perpetrator, being disabled, having a prior history of violence, having an abuse history during pregnancy (Sorenson, Joshi, & Sivitz, 2014), and a substance abuse history by the perpetrator (Strack et al., 2001).

When victims of NFS were asked what they perceived as triggers to their NSF event, they reported partner jealousy, infidelity, their failure to comply with perpetrator demands, and their attempt to end the relationship as the triggers to the NFS incident (Thomas, Joshi, & Sorenson, 2012). Threats of death by the perpetrator to the victim were also noted prior to strangulation incidents (Strack et al., 2001; Wilbur et al., 2001; Thomas et al., 2012).

In the Thomas et al., (2014) study, researchers utilized grounded theory methodology to identify the women's experiences of, thoughts about, and reactions to being strangled. Findings pertained to two categories: immediate power and control during incident and maintaining power and control after the incident. The participants identified perceived triggers for the assault, their reports of their partners' statements, their thoughts and reactions during the incident, ending of the incident, and their subsequent reactions. This was used to determine identification of risk and prevalence from a victim perspective. This was one of only two published studies utilizing a grounded theory approach, and both articles were written from the same study with a different focus for each.

The estimated prevalence of NFS is one in every 100 women in the general population in eight countries (including the United States) within the past year (Sorenson et al., 2014). In specific studies, the prevalence of NFS in IPV cases varied from 9.7% (Black et al., 2010) to 68% (Wilbur et al., 2001). All estimates of NFS prevalence are potentially underestimated as most information is obtained from self-report and potentially underreported, as well as the possibility of a victim's cognitive impairment secondary to abuse (Sorenson et al., 2014).

Signs and symptoms. NFS victims report pain, difficulty breathing, and difficulty swallowing (Strack et al., 2001), neck and throat injuries, scratches, red linear marks on the neck, voice changes, dizziness, memory loss, tinnitus, weakness, muscle spasms, nightmares, loss of consciousness (Smith et al., 2001; Funk & Schuppel, 2003; Shields et al., 2010; Joshi, Thomas, & Sorenson, 2012). Victims were also found to have insomnia, nightmares, anxiety, depression, suicidal ideation, extreme fear, and panic attacks (Joshi et al., 2012). Findings of blunt force trauma were noted in 97% of 102 NFS cases at a forensic program (Shields et al., 2010).

In one study, results indicated that signs and symptoms may be *dose* dependent, such that the symptom severity (memory loss, weakness, muscle spasms, nightmares, tinnitus, pain) or ability to identify injury (scratches, marks on neck, voice changes) increased with number of attempts (Smith et al., 2001). At times there may be no visible signs of strangulation; 67% to 93% of reported NFS cases were noted to have no reported signs or symptoms (Strack et al., 2001; Holbrook & Jackson, 2013).

Case studies identified in the literature included findings not typically reported in previous research on sign and symptom identification in NFS. Bilateral carotid

thrombosis and bilateral carotid artery dissection were identified with repeated

strangulation in the history of two cases (Tieulie et al., 2003; Clarot, Vaz, Papin, &

Proust, 2005) supporting the previous exploration of severe findings being dose

dependent (Smith et al., 2001). Absence of laryngeal crepitus was found in three cases of

laryngeal trauma following NFS. These findings indicated a retro laryngeal mass,

identifying need for additional evaluation for NFS when absence of laryngeal crepitus is

noted (Hansen, 2001).

In two additional case studies, unusual signs and symptoms included development

of delayed Parkinsonism five days post NFS with unremarkable CT scan findings (Miao

et al., 2009), and presentation of dysphagia and cough with laryngeal fracture identified

on direct laryngoscopy (Briddell, Mallon, DeFatta, Chowdhurry, & Nagorsky, 2012).

The majority (13) of empirical studies found that were focused on sign and

symptom identification utilized non-experimental, descriptive techniques and case study

approach (Strack et al., 2001; Wilbur et al., 2001; Hansen, 2001; Funk & Schuppel, 2003;

Tieule et al., 2003; Clarot et al., 2005; Plattner et al., 2005; Miao, 2009; Shields et al.,

2010; Briddell et al., 2012; Holbrook & Jackson, 2013; Song et al., 2014) as well as

correlational design (Smith et al., 2001).

One grounded theory study allowed for additional determination of health effects

of strangulation from the victim perspective (Joshi et al., 2012). Seventeen women were

interviewed in the study. Nine participated in focus groups, and 8 participated in

individual in depth interviews. The two general themes identified following coding were

health effects and help seeking (Joshi et al., 2012) allowing for identification of victim-

perceived signs and symptoms. The researchers identified that less than half of the

victims received medical care following their NFS event, and of those that did, half did

not disclose nor were asked about a history of strangulation (Joshi et al., 2012). The

researchers further identified that victims referred to strangulation as the use of an item,

such as clothing or wire. They referred to "choking" as strangulation in which the

perpetrator used his hands (Joshi et al., 2012).

As these studies were among the first to be performed following the identification

of the importance of NFS as a risk factor for worsening violence and possible death in

IPV, non-experimental research aimed at description or correlation was needed. The

limitations noted with non-experimental study designs include the inability to support a

cause and effect relationship, the inability to manipulate study variables, and the inability

to randomize (Polit & Beck, 2012). However, the subject of NFS is not amenable to

experimentation.

Attempts at danger stratification. Researchers have sought ways to stratify

findings of NFS into a classification system or to indicate severity of strangulation

incident (Plattner, Bollinger, & Zollinger, 2005; Yen et al., 2005; Christe et al., 2009). In

two studies, the use of radiologic imaging allowed for identification of soft tissue injury

(subcutaneous desiccation, lymph node hemorrhage, intramuscular hemorrhage) that was

missed on forensic exam (Yen et al., 2005; Christe et al., 2009). In a third study, the

researchers attempted to classify findings into three categories: light, moderate, and

severe strangulation (Plattner et al., 2005). The attempts to provide an objective

stratification of danger were intended for prosecution of cases moving forward into the

legal system.

The Yen et al. (2005) study sought to evaluate the multislice computed tomography (MSCT) and MRI findings in NFS cases and compare them to forensic autopsy results in an attempt to stratify injury identification. A retrospective radiologic analysis was compared to autopsy cases and two live cases. The radiologic findings were assessed by two radiologists, and the second radiologist was blinded to the first assessment. Overall, it was found that MRI has good use for forensic evaluation of soft tissue injury for determination of severity of strangulation (Yen et al., 2005). This was the only article identified that utilized a quasi-experimental study design.

Gaps in Professional Practice and Literature

While each of these studies added knowledge to the presenting signs and symptoms seen in NFS cases, there were no studies found regarding prevention of NFS. Non-empirical literature, including commentaries, review of current practice, recommendations for practice, and statute changes and updates, (Appendix B) was found documenting changes secondary to increased knowledge and information about strangulation. These publications include: suggested protocol for healthcare professionals in identifying and treating victims (McClane, Strack, & Hawley, 2001; Gwinn, McClane, Shanel-Hogan, & Strack, 2004; Sheridan & Nash, 2007; Bergin & Berkowitz, 2011; Fauguno et al., 2013; Wilkinson, 2013; Foley, 2015); changes in state statute to identify NFS as a felony offense (WCADV, 2008; Laughon, Glass, Worrell, 2009; State of Maine, 2011; Colpitts & Niemczyk, 2013); and suggestions for improving prosecution of NFS cases (Strack, 2007; Turkel, 2007; Laughon et al., 2009; Wilkinson, 2013).

While these non-empirical articles contribute to the state of the science regarding NFS, no identified research studies have been performed to assess the impact of the

treatment recommendations, the changes to state statute, or the suggestions for improved prosecution. Recommendations for continued research began in 2001 with Taliaferro, Mills, and Walker identifying a paucity of literature about NFS in general. Sheridan and Nash (2007) identified the need for research examining associations between mechanism of injury and homicide, effectiveness of injury documentation, injuries in same sex IPV, and injuries to male victims of IPV. Turkel (2007) called for greater research in the area of prevention, specifically education effects. In 2009, Laughon et al. called for continued research on the impact of changes in statutes in the states adopting changes. As recently as 2014, Carlson called for increased screening and documentation. In 2016, Pritchard, Reckdenwald, Nordman, and Holton, called for expansion of research to determine the effectiveness of statutory changes on prosecution rates. In 2018, recommendations continue to include the need for lethality assessment when NFS is identified and research to determine the impact on risk for homicide, especially in multiple strangulation history (Messing, Patch, Wilson, Kelen, & Campbell, 2018). Despite these identified research needs, a gap in the literature remains regarding screening and case identification of NFS.

The most notable gap was relating to the issue of screening for NFS. No studies focused on screening were found. Pritchard et al. (2016) identified that "the lack of systematic training on screening for strangulation among first responders" has led to an inability to gather quality data about the prevalence of strangulation in IPV cases (p. 5) and called for additional research efforts to determine the efficacy of specific strangulation screening in addition to universal IPV screening in medical and mental health settings. Another publication was found regarding the epidemiology of NFS (Sorenson et al., 2014). This systematic review reported national prevalence estimates of

NFS in IPV, noting that evidence regarding strangulation is "scarce" (Sorenson et al., 2014, p. 54). The authors note that NFS is difficult to detect, though a fairly common occurrence in IPV, and more work is needed to assess the true extent of the problem. To meet this challenge, recommendations for future research include continued focus on risk factors for victimization, greater focus on understudied communities (such as same sex IPV and racial or ethnic minorities), understudied geographical locations (worldwide), and use of ongoing national surveys with NFS specific assessment (Sorenson et al., 2014). Following this work, identification of prevention, intervention, and policy changes needed to protect vulnerable groups may occur. This research seeks to address the specific gap of screening for NFS with the intent to use findings to form meaningful intervention with professionals most likely to encounter victims of IPV and NFS in the future.

TPB and Screening

The TPB has been the theoretical framework in hundreds of published studies and its efficacy has been evaluated in numerous meta-analyses (Armitage & Conner, 2001; Godin & Kok, 1996; & McEachan, Conner, Taylor, & Lawton, 2011). Despite no studies identified that used the TPB to measure intention to screen for a history of NFS in IPV cases, the TPB has been utilized in a wide range of studies seeking to identify the best predictor of intention for healthcare professionals' practice (Levin, 1999; Sanders, 2006; Perkins et al., 2007; Sauls, 2007; Ward, Cobb, Kelly, Walker, & Williams, 2010; Nelson, Cook, & Ingram, 2013; Natan, Khater, Ighbariyea & Herbet, 2016).

The use of the TPB for predicting healthcare professional behavior has been studied regarding reporting of child abuse, screening for domestic violence, glove use,

depression screening, labor support, screening for periodontal disease, and blood pressure monitoring (Feng & Wu, 2005; Natan, et al., 2016; Levin, 1999; Sanders, 2006; Sauls, 2007; Ward et al., 2010; Nelson et al., 2013). One review of the literature reported on 19 articles using either the TRA or TPB for understanding and changing clinician behavior (Perkins et al., 2007). Overall, the studies focused on measurement of behavior (Sanders, 2006; Ward et al., 2010), intention (Feng & Wu, 2005; Natan et al., 2016) or both intention and behavior (Levin, 1999; Sauls, 2007; Nelson, 2013) and found support for the use of TPB as theoretical framework for the study of healthcare professionals' behavior in a variety of settings.

A research study performed in Taiwan to identify factors associated with nurses' intention to report suspected child abuse (Feng & Wu, 2005) found that ATT, PBC, SN and knowledge of child abuse and reporting laws explained 91% of the variance in intention to report. A path analysis identified knowledge as the best predictor, with a path coefficient of .71, followed by ATT with .32, SN with .15, and PBC of .12 (Feng & Wu, 2005).

Natan et al. (2016) examined which variables affected nursing students' intention to screen women for domestic violence (DV) when providing treatment. The researchers found statistically significant relationships between knowledge, PBC, SN and intention. Attitudes did not significantly correlate with intention. The regression model predicted 32% of students' intention to screen for DV with normative beliefs and knowledge being the most significant predictors. SN was also significant. PBC was not significant (Natan et al., 2016).

Levin (1999) compared the efficacy of TRA to the TPB and an extension of the

TPB (added construct of perceived risk) in identifying predictors of glove use when there

is a potential for blood exposure. Structural equation modeling was used to determine that

intention, attitude, and perceived risk were significant predictors of behavior for 280 lab

workers and 247 nurses surveyed. Approximately 70% of the variance in glove use (self-

reported) could be explained with the TRA, while the TPB explained 66% of the

variance, and the extended TPB explained 69% of the variance (Levin, 1999). It was

found that in all cases, intention, attitude, and perceived risk were significant predictors

of behavior, with intention being the best predictor. Subjective norm did not influence

intention to use gloves (Levin, 1999).

Sauls (2007) aimed to examine the contribution of attitude, subjective norm, and

perceived control on intrapartum nurses' intention to provide professional labor support

to laboring mothers. 39 nurses completed a survey measuring their attitudes, subjective

norms, perceived behavioral control, and intention. Findings included a 70% explanation

of the variance of intention attributed to attitude, subjective norm, and perceived

behavioral control. There was also a strong positive relationship between attitude and

intention (Sauls, 2007).

Ward et al. (2010) used the TPB as the basis for examining knowledge, attitudes,

and behaviors of primary care providers (123 NPs, 2 MDs, 4 CNMs) regarding screening

for periodontal disease and knowledge regarding the link between periodontal disease

and heart disease, stroke, and diabetes. Factor analysis was used to determine the factor

structure of the predictor variables. ATT, SN, and PBC were identified factors and

correlated with the TPB. An additional factor was identified as "reimbursement for

screening services" and together with the aforementioned explained 65% of the variance (Ward et al., 2010, p.1809).

Nelson, Cook, and Ingram (2013) sought to evaluate the constructs of the TPB as predictors of medical assistant (MA) and Licensed Practical Nurses (LPN) accuracy in blood pressure monitoring. 50 MAs and LPNs participated in blood pressure monitoring of 143 patients. This research measured the relationship between predictors and intention, followed by the relationship between predictors and actual behaviors. As indicated in the TPB, perceived behavior control and subjective norm were positively correlated with intention and showed a medium effect ($r = 0.37$ for both). A small, non-significant relationship was identified with attitude (Nelson et al., 2013, p.465). In analysis of the predictors and actual blood pressure accuracy, only intention was a significant predictor of accuracy in the measurement of the systolic blood pressure (Nelson et al., 2013).

The study by Sanders (2006) investigated the depression screening practices of Certified Nurse Midwives and factors associated with screening. The TPB was the cited theoretical framework for this study of 378, with attitude, knowledge, perceived ability, and screening behavior identified as the variables included for study. It was not clear if perceived ability was to be similar to the TPB perceived behavioral control, but as perceived behavioral control accounts for self-efficacy, it is assumed. Multiple regression analysis was performed and attitude, perceived ability, and knowledge were positively related to depression screening. The author stated in the abstract that 20% of the variance in depression screening could be accounted for by all three predictors combined but did not provide enough information within the article to substantiate these findings (Sanders, 2006). The findings of two variables of attitude and perceived ability were positively

related to screening with statistically significant small to medium sized correlation ($r =$ .27 and $r = .25$ respectively) (Sanders, 2006, p.342). The findings for the remaining variable of knowledge were not reported in the article.

Overall, the reviewed literature supports the use of the TPB in the measurement of healthcare providers' intention and/or behaviors. The lack of an instrument available to measure the intention of professionals to screen for, or identify, cases of NFS in IPV necessitated the creation of a survey (DINS) utilizing components of the TPB.

Development of DINS

The Delwiche Intention to screen for Nonfatal Strangulation (DINS) was developed with an interprofessional work group including law enforcement officers, healthcare providers, and advocates from southeastern Wisconsin. This group was convened specifically for the development of the DINS. The initial interprofessional group focused on the issues surrounding knowledge and key facts regarding NFS. After several months of meeting and collaboration, ten knowledge items were created by the interprofessional group. These questions will be part of data collection used to assess professionals' knowledge of NFS. These questions were included on the DINS to assess professionals' knowledge of NFS.

Following this initial work, there were some interprofessional group membership changes. The final work group consisted of two law enforcement officers, two advocates, two healthcare professionals, and one District Attorney. Each member of the interprofessional workgroup had a minimum of five years of experience working with victims of intimate partner violence. The final group provided expert opinion on the content validity of the final version of the DINS.

The DINS items measuring antecedents to intention (ATT, PBC, and SN) and intention to screen for NFS history were created by this author and guided by Ajzen's Theory of Planned Behavior (2005, 2006). As previously discussed, the combination of the ATT, SN, and PBC of a behavior contributes to intention to perform that behavior.

The behavior of interest in this study was screening for NFS in cases of IPV by professionals most likely to see and provide acute services to victims. When designing the study, the behavior of interest was identified in terms of its Target, Action, Context, and Time (TACT) elements. According to Ajzen (2006), defining the TACT elements allows all of the constructs of the theory of planned behavior to be defined in terms of exactly the same elements, referred to as the principle of compatibility. In this study, the TACT elements were as follows:

Target = Professional groups (Healthcare Providers, Law Enforcement, Advocates)

Action = Screening for history of NFS in IPV cases

Context = Care or work setting (varied per professional setting)

Time = Variable: when history of IPV identified

Utilizing specific action behavior allows development of questions that are precise for the respondent. The measures of the antecedents and behavioral intention were by self-report as observation of screening for NFS is outside the scope of this study at this time. Attitude, perceived behavioral control, subjective norm, and intention were assessed directly.

The survey contained both negatively and positively worded items to avoid agreement bias by the respondent, or a tendency to agree with an item regardless of content (DeVellis, 2012). Likert scaling was chosen for each item, using a seven point

scale with strongly disagree and strongly agree as anchors. An odd number was chosen to allow for a neutral midpoint (Pett, Lackey, & Sullivan, 2003). Likert scaling was chosen as the intent is to capture the opinions and attitudes of the respondents. Likert scaling allows the respondent to indicate their level of agreement (or disagreement) with the item (DeVellis, 2012).

Readability of the survey was assessed using two measurements: the Flesch-Kincaid Grade Level assessment and the SMOG (Simplified Measure of Gobbledegoop). Both assessments identified the survey content written at an eleventh grade level. Based on the professional preparation of each member of the identified groups for possible inclusion in the study, no changes were made to adjust readability. All professions identified for inclusion require a minimum of a high school education for practice.

The next step in the development of the DINS was the initial review of the survey by the interprofessional group. Four of the seven interprofessional group members assessed the survey and provided input about the clarity of the survey instructions, overall appearance of the survey, readability of the survey, and ease of marking responses. Additionally, each item was reviewed to assess the content validity of the item, or how relevant each item was to the underlying construct of interest. The members were asked to rate each item on a scale of $1 - 4$: 1 indicated no relevance to the study; 2 indicated that the item was somewhat relevant; 3 indicated the item was quite relevant; and 4 indicated that the item was highly relevant. Each item score was then calculated to identify the item content validity index (I-CVI). If an item had a score of 1 or 2, the item was revised and reviewed again by the expert panel. The I-CVI is computed as the number of experts rating each item at a 3 or 4, divided by the total number of raters. For a

group of four evaluators, the I-CVI should be no less than 1.00 (Polit & Beck, 2006).

Following multiple iterations of the survey and multiple reviews by the group members,

an I-CVI of 1.00 was achieved.

Feasibility study. A feasibility study was conducted to assess planned

distribution of the survey, ease of use and acceptability of the DINS.

Following IRB approval, twenty nine participants were recruited: 7 law

enforcement officers, eleven registered nurses, and eleven advocates. Law enforcement

and advocate participants were recruited via email with a survey link embedded.

Registered nurses were solicited face to face at a monthly staff meeting and provided a

written survey with self-addressed stamped envelope for return of the completed survey.

A follow up email was sent to the RN group with the survey link embedded. There was a

total response rate of 66%: 5/7 law enforcement officers (71% response rate); 4/11 RNs

(36%); and 10/11 advocates (91%). Two of the RNs returned a paper survey, two

completed the online survey. Qualtrics© Survey Software was utilized for online data

collection.

The average time to complete the survey was 12 minutes. Respondents were

asked about confusing statements, difficulty in answering questions, unclear directions,

or annoying features of the survey. All indicated that there was no problem with any of

the aspects of the survey. Open answer questions about the survey elicited responses

indicating that the survey length was "just right" and that the survey overall was easy to

comprehend.

Three RNs agreed to participate in a focus group, providing contact information

for follow up. None of the advocates or the law enforcement participants indicated

agreement to participate in a focus group. When contacting the RNs to schedule a date for a focus group, only one participant was able to schedule a mutually agreeable date to meet. Based on this response, the focus group was cancelled.

The DINS was developed as a brief tool to collect data to assist in determining which factors influence professionals' intention to screen for a history of NFS in IPV cases. The proposed method of survey distribution, as described above, was determined to be feasible. The next steps included the evaluation of the psychometric properties of the newly developed instrument and the identification of factors that may influence intention.

Research Purpose, Aims, Questions, and Hypotheses

The overall purpose of this study was to identify what factors (background factors and antecedents to intention) influence professionals' intention to screen for NFS in IPV cases. The differences in intention between professional groups was assessed.

The primary aim of this study was to establish preliminary psychometric properties of the DINS. The secondary aim was the identification of the influence of factors (background factors and antecedents to intention) on professionals' intention to screen for NFS in IPV cases.

Aim 1

The primary aim of the study was to conduct initial psychometric testing of the newly developed DINS.

RQ1: What are the initial psychometric properties of the newly developed DINS?

H1: Exploratory factor analysis will reveal a four factor scale.

H2: Controllability and self-efficacy will both load on the same factor.

H3: The DINS total score and each of the four subscale scores (ATT,

SN, PBC, and Intention) will have a Cronbach's alpha reliability of $\geq .70$.

H4: The DINS average inter-item correlations will be $\geq .30$.

H5: All DINS items will positively correlate with the respective subscale total

score demonstrated with an item-total correlation of $\geq .40$.

Aim 2

The secondary aim of this study was to examine the influence of background

factors (prior training, professional group and knowledge) and antecedents to intention

(ATT, SN, PBC) on intention to screen for NFS history in IPV cases.

RQ2: How well is intention to screen for NFS history predicted when the entire set of six

predictor variables is included?

H6: The overall regression, including background factors and antecedents to

intention, will be statistically significant.

RQ3: How much variance does each predictor variable uniquely account for?

H7: Antecedents to intention (ATT, SN, PBC) will have a significant contribution

to predicting intention.

RQ4: Are there differences in screening intention based on professional group?

$H8_0$: There will be no significant difference in intention between the professional

groups.

RQ5: Are there professional group differences in predictive variable impact on intention?

$H9_0$: There will be no significant differences in the influence of chosen background factors (knowledge, prior training) and antecedents to intention (ATT, SN, and PBC) on intention to screen between the professional groups.

Statement of Assumptions

In this study, the behavior of interest was screening for (or identification of) a NFS history in IPV victims. The following assumptions were based on the influence of the TPB as the conceptual framework for the study (Ajzen, 2005) and the researcher's paradigmatic views:

1. Humans behave in a sensible manner.

2. Humans take into account available information and implicitly, or explicitly, consider implications of their actions.

3. Behavioral intention is the direct antecedent to actual behavior.

4. The relative importance of attitude, subjective norm, and perceived behavioral control in influencing intention varies across behaviors and situations.

5. Attitude, subjective norm, perceived behavioral control, and work environment will influence behavioral intention in this sample.

6. People will generally intend to perform screening if they hold a positive attitude about screening for NFS.

7. People will generally intend to screen if they are supported in completing screening or case identification by those whose opinion matters to them (peers, co-workers, supervisors, etc.).

8. People will generally intend to screen if they believe they can screen for or identify cases of NFS.

9. People will generally intend to perform the screening if they believe that they have supportive work environments for the completion of screening or case identification.

10. Emergency department healthcare team members, advocates, and law enforcement officials are professionals most likely to interact with victims of IPV.

11. Participants in this study will represent professionals in similar positions within this community.

12. Participants will be able to reflect on their intention regarding screening for or case identification of NFS history in IPV cases.

Chapter Two Conclusion

This chapter provided an overview of the theoretical framework, the Theory of Planned Behavior, used to guide the study. An overview of the philosophical underpinnings of the study, post positivism was also presented. An integrated review of the literature was performed to identify what is known and not known about NFS in IPV cases as well as screening for/identification of cases. A review of literature of the use of the TPB to examine healthcare provider behavior was included. The chapter concluded with the restatement of the study questions as well as the assumptions of this study.

Chapter 3

RESEARCH DESIGN AND METHODS

This chapter provides a detailed review of the research design, choice of setting, sampling method, sample size justification, proposed data collection methods, procedures for data analysis, description of statistical analysis, and description of protection of the rights of the human research participants.

The overall purpose of this study was to identify what factors (background factors and antecedents to intention) influence professionals' intention to screen for NFS in IPV cases. The differences in intention between professional groups were assessed. To facilitate this purpose, the DINS was created. The primary aim of the study was to assess the psychometric properties of the newly developed DINS. The secondary aim of the study was to examine the influence of background factors and antecedents to intention on professionals' intention to screen for a history of NFS in IPV cases.

Design

In this study, I used a nonexperimental, descriptive, correlational, cross-sectional design. Intention to screen is an indirect construct that was measured through the use of factors derived from the theoretical framework and construct definitions. The aim of the study also included description of the relationships between the background factors and antecedents of intention to intention to screen. The type (positive or negative) and strength of the relationship was determined. This aim was met through a correlational design (Grove, Burns, & Gray, 2013).

The DINS was administered to each professional group at one point in time. The independent variable data of background factors (profession, age, gender, knowledge and prior training) and antecedents to intention (ATT, SN, PBC) was collected at the same time as the dependent variable measurement of respondents' intention to screen for NFS, utilizing a cross-sectional design (Polit et al., 2001).

Recruitment of Participants

A target population of law enforcement officers, Emergency Department RNs, and advocates in Wisconsin were chosen based on the likelihood to provide care to victims of IPV and NFS. A nonprobability sampling plan using purposive sampling was employed. Nonprobability sampling indicates that the chosen sampling plan does not include randomization. Purposive sampling was chosen to allow for selection of the proportion of sample from different subgroups, in this case professional practice group (Laerd Statistics, 2012). Based on the three professional groups targeted for participation, a purposive sampling allowed for continuous enrollment of subjects with the intent to enroll until the goal of one third of participants from each professional group was obtained. While purposive sampling did occur, enrollment was not evenly split between the professional groups.

Eligible participants were solicited through professional practice organizations for healthcare team members and advocates. Law enforcement officers were recruited through direct email request for participation to Chiefs of Police and Sherriff. RNs and other healthcare team members were recruited through the Wisconsin Emergency Nurses Association (WENA), an organization of approximately 650 to 700 members focused on the advancement of emergency nursing through education and public awareness (WENA,

n.d.) via social media and direct solicitation at a WENA conference. Healthcare team members working in emergency departments were also recruited through email at various healthcare agencies following IRB approval. Nurse managers were identified and asked to distribute the email and study link to healthcare team members working in the ED. Advocates were recruited through Wisconsin Coalition Against Domestic Violence (WICADV), a statewide coalition working towards social change to end domestic violence with a current membership of approximately 20,000 (End Domestic Abuse Wisconsin, n.d.).

Eligible participants were invited to voluntarily participate through email solicitation, in person at the WENA conference, and a study "page" that was created and shared using Facebook. Inclusion criteria included, (1) age greater than 18 years; (2) able to speak and read English; (3) membership to one of the identified professional groups; (4) computer and internet access for data collection.

Sample size determination was made based on planned statistical analysis in this study. Exploratory factor analysis was completed for purposes of validity testing. There are various recommendations for sample size in the literature. Comrey and Lee and Tabachnick and Fiddell (as cited in Pett, Lackey & Sullivan, 2003) indicated 200 subjects would be considered "fair" and 300 subjects would be considered "good" for sample size in factor analysis. A minimum subject to item ratio of 5:1 was supported by Gorsuch and Hatcher (in Osborne & Costello, 2004), indicating a minimum sample size of 135. Power analysis for additional planned statistical tests was performed, but the largest sample size needed was for factor analysis. Thus, the proposed sample for this study was 300 subjects, with 100 from each professional group. Based on a suggested

response rate of 20 to 30% in online survey research (Kaplowitz, Hadlock, & Levine, 2004), a pool of 335 to 500 eligible potential participants per professional group was needed to recruit an adequate sample size. The reported enrollment in the identified professional practice associations was sufficient to meet these goals.

Recruitment of participants began in July, 2018 following IRB aproval. The online social media (Facebook) page was opened on July 18, 2018. The first wave of email solicitation was sent to professional groups (WENA, Wisconsin Professional Police Association, & WICADV) concurrently. There was no response following the initial contacts at the Wisconsin Professional Police Association, therefore dissemination did not occur through this professional agency. The WENA contact persons assisted with survey dissemination through WENA social media sites, but were unable to disseminate utilizing the professional group email address list. WICADV approved dissemination via membership email list. These recruitment efforts generated a total of 55 responses, with 43 meeting inclusion criteria.

An amendment to recruitment effort was made to send emails directly to law enforcement agencies and healthcare agencies in Wisconsin. The amendment was approved on 8/8/18. The law enforcement agency emails were sent to the Chief or Sherriff of the agency with a request for dissemination to the officers. Nine law enforcement agencies responded with an agreement to participate. Five agencies responded and declined to participate. The remaining agencies (greater than 50) did not respond directly. It was not clear if the email request for participation was forwarded to the officers.

Healthcare agencies in Wisconsin were also contacted at this time (beginning in August, 2018) to request participation of ED healthcare team members. Emails were sent to the IRB of the healthcare agencies with request for participation. Two healthcare systems indicated that their IRB review was not required for participation of their healthcare team members and approved email dissemination through their respective hospital ED nurse managers. A third healthcare system required IRB review. The IRB approval was obtained and emails were disseminated. A total of nine hospitals' ED nurse managers were contacted with request for email dissemination.

On 9/17/18 an additional site was approved for participation in the study. This site is a center in Southeastern Wisconsin that provides comprehensive, co-located services for victims and families impacted by domestic violence, including law enforcement services, advocacy, and healthcare abuse response services (Sojourner Family Peace Center, 2013). Individual emails were distributed to the center employees requesting participation. Following the above recruitment efforts, a total of approximately 250 surveys were obtained.

On 10/15/19 an amendment was approved to seek study participation at the WENA conference. Paper copies of the survey were disseminated in the welcome packet for participants with a request for completion of the anonymous survey. Participants were eligible to submit a separate raffle ticket for the drawing of one of four $50 Amazon gift cards.

After 18 weeks of recruitment, a total of 272 surveys were collected. At this point, enrollment of new participants ended as it was concluded that further recruitment from the identified participant pools would not yield more participation.

Protection of Human Subjects

The rights of self-determination, privacy, anonymity, and protection from harm are protected for participants. Self-determination was protected by informing potential participants about the study and allowing them to voluntarily choose whether or not to participate. They were also assured of their ability to withdraw from the study participation at any time, without penalty. Study participants remained anonymous, with no way to identify or link their identity and responses. This allows for protection of privacy (Grove et al., 2013).

This research was submitted to the IRB as exempt research, as determined by federal guidelines 45 CFR 46.101(b), Category 2: survey procedures in which the participants cannot be linked to responses and the responses cannot reasonably place the participants at risk for of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation (Marquette Office of Research Compliance, 2013). This indicated less than minimal chance of harm for participants. One potential risk may be psychological distress secondary to the study topic, NFS in IPV cases. Participants were given resources to assist with any distress caused by study participation. Those resources are free of charge and were identified within the email explanation of the study. The data was collected online and accessed via a password protected laptop. The research study was approved as exempt. The participants retained anonymity, so a written consent form was not be developed.

Methods

Data Collection

An explanatory email was sent to the contact person at the respective professional groups and/or agencies with a request to distribute the email to all of their members and/or employees. The survey link was embedded in the email. A copy of the explanatory email is found in Appendix D. After the participants received the initial email and explanation, they had the option to utilize the embedded survey link to participate. The identified contact person was sent a reminder email one week after the initial explanatory email with a request for dissemination to their members/employees. This reminder email had an identified deadline for participation.

The Facebook page was created and published concurrently with the initial email solicitation. The page included the same study explanation as provided via email. The survey link was embedded in the page. The Facebook page was public and could be seen by any interested Facebook user. Individuals known to belong to one of the professionals groups identified for participation in this study were invited to "like" the page. The WENA supported the study page on their own WENA Facebook page. The Facebook page was not used to collect any data directly. The Facebook page was unplublished (closed) at the conclusion of data collection.

Face to face study participation was solicited at the WENA conference. Copies of a flyer that requested participation and explained the study, the study survey, and a raffle ticket were included in the conference materials given to each participant. The flyer explained that the participation was voluntary and the participant could complete the

included anonymous paper survey or find the online survey via the Facebook page. At the welcome of the conference, a short announcement was made explaining the option to voluntarily participate in the study and identifying the study materials in the conference folder. The paper surveys were collected in a closed file box at a table in the main conference meeting area. In a separate closed file box, raffle tickets were collected with the name of respondent. At lunch break, two names were drawn by conference organizers for the first two Amazon gift cards. At the conclusion of the conference, the final two names were drawn for the final two gift cards. All raffle tickets were kept separate from the anonymous completed surveys and were disposed of following the drawing.

Instrument

The DINS was a newly constructed survey including items used to collect demographic data, background factors, and antecedent to intention and intention subscales.

Demographic data included gender, age, years of practice in the professional role, encounters with victims of violence, current screening practice, and screening tools used. Gender was collected as a dichotomous response of male/female. Age and years of practice were short answer responses, allowing the respondent to indicate the age and practice in years.

Encounters with victims of violence consisted of two questions with a dichotomous response of yes or no: Have you encountered a victim of IPV in your practice and have you encountered a victim of NFS in your professional practice. Both responses used branching logic. If the respondent answered "yes", the next question inquired about the approximate number of times they encountered these victims in their

practice. These responses were short answer, allowing for either a number or other explanation by participant. If the respondent answered "no", they went to the next item in the survey.

Two separate current screening practice questions were asked: Do you currently screen for IPV and do you currently screen for a history of NFS. These questions also utilized branching logic. If the respondents indicated "no", they did not currently screen for either IPV or NFS, the next survey item was displayed. If they responded "yes" or "yes, if circumstances warrant it", they were asked to enter approximate percentage of time they screened for IPV or NFS in a short answer response. Branching logic also allowed for those who said "yes" to screening for IPV to answer additional items about screening tools. The first question asked if they used a specific screening tool (dichotomous yes/no response). If they indicated that they did use a specific tool, a question asking for the name of that tool was asked with the option for a short answer response.

Background factors included professional group affiliation, prior training and knowledge about NFS. The profession variable was collected for sample description and comparison of differences in antecedents to intention and intention between groups. Prior training about NFS was assessed with a dichotomous response (yes/no) item.

Knowledge about NFS was assessed with questions developed by the previously described interprofessional work group. The questions were developed following identification of key knowledge areas for NFS by the interprofessional group. These 10 questions measured knowledge of current law in Wisconsin regarding NFS, definition of strangulation, types of strangulation, signs and symptoms of NFS, appropriate

terminology to use in NFS case documentation, and victim lethality risk with history of NFS. A composite score (range 0 – 10) on the knowledge quiz was calculated and analyzed for the association with antecedents to intention and intention. Differences in knowledge about NFS between groups was also compared.

To assess intention to screen, the DINS included a 27 items with four subscales: (1) Attitude subscale (6 items); (2) Subjective norm subscale (6 items); (3) Perceived Behavioral Control subscale (9 items); and (4) Intention subscale (6 items). All items were answered on a 7 point Likert scale to allow respondents to rate their degree of agreement or disagreement with 1 = strongly disagree and 7 = strongly agree. Thirteen of the 27 items were reverse coded due to being phrased in a negative manner.

The ATT subscale measured the respondents' attitudes towards screening for NFS in IPV victims and referred to their positive or negative response to engaging in this screening. Sample questions included, "Screening for/identifying cases of strangulation is worthless" and "It is beneficial to identify a history of strangulation in IPV cases". A higher score on the ATT subscale indicated a more positive response to screening.

The subjective norm subscale measured the respondents' perceptions of the social pressure to either perform or not perform screening for NFS. This included the respondents' perceptions of whether or not screening would be approved of by important others. As such, items about what those important others would do in the same situation were important and were included. Sample questions included "The people in my profession whose opinion I value already screen IPV victims for a history of strangulation" and "My peers are unlikely to screen for a history of strangulation in cases

of IPV". A higher score on the SN subscale indicated perceived greater social support for screening.

Perceived behavioral control subscale items captured the respondents' perceptions of their ability to both perform the behavior of interest (self-efficacy), and their ability to control the behavior (controllability). Sample questions included "I am unable to screen for/identify cases of strangulation due to barriers in my work environment" and "If I wanted to, I could screen for/identify cases of strangulation in IPV victims". A higher score on the PBC subscale indicated greater perceived control over the behavior and greater self-efficacy.

The intention subscale was a measure of generalized intention to perform or not perform screening for NFS in IPV cases. Intention served as a proximal measure for the behavior of interest because the behavior was difficult to measure directly. Generalized intention was measured with intention statements such as "In the future, I intend to screen for a history of strangulation in IPV cases" and "I expect to screen for a history of strangulation in IPV cases in the future". A higher score on the Intention subscale indicated greater intention to perform the behavior.

An open-ended question followed each subscale (ATT, SN, PBC, and Intention). The open-ended questions allowed participants to provide additional information regarding their perceived control of screening, their opinions of screening, their perceptions of what others thought about screening and their thoughts about their future practice of screening. A copy of the DINS can be found in Appendix C.

Data Analysis

Prior to data analysis, data were cleaned. Potential problems with the data were examined, including errors in data coding or entry, missing values, extreme outliers, nonnormal distribution and sample sizes too small for the intended analysis (Warner, 2013).

Initially, data were reviewed for scores outside of the expected range for any of the variables. For example, possible scoring on the likert scaling was 1-7, and scores falling outside this range required closer inspection of the individual case and correction or deletion of that value (Pallant, 2010). Additional scoring was evaluated, such as the dichotomous variables and knowledge composite score range from 0 to 10.

The Missing Value column in the Variable View worksheet in the SPSS program allowed for visualization of missing values (Warner, 2013). Missing data was checked against the Qualtrics data collection software to detect any data transfer issues. Systematic patterns in missing data could indicate bias in nonresponse and can affect how the findings can be generalized. If a particular individual respondent has many missing data points, a "listwise" deletion of the data occurred for the analyses of research questions 2, 3, 4, and 5. Listwise deletion eliminated the respondents' data from the calculations if any variable score was missing (Warner, 2013). For the EFA analysis of research question 1, "pairwise" deletion was chosen to maximize the data used for the analysis. Prior to this decision, missing data was reviewed and it was determined that the data was missing randomly, and not systematically.

Following initial inspection and cleaning of the data, preliminary analyses included exploration of the nature of the variables. Categorical variables of gender, professional

group affiliation, previous history of caring for a victim or IPV and/or NFS, and previous history of training were assessed with review of a frequency table, including the total number per group/variable and percentages (Warner, 2013).

The continuous variables (all subscales, age, and years of experience) summary statistics were assessed, including the mean, median and standard deviation. Normality of the distribution, skewness and kurtosis of the subscales was assessed through the evaluation of a histogram. Scores distributed to right or left side indicated negative or positive skewness, or clustering of scores at the low or high end of the value range (Pallant, 2010). Kurtosis refers to how the distribution of scores is "peaked". If too pointed, the scores are clustered in the center. If too flat, there may be too many scores in the extreme ends of the range (Pallant, 2010). After performing initial exploratory evaluation of the scores, specific review of the data for suitability for further analysis took place.

The primary aim of the study was to conduct initial psychometric testing of the DINS. Hypotheses one through five were directly related to Research question one: What are the initial psychometric properties of the newly developed DINS?

Hypotheses one and two were analyzed with exploratory factor analysis which allowed for determination of how many latent variables underlie the set of items written for the DINS (DeVillis, 2012). Prior to running a factor analysis, the data were assessed for factorability. There were sufficient numbers of significant correlations to assure that factor analysis was the correct test to run (Pett et al., 2003). The sample size was reviewed for adequacy after cleaning and pairwise deletion of missing data. The average of the inter-item correlations was assessed to be .30 or better. The correlations were assessed for intercorrelations greater than .80, which would indicate multicollinearity

(Polit, 2010). Multicollinearity refers to the relationship among the variables and exists when the variables are highly correlated (r=.9 and above). Bartlett's test of sphericity assessed that the correlation matrix was not an identity matrix, or a matrix in which there is no correlation among the items (Pett et al., 2003). Bartlett's test of sphericity was significant to support the factorability of the data. Another tool to assess factorability is the Kaiser-Meyer-Olkin (KMO) test. The KMO is a measure of sampling adequacy and "compares the magnitude of the correlation coefficients to the sizes of the partial correlation coefficients", or the correlation after controlling for the effects of all the other variables (Polit, 2010, p. 339). The range of the KMO result is 0 to 1, with values of .80 or above considered good, and .70 and above considered fair. Less than .60 would be considered unacceptable (Pett et al., 2003).

Factor extraction is based on the assumption that underlying constructs are responsible for correlations and that factors can be identified that will represent the construct being measured. Principle components analysis (PCA) factor analyzes all the variance in the variables (common, specific, and error). The basic perspective is that each of the extracted factors are orthogonal (not correlated) to one another and that they are linear combinations of the items included in the analysis (Pett et al., 2003). The first factor is the linear combination that accounts for the largest amount of variance. Eigenvalues is a single value and represents the amount of variance in all of the items that can be explained by a factor. All eigenvalues must be positive (greater than 0) for factorability. Using the Kaiser-Guttman rule, I extracted those factors with eigenvalues above 1.0. This is due to the fact that an eigenvalue lower than 1.0 is less important than

the original factor in accounting for variance, as all original variables have a variance of 1.0 (Polit, 2010).

The Scree plot was also assessed to determine the factors that were larger and more important than smaller, less reliable factors. This was done by reviewing the plot and determining where there was a sharp discontinuity in the steep slope of the plot (Polit, 2010).

The cumulative percentage of variance extracted by previous factors was reviewed. In this approach, the extraction of factors stops when the maximum variance has been extracted, at approximately 75 to 80% of variance or when each successive factor contributes less than 5% to the cumulative variance (Pett et al., 2003).

Following factor extraction, factor rotation was performed to better understand the meaning of the factors and the interpretation of them. Varimax rotation was performed with the goal of simplification, by maximizing the variances of the loadings within the factors and between the high and the low loadings on particular factors (Pett et al., 2003).

Finally, factors were interpreted, beginning with examination of the factor loadings. In this study, the four factor structure was assessed. Item to factor loadings in orthogonal solutions (like varimax rotation) include .45 (fair); .55 (good); .63 (very good); and .71 (excellent). This provided initial guidelines in interpretation (Pett et al., 2003). Factor naming occurred following the interpretation.

Hypothesis three was analyzed by calculating Cronbach's alpha reliability coefficient for each of the subscales of the DINS and for the total score. This provided information about the internal consistency of the scale and the subscales, identifying that the items were all measuring the same underlying constructs (Pallant, 2010). The

negatively worded items on the scale were reverse coded prior to running the reliability tests. DeVellis (2012) suggests between .65 and .70 as "minimally acceptable", with .70 to .80 as "respectable" (p. 109).

Hypothesis four was assessed by reviewing the inter-item correlation matrix. First assessment was for positive values, indicating that the items measured the same underlying characteristic. The mean inter-item correlation was assessed, which should be on average .30 or better, indicating a strong relationship among the items (Pallant, 2010).

The item-total statistics was evaluated for analysis of hypothesis five. This provided information about how each item correlated to the total scale. Items that are good measures of the underlying construct should be highly correlated with the other measures, so item-total correlations less than .40 were reviewed (Polit, 2010).

The secondary aim of this study was examining the influence of background factors (prior training, knowledge, professional group) and antecedents to intention (ATT, SN, PBC) on Intention to screen for NFS history in IPV cases.   Research question two through five addressed this aim. The analysis of hypotheses six through nine are described below.

Hypothesis six and seven were analyzed with multiple regression, which allowed for the exploration of relationship between one dependent variable and a number of independent variables (Pallant, 2010). A standard multiple regression was utilized in which all independent variables (prior training, profession, knowledge, ATT, PBC, and SN) were entered in one step of an overall significance test to assess if the variables significantly predicted scores on intention to screen, the dependent variable. This simultaneous approach was preferred as all variables were given equal treatment, in

which the predictive usefulness of each predictor variable was assessed while controlling

for all the other predictors (Warner, 2013). Prior to running a multiple regression,

assumptions about the statistical analysis were assessed, including sample size,

multicollinearity, outliers, normality, linearity, homoscedasticity, and independence of

residuals (Pallant, 2010).

Sample size recommendations for multiple regression include a formula of $N > 50 + 8m$ (where m = number of independent variables). Six independent variables were

identified for this analysis required a minimum $N = 98$ (Warner, 2013).

Multicollinearity and normality assumptions were discussed above for purposes

of EFA testing assumptions. Assessing the residuals scatterplots is the preferred method

to assess normality in multiple regression and allowed for review of linearity and

homoscedasticity (or that the variance of the residuals about predicted DV scores should

be the same for all predicted scores). Additional checks of these assumptions were done

by reviewing the Normal Probability Plot (P-P) of the regression standardized residual

with the scatterplot. The Normal P-P Plot should show that the data points lie in a

reasonably straight diagonal line from left to right, indicating no major deviation from

normality (Pallant, 2010). The scatterplot should resemble a rectangle (approximately)

with most of the scores at the center. Outliers could also be seen in the scatterplot.

Hypothesis eight, the measurement of the differences in intention (dependent

variable) between professional groups (independent variable) was assessed using a one-

way ANOVA. The assumptions underlying ANOVA include normal distribution of

scores and equal variances in the groups, though ANOVA is robust even when these

assumptions may be violated so long as the sample size is large and the groups are fairly

equal (Polit, 2010). The test of homogeneity of variances is called the Levene's test and was assessed for significance. Post-hoc tests were used to determine where the differences among the groups occurred (Pallant, 2010).

Hypothesis nine was assessed using a series of Factorial ANOVAs, with two categorical independent variables (for example: professional group and training) and one continuous dependent variable (intention). This allowed for exploration of the differences between professional groups. To perform a Factorial ANOVA, the continuous independent variables of knowledge, ATT, SN and PBC were binned using score quartiles to create a categorical variable. The independent variables were assessed for interaction effect. Interaction indicates that the effect of one independent variable depends on the level of the second independent variable. If there is not a significant interaction, the main effects were evaluated, examining the effect of the one independent variable and ignoring the effects of the other independent variable (Warner, 2013).

Finally, content analysis of the open-ended questions began with development of a category scheme following review of the actual response data. Careful reading of the data was done, with identification of underlying concepts or clusters of concepts. Important concepts that emerged were given a label to indicate category. The next step included the coding of data in correspondence with the category. There was careful consideration of discovered concepts. When a particular theme emerged, frequency of the theme in the data was noted (Polit & Beck, 2012).

Potential Threats to Internal and Construct Validity

There are inherent threats to internal validity with the use of a descriptive correlational research design. One of these threats include selection bias, which may

include pre-existing differences between groups (Polit & Beck, 2012). Differences in intention may have been related to group differences rather any effect of the antecedents to intention. Key demographic and background variables were assessed to compare groups, such as age, years of experience, and prior training. This allowed for identification of group differences that may contribute to differences on the independent or dependent variable.

Construct validity involved inferences from the study variables (antecedents to intention, intention, etc.) to the higher order constructs they are intending to represent. If construct errors are present, there is a risk that evidence will be misleading (Polit & Beck, 2012). Development of the items began with conceptualization of the construct of interest, intention to screen for NFS. A review of the literature and input of an interprofessional group, consisting of members from the study population, resulted in the generation of items addressing intention as well as antecedents to intention. These items were reviewed and rated by an expert panel for content validity. A small feasibility study was conducted with nineteen respondents from the target population. The respondents were asked questions about the overall clarity and wording of the questions. Each of these efforts to enhance validity were discussed in further detail earlier in this chapter. EFA and reliability testing evaluated initial DINS psychometric soundness and findings will be discussed in chapter four.

When the DINS was created, the readability of the items was also reviewed and determined to be approximately at a grade level of 12. As stated in the previous paragraph, the items were reviewed in a small feasibility study by participants from each of the professional groups in this larger study population. The comments were supportive

of the tool and individual items. This potential limitation will be reviewed further in

chapter five.

Chapter Three Conclusion

This chapter described the study methodology, including design, recruitment

process, protection of human subjects and methods (data collection, instruments, and data

analysis). Potential limitations were also identified.

CHAPTER FOUR

Results

Chapter Four includes a description of the preliminary data screening process, a description of the sample characteristics, descriptive statistics for study measures, and results of the data analyses to address the primary and secondary aims of the research, including the research questions and hypotheses.

Preliminary Screening of Data

A total of 272 surveys were started. Thirty one respondents did not meet inclusion criteria of providing care and/or services to victims of intimate partner violence. An additional 38 respondents failed to complete portions of the background factors (knowledge questions, professional group affiliation, training) and/or whole portions of the antecedents to intention (inclusive of the ATT, SN, PBC and intention subscales). This resulted in a total 203 surveys included in the analysis.

Prior to completing quantitative data analyses to address the study questions and hypotheses, the data set was examined for missing data, errors in data coding or entry, missing values, and extreme outliers. Frequency tables were run on categorical variables, and summary statistics were assessed on continuous variables. Outliers were assessed and checked for data entry accuracy. All scores were within the expected range. Two respondents did not identify their professional group affiliation. There was one missing data point in each of the following subscales: PBC, SN, and intention. Individual missing data points were excluded pairwise for EFA testing and listwise for ANOVA and factorial ANOVA analyses.

Prior to running analyses, a summary score was calculated from the knowledge questions. The summary score range was 0 – 10. Negatively worded items within the antecedent to intention and intention subscales were reverse coded prior to running analyses. These items are indicated on the attached DINS with italicized text. (Appendix C).

The main continuous study variables were examined for outliers and normality. Box plots were reviewed and outliers were examined. There were three extreme outliers noted in the ATT subscale when all groups were assessed at one time. The data points were not transformed due to a low number of outliers per variable. Histograms were assessed to evaluate normality. All of the subscale variables (antecedents to intention and intention) were negatively skewed, indicating a clustering of scores at the high end of the range. Intention, PBC, and ATT score distributions were all leptokurtic, indicating a peaked distribution. SN had a platykurtic distribution, indicating a flatter distribution of scores. Skewness of the ATT subscale was -1.930 and kurtosis was 4.785; SN subscale was -.112 and -1.229; PBC was -.942 and .456; intention was -1.804 and 3.752. The overall shapes of each frequency distribution differ significantly from normal as indicated by positive Shapiro-Wilk statistic ($p = .000$ for all subscales).

Transformation of the scales was considered. To determine if this would be beneficial, the 5% Trimmed Mean statistic was assessed to identify if there was a large difference between the original mean and the trimmed mean following removal of the top and bottom 5% of cases (Pallant, 2010). There was not a large difference between the original and the trimmed mean in any of the continuous study variables. The largest difference was noted in the total intention subscale mean among advocates. There was a

difference in mean from original of 38.015 to a trimmed mean of 39.233 (change of

1.22). In the advocate group, there are three extreme outliers on the total intention

subscale. There was not a large enough difference to support transforming the data.

Scatterplots were assessed to determine if linear relationships existed between the

background variables, antecedents to intention, and intention. The scatterplots were not

curvilinear, and the antecedents to intention demonstrated a positive linear relationship

with intention.

Despite the non-normal distribution of scores, the statistics utilized were

considered robust enough to accommodate these violations of the parametric test and the

sample size was large enough to proceed with analyses (Pallant, 2010 & Warner, 2013).

Sample Characteristics

Sample characteristics are listed below in Table 1. Participants were 203

professionals from a Midwestern state who serve victims of violence in law enforcement,

healthcare, and advocacy. The participants were recruited through direct email

solicitation sent to the following for dissemination: Chief of Police or Sheriff for the

respective Wisconsin Law Enforcement Agencies; End Domestic Abuse WI; Sojourner

Family Peace Center and various healthcare agencies Emergency Departments.

Emergency department RNs were also directly recruited at a Wisconsin Emergency

Nurses Association conference where paper surveys were disseminated. Participation was

also recruited utilizing social media (Facebook) with the creation of a page named

"Identifying a History of Nonfatal Strangulation".

Table 1
Sample Characteristics (N=203)

Participant Characteristics	N	%	Mean	SD
Gender				
Male	42	20.7		
Female	161	79.3		
Age	199		40.27	12.476
Missing	4			
Professional Group				
Law Enforcement	55	27.1		
Healthcare Team Member	82	40.4		
Advocate	63	31.0		
Missing	3	1.4		
Prior Training NFS				
Yes	132	65		
No	71	35		
Knowledge	203		7.27	1.438
Encountered IPV victim				
Yes	191	94.1		
No	12	5.9		
Encountered victim NFS				
Yes	166	81.8		
No	37	18.2		
Currently screen IPV				
Yes	126	62.1		
Yes, if circumstances warrant it	49	24.1		
No	27	13.3		
Missing	1	.5		
Currently screen NFS				
Yes	40	19.7		
Yes, if circumstances warrant it	66	32.5		
Yes, as part of risk/lethality screening	38	18.7		
No	76	37.4		

Sample characteristics were also analyzed by professional group separately and are presented below in Table 2.

Table 2
Description of Sample Characteristics Used in Analyses by Professional Group (N=200)

Background Factors	Law Enforcement (N=55)		Healthcare Team Members (N=82)		Advocates (N=63)	
	Mean (N)	**SD**	**Mean (N)**	**SD**	**Mean (N)**	**SD**
Age	42.57 (54)	10.43	37.95 (79)	12.04	40.86 (63)	14.00
Years of Experience	17.19 (54)	8.96	13.74 (81)	11.38	9.25 (63)	9.02
Knowledge[a]	7.50 (55)	1.33	7.17 (82)	1.37	7.30 (63)	1.47
Gender (N=200)	**N**	**%**	**N**	**%**	**N**	**%**
Male	34	61.8	5	6.1	1	1.6
Female	21	38.2	77	93.9	62	98.4
	Yes	**%**	**Yes**	**%**	**Yes**	**%**
Prior Training NFS	45	81.8	36	43.9	48	76.2
Currently screen	19	34.5	58	70.7	47	74.6
IPV Yes, if warranted	27	49.1	13	15.9	9	14.3
Currently screen NFS	12	21.8	6	7.3	22	34.9
Yes, if warranted	29	52.7	22	26.8	13	20.6

[a]Knowledge (Range 0 – 10)

The following is a presentation of the findings for each research question and hypotheses for Aim 1, the initial psychometric testing of the newly developed DINS.

RQ1: What are the initial psychometric properties of the newly developed DINS?

H1: Exploratory factor analysis will reveal a four factor scale. The 27 item DINS were subjected to principal components analysis (PCA) with varimax rotation. Prior to performing the PCA, the suitability for factor analysis was assessed. Inspection of the correlation matrix revealed a fair amount of coefficients of .3 or above, and very few above .8. Bartlett's test of sphericity was significant ($p=.000$) indicating the correlation matrix was not an identity matrix. The Kaiser-Meyer-Olkin (KMO) test value

was .868, interpreted as "meritorious", and that there is a sufficient sample size relative to the number of items (Pett et al., 2003, p.78). Finally the measure of sampling adequacy (MSA) statistics indicate how strongly the item is correlated with other items in the matrix. Individual MSAs ideally should be above .7. In this case, all were .8 or .9, indicating correlation matrix is factorable (Pett et al., 2003).

Initial factor extraction was performed with criterion to retain factors that had eigenvalues greater than 1. Seven factors had eigenvalues greater than 1. Next, the percentage of the variance explained by each factor was evaluated. Four factors account for a minimum of 5% of the variance, and cumulative variance of 59%. Finally, the scree plot was examined. A ruler was used to draw a straight line through the lower values of the smaller eigenvalues to the point where the factors curve above the straight line. This occurs approximately at the 5 factor point.

The five factors were then rotated using varimax rotation. Factor loadings were evaluated. Factor one included eight items (retained factor loadings are bolded in the table). Factor two included six items, and Factor three included four items.

Factor four included only two items (Q33_5: Time constraints in my work environment prohibit me from screening; Q33_6: The physical space in which I perform screening for/identification of strangulation is prohibitive). Both items had high loadings on only this factor, but ideally at least three items would load on one factor (Pallant, 2010). If there are not at least three to four items correlated with a factor, the entire factor just represents one correlation which may arise from sampling error (Warner, 2013). Therefore, this factor was not retained, and these two items were removed from the DINS.

The remaining seven items loaded on factor five. Due to the elimination of factor four with two loadings, the four factor model was run and was analyzed. Results from this analysis, including rotated factor loadings are summarized in Table 3. The factor loadings remaining fit with the theoretical construct underlying DINS tool development. Interpretation of these factors will occur in Chapter 5. Based on these decisions, the hypothesis of an underlying four factor scale was supported.

Table 3
Rotated Component Matrix, 4 Factor Model

Rotated Component Matrix[a]

	Component			
	1	2	3	4
My supervisor expects me to screen victims of IPV for a history of strangulation.	**.832**			
The people in my profession whose opinion I value already screen IPV victims for a history of strangulation.	**.815**	.332		
My peers are extremely likely to screen for a history of strangulation.	**.785**			
R My supervisor has no expectations about screening for strangulation in IPV victims	**.765**			
In my work environment, there is a clearly defined method to document/report cases of strangulation when identified.	**.745**			
R My peers are unlikely to screen for a history of strangulation	**.687**			
There are resources in my work environment that help me to complete the screening for strangulation in IPV cases (i.e. checklists, forms, screening alerts, etc.)	**.671**			
I expect to screen for a history of strangulation in IPV cases.		**.866**		
I want to screen for a history of strangulation in IPV cases.		**.840**	.316	
It is likely that I will screen for a history of strangulation in IPV cases.	.382	**.803**		
In the future, I intend to screen for a history of strangulation in IPV cases.	.349	**.794**		
R In the future, I do not intend to screen for a history of strangulation in IPV cases		**.781**		.335

	1	2	3	4
R It is unlikely that I will screen for a history of strangulation in IPV cases in the future		**.724**		
It is valuable to screen for cases of strangulation.			**.794**	
It is beneficial to identify a history of strangulation in IPV victims.			**.747**	
R Screening for cases of strangulation is worthless			**.657**	.376
Screening for strangulation in IPV cases should always happen.			**.645**	
R It is impossible to screen for a history of strangulation in IPV victims				**.693**
R I have no control over screening for history of strangulation in IPV victims	.489			**.662**
R I am unable to screen for cases of strangulation due to barriers in my work place	.414	.359		**.513**
I have complete control over screening for a history of strangulation in IPV victims.	.550	.321		**.379**
If I wanted to, I could screen for cases of strangulation in IPV victims.	.472			**.381**

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.[a]
a. Rotation converged in 5 iterations.

Table 4
Component Transformation Matrix
Component Transformation Matrix

Component	1	2	3	4
1	.683	.585	.273	.342
2	-.658	.587	.467	-.063
3	.135	-.523	.840	-.048
4	-.286	-.200	-.026	.937

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization

Table 5
Total Variance Explained, 4 Factor Model

Total Variance Explained

Comp onent	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.750	39.000	39.000	9.750	39.000	39.000	5.765	23.058	23.058
2	2.466	9.863	48.862	2.466	9.863	48.862	4.697	18.787	41.845
3	1.676	6.704	55.566	1.676	6.704	55.566	2.452	9.809	51.654
4	1.406	5.624	61.191	1.406	5.624	61.191	2.384	9.537	61.191
5	1.065	4.259	65.449						
6	1.023	4.091	69.540						
7	.987	3.948	73.489						
8	.844	3.377	76.865						
9	.691	2.763	79.628						
10	.636	2.544	82.172						
11	.600	2.400	84.572						
12	.559	2.236	86.807						
13	.520	2.081	88.888						
14	.500	2.001	90.889						
15	.384	1.537	92.427						
16	.306	1.223	93.649						
17	.281	1.123	94.772						
18	.265	1.059	95.832						
19	.213	.853	96.685						
20	.200	.800	97.485						
21	.182	.727	98.213						
22	.160	.639	98.852						
23	.133	.530	99.382						
24	.094	.375	99.757						
25	.061	.243	100.000						

Extraction Method: Principal Component Analysis.

H2: Controllability and self-efficacy will both load on the same factor. There were five controllability items and four self-efficacy items on the DINS. Two controllability factors loaded on Factor 1, two on factor 4, and one on factor 5. As stated

above, the two items that loaded on factor 4 were removed from the DINS. All four self-efficacy items loaded on factor 5. This hypothesis was not supported.

H3: The DINS total score and each of the four subscale scores (Attitude, Subjective Norm, Perceived Behavioral Control, and Intention) will have a Cronbach's alpha reliability of ≥ .70. The overall Cronbach's alpha coefficient for the DINS with 25 items (following removal of two items after EFA) for this study was .929. The SN subscale with 8 items had a Cronbach's alpha coefficient of .901. One item was removed following further evaluation of the reliability analysis (reported below in results for hypothesis 5), and the alpha increased to .911. The ATT subscale was .730. The PBC subscale was initially .784. Two items were removed from the PBC subscale (reported below in results for hypothesis 5) and the alpha increased to .828. The intention subscale was .933. This hypothesis was supported.

H4: The DINS average inter-item correlations will be ≥ .30. The DINS mean inter-item correlation was .345. The SN subscale inter-item correlation was .523. The ATT subscale was .444. The PBC subscale was .339. The intention subscale was .704. This hypothesis was supported.

H5: All DINS items will positively correlate with the respective subscale total score demonstrated with an item-total correlation of ≥ .40. The SN subscale had one item (Q39_2: people in my profession whose opinions I value would not approve of screening) that had a low corrected item-total correlation of .369. If items do not correlate well with the scale totals, it may be measuring something else and can impact reliability (Polit & Beck, 2012). When removed, the corrected item-total correlations for the remaining seven items were all above .4.

Two items on the PBC subscale (RQ37_1: it is unpleasant to screen; RQ37_6: it would be detrimental to screen) had low corrected item-total correlations of .297 and .248. The two items were removed and the reliability was re-run. The corrected item-total correlations for PBC subscale were all greater than .4 following the deletion of the two items.

The ATT and intention subscale items all demonstrated corrected item-total correlation greater than .4. Overall, this hypothesis was not supported.

Aim 2

The secondary aim of this study is to examine the influence of background factors (training, professional group, and knowledge) and antecedents to intention (ATT, PBC, SN) on Intention to screen for NFS history in IPV cases.

RQ2: How well is intention to screen for NFS history predicted when the entire set of six predictor variables is included?

H6: The overall regression, including the independent variables of background factors (training, professional group, and knowledge) and antecedents to intention (ATT, PBC, SN,) will be statistically significant. Research question 2 was analyzed using standard multiple regression. Six independent variables were hypothesized to predict intention to screen for NFS history. Following preliminary data screening for violations of assumptions for multiple regression (explained below), scores on intention to screen were predicted from the following variables: Background variables (prior training, professional group affiliation, knowledge), and antecedents to intention (ATT, PBC, and SN). The total N for this sample was 203. Two cases were dropped due to missing data on at least one variable, therefore, for this analysis, $N = 201$. The prior

training variable was dummy coded 0 = no, 1 = yes. The professional groups were
dummy coded as LEO group and HCT group. The advocate group was the reference
group.

Checking the Assumptions.

Multicollinearity was assessed using the correlations between the variables in the
model. The independent variables of knowledge, ATT, PBC, and SN all correlate
substantially with the dependent variable of intention above .3. The independent variables
of professional group affiliation and prior training had correlation less than .3, though
they were statistically significant. See Table 6 for values.

The regression was run with the six independent variables. All six independent
variables retained significant correlation with the dependent variable, and none of the
independent variables demonstrated bivariate correlation above .7. See Table 6 for
values.

Table 6
Multiple Regression Correlation Matrix for Research Question 2 (N=201)

	Intention	LEO Group	HCT Group	Knowledge	Prior Training	ATT	PBC
Intention	-						
LEO Group	.168**	-					
HCT Group	-.228**	.498***	-				
Knowledge	.307***	.107	-.066	-			
Prior Training	.241***	.231***	-.379***	.272***	-		

ATT	.459***	.084	-.234***	.304***	.259***	-	
PBC	.562***	.249***	-.312***	.333***	.343***	.359***	-
SN	.543***	.329***	-.487***	.247***	.449***	.375***	.676***

*p<.05; **p<.01; ***p<.001

Additional collinearity diagnostics include the evaluation of tolerance and variance inflation factor (VIF). Tolerance indicates how much of the variability of the specified independent variable is not explained by the other independent variables in the model and is calculated by using the formula 1 – R squared for each variable. If the tolerance value is less than .10, it indicates that the multiple correlation with other variables is high, suggesting multicollinearity (Pallant, 2010). The range of the tolerance values for the six independent variables is .427 to .814. The VIF is the inverse of tolerance (1 divided by tolerance), and values above 10 would suggest multicollinearity (Pallant, 2010). All VIF values for the six independent variables were below 3. Both findings indicate multicollinearity is not violated with the six independent variables retained for the regression model.

The Normal Probability Plot (P-P) of the Regression Standardized Residual and the Scatterplot were reviewed to assess violations of assumptions for outliers and normality. The Normal P-P Plot lies in a reasonably straight diagonal line from bottom left to top right (Pallant, 2010). The Scatterplot of standardized residuals indicated an outlier with a standardized residual greater than -3. The Mahalanobis distance was reviewed next. This indicates the degree to which an observation is a multivariate outlier

(Warner, 2013). The critical chi-square value for six independent variables = 22.46 (Pallant, 2010). Three cases had a Mahalanobis distance that exceeded this value. Those cases were reviewed and no data entry errors were identified.

The Casewise Diagnostics output was reviewed to identify other unusual cases in the sample. Three cases had standardized residuals greater than 3.0 or below -3.0. The model did not predict the total intention score well for three respondents. The Cook's Distance was evaluated to determine if these cases are having undue influence on the results of the model as a whole. A value greater than 1 are a potential problem (Pallant, 2010). In this sample, the maximum Cook's Distance = .215, suggesting no major influence of these cases to the overall model.

Model Evaluation. Standard multiple regression was performed with all predictor variables entered in one step. Results for the standard multiple regression are summarized in table 7. The overall regression, including six predictor variables, was statistically significant, $R = .657$, $R^2 = .431$, adjusted $R^2 = .411$, $F(7, 193) = 20.90$, p <.001. Intention scores could be predicted from this set of six variables with approximately 43% of the variance in intention accounted for by the regression.

The regression equation for predicting intention was:

Intention = 1.71 + .18 LEO group + .33 HCT group + .41 knowledge - .81 prior training + .62 ATT + .26 PBC + .15 SN

Table 7
Regression Coefficient Table for Predictors of Intention, N=201

	Unstandardized b	SE b	β	t
Constant	1.71	3.94		.44
LEO Group	.18	1.01	.01	.18
HCT Group	.33	.50	.05	.66
Knowledge	.41	.30	.08	1.39

Prior Training	-.81	.94	-.06	-.87
ATT	.62	.15	.25	4.10***
PBC	.26	.07	.29	3.76***
SN	.15	.05	.28	3.35**

*$p<.05$; **$p<.01$; ***$p<.001$

RQ3: How much variance does each predictor variables uniquely account for?

H7: Antecedents to intention (ATT, SN, PBC) will have a significant contribution to predicting intention. To assess the contributions of individual predictors, the t ratios for the individual regression slopes were examined. Three of the six predictors were significantly predictive of intention scores. These include ATT, $t(193)$ = 4.10, $p<.01$; PBC, $t(193)$ = 3.76, $p<.001$; and SN, $t(193)$ = 3.35, p = .001. The proportions of variance uniquely explained by each of these predictors ($sr^2 unique$, obtained by squaring the part correlation from the SPSS output) were as follows: ATT uniquely accounts for approximately 5% of the variance in intention; PBC uniquely accounts for about 4%; and SN uniquely accounts for about 3% of the variance when all other variables are statistically controlled. Thus, in this sample, ATT was the strongest predictor for intention. This hypothesis was supported.

RQ4: Are there differences in screening intention based on professional group?

H8$_0$: There will be no significant difference in intention between the professional groups. Research question four was analyzed using a one-way analysis of variance (ANOVA) with post hoc test to explore the impact of professional group affiliation on intention to screen. Prior to interpreting the ANOVA, the Levene's test for homogeneity of variances was reviewed. The significance was greater than .05, indicating the assumption was not violated (Pallant, 2010).

There was a statistically significant difference (p<.05) in intention for the three professional groups: $F(2, 196) = 6.88, p = .001$. Post-hoc comparison using the Tukey HSD test indicated that the mean intention score for Healthcare team members ($M = 34.83, SD = 6.80$) was significantly different from Law enforcement officers ($M = 38.72, SD = 4.92$) and Advocates ($M = 38.02, SD = 7.67$). The Healthcare team members had a lower mean score on intention than Law enforcement officers and Advocates. Higher scores indicate an increased intention to screen. The mean intention score of Law enforcement officers did not differ significantly from Advocates.

The effect size was evaluated by calculating eta squared: eta squared = $\frac{Sum\ of\ squares\ between\ groups}{Total\ sum\ of\ squares} = \frac{609.357}{9286.784} = .0656$. Classifying this effect size using Cohen's terms, this would be a medium effect (Pallant, 2010). The null hypothesis was rejected.

RQ5: Are there professional group differences in predictive variables impact on intention (background factors and antecedents to intention)?

H9$_0$: There will be no significant differences in the influence of the chosen background factors (knowledge, prior training) and antecedents to intention (attitude, subjective norm, and perceived behavioral control) on intention to screen between the professional groups. A series of factorial analyses of variance was run to assess research question 5, in which two or more group membership variables were used to predict scores on one quantitative variable (Intention).

Prior to running this analysis, the continuous variables of knowledge, ATT, SN, and PBC were collapsed into groups to create categorical variables using quartiles of the scores to determine high, medium, and low scores. Crosstabs were reviewed between

each variable and the professional group variable to assure that an adequate number of cases were in each cell. Based on an alpha level of .05, with .80 power, and medium effect size, the cell sizes should be 9 to 10 for a minimum (Warner, 2013). The SN and PBC variables had too low of cell sizes when split into high, medium, and low scores. Therefore, these two variables were split into high and low scores, while knowledge and ATT remained at high, medium, and low. The cell sizes were rechecked and noted to have greater than 10 cases per cell. Training is a dichotomous variable (0 = "no", 1 = "yes") and did not need to be changed.

A nonorthogonal design was used, meaning that the number of scores is not equal across the cells (Warner, 2013). When the n in cells are not balanced, it implies that the group membership may be confounded, and they compete to explain some of the variance. A computation of sum of squares called SS Type III was used to deal with the potential confounds with variance partitioning that is similar to standard multiple regression in which each effect is tested while statistically controlling for other effects (Warner, 2013).

A 2 x 3 factorial ANOVA was performed using SPSS GLM to assess whether intention (Y) could be predicted from professional group affiliation (A_1= LEO, A_2= HCT, A_3= Advocate) and prior training (B_0= No, B_1=Yes), and the interaction between professional group and training.

The Levene test indicated no significant violation of the homogeneity of variance assumption. Further data screening was previously reported for the variables.

There was not a statistically significant interaction between professional group affiliation and training on the intention score, $F(2,193) = .272$, $p = .762$, partial $\eta^2 = .003$.

The main effects were reviewed for training as the effect on professional group and intention scores was established in analysis for research question 4. All pairwise comparisons were run where *p*-values are Bonferroni-adjusted.

There was a statistically significant main effect for prior training on intention, $F(2,193) = 5.152$, $p = .024$, partial $\eta^2 = .026$. A history of prior training was associated with a mean Intention score 2.59 points higher than someone who had not had training, a statistically significant difference, $p=.024$. The marginal means for Intention score were $38.125 \pm .583$ for prior training, $35.539 \pm .979$ for no prior training.

Table 8
Estimated Marginal Means, Training and Professional Group
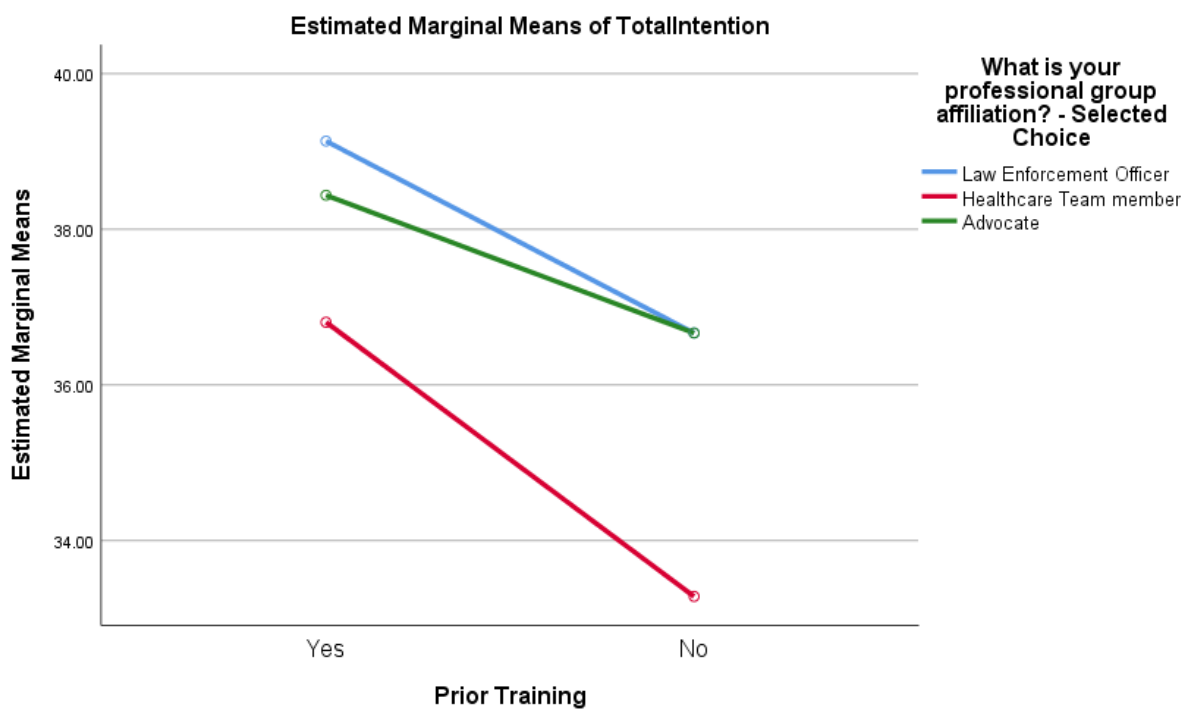
Another 3 x 3 factorial ANOVA was performed using SPSS GLM to assess whether intention (Y) could be predicted from professional group affiliation (A_1= LEO,

A_2= HCT, A_3= Advocate) and knowledge (B_1= low, B_2=medium, B_3= high), and the interaction between professional group and knowledge.

The Levene test indicated no significant violation of the homogeneity of variance assumption. Further data screening was previously reported for the variables.

There was no statistically significant interaction between profession group and knowledge score for Intention score, $F(4,190) = 1.272, p = .283$, partial $\eta^2 = .026$. The main effects were reviewed for main effect of knowledge on intention. All pairwise comparisons were run where p-values are Bonferroni-adjusted. There was a statistically significant main effect for knowledge on intention, $F(2,190) = 4.241, p = .016, \eta^2 = .043$. High knowledge score was associated with a mean intention score 3.026 points higher than someone who had a low or medium knowledge score, a statistically significant difference, $p=.035$. The marginal means for Intention score were $36.031 \pm .652$ for low score, $38.464 \pm .933$ for medium score, and $39.057 \pm .991$ for high score.

Table 9

Estimated Marginal Means, Knowledge and Professional Group

The next 2 x 3 factorial ANOVA was performed using SPSS GLM to assess whether intention (Y) could be predicted from professional group affiliation (A_1= LEO, A_2= HCT, A_3= Advocate) and ATT(B_1= low, B_2=high), and the interaction between professional group and ATT. The Levene test indicated a significant violation of the homogeneity of variance assumption, p = .023. This suggests that the variance for the groups are not equal, however the sizes of the groups are reasonable similar, indicating that the Factorial ANOVA should be robust to this violation of assumption (Pallant, 2010).

There was no statistically significant interaction between profession group and ATT score for Intention score, $F(4,190)$ = .824, p = .511, partial η^2= .17. The main effects for ATT on intention were reviewed. All pairwise comparisons were run where p-values are Bonferroni-adjusted.

There was a statistically significant main effect for ATT on intention, $F(2,190) =$ 16.280, $p < .001$, $\eta^2 = .146$. The marginal means for Intention score were $33.34 \pm .868$ for low ATT score, $37.43 \pm .911$ for medium score, and $39.64 \pm .686$ for high ATT score. Low ATT score was associated with a mean intention score 4.09 points lower than someone who had a medium ATT score, a statistically significant difference, $p = .004$. Low ATT score was associated with a mean intention score 6.31 points lower than someone who had a high ATT score, a statistically significant difference, $p < .001$.

Table 10
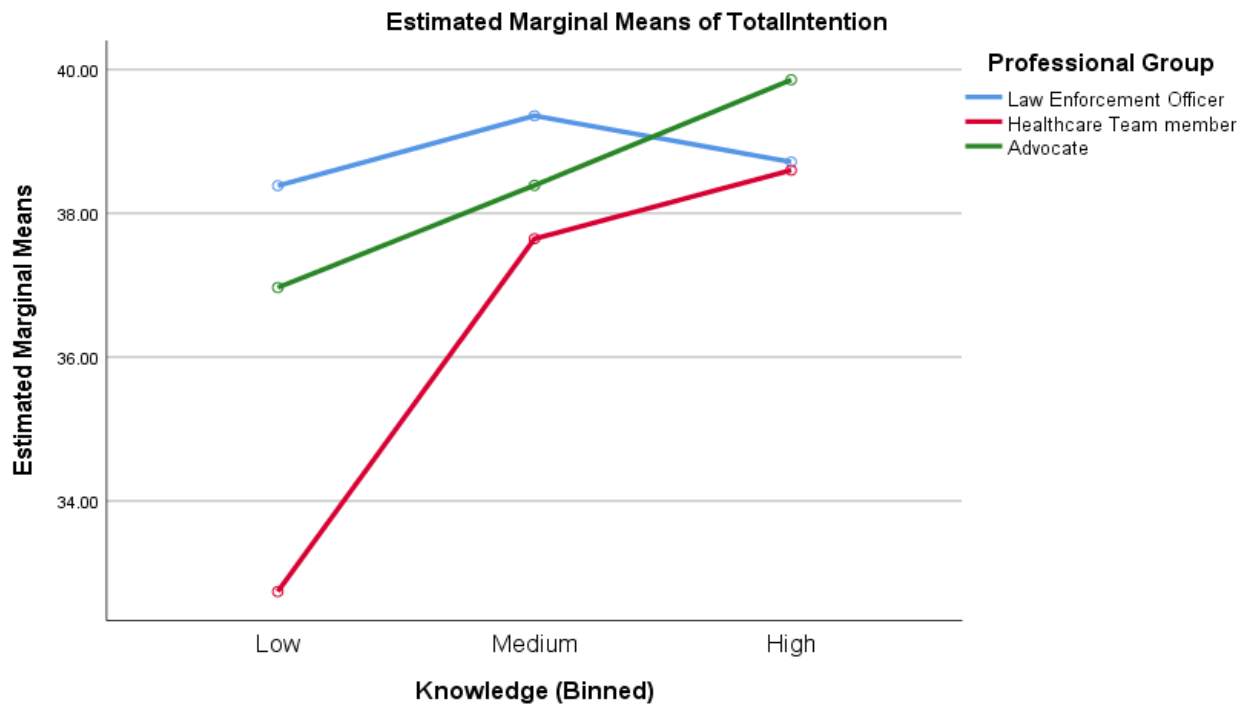*Estimated Marginal Means, ATT and Professional Group*

Another 2 x 3 factorial ANOVA was performed using SPSS GLM to assess whether intention (Y) could be predicted from professional group affiliation (A_1= LEO, A_2= HCT, A_3= Advocate) and SN(B_1= low, B_2=high), and the interaction between professional group and SN.

The Levene test indicated a significant violation of the homogeneity of variance assumption, $p = .000$. This suggests that the variance for the groups are not equal, however the sizes of the groups are reasonable similar, indicating that the Factorial ANOVA should be robust to this violation of assumption (Pallant, 2010).

There was a statistically significant interaction between profession group and SN score for Intention score, $F(2,193) = 3.561$, $p = .030$, partial $\eta^2 = .036$. This indicates that the effect of one independent variable has on the dependent variable depends on the level of the other independent variable. The simple effects were reviewed next. Due to the failed assumption of homogeneity of variances, one-way ANOVA was run for each simple main effect, as this should make it less susceptible to violations of homogeneity of variances (Laerd Statistics, 2017). There was a statistically significant difference in mean Intention scores between Law Enforcement Officers and Advocates who had a high score on SN, $F(2,95) = 3.252$, $p = .043$, partial $\eta^2 = .064$. However, when the Bonferroni adjustment was made to correct for multiple tests ($p<.025$ for two simple main effects tests), the simple main effect of SN on mean intention score for those in the Law enforcement and advocate groups is not significant.

Table 11

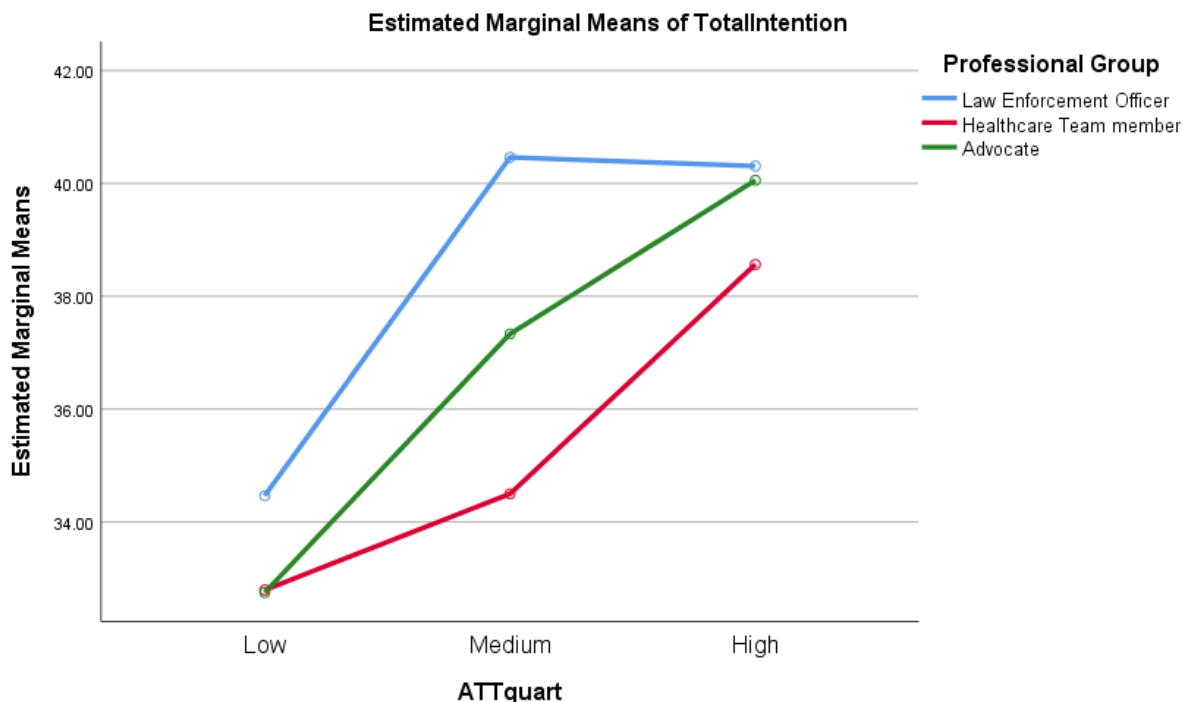*Estimated Marginal Means, SN and Professional Group*
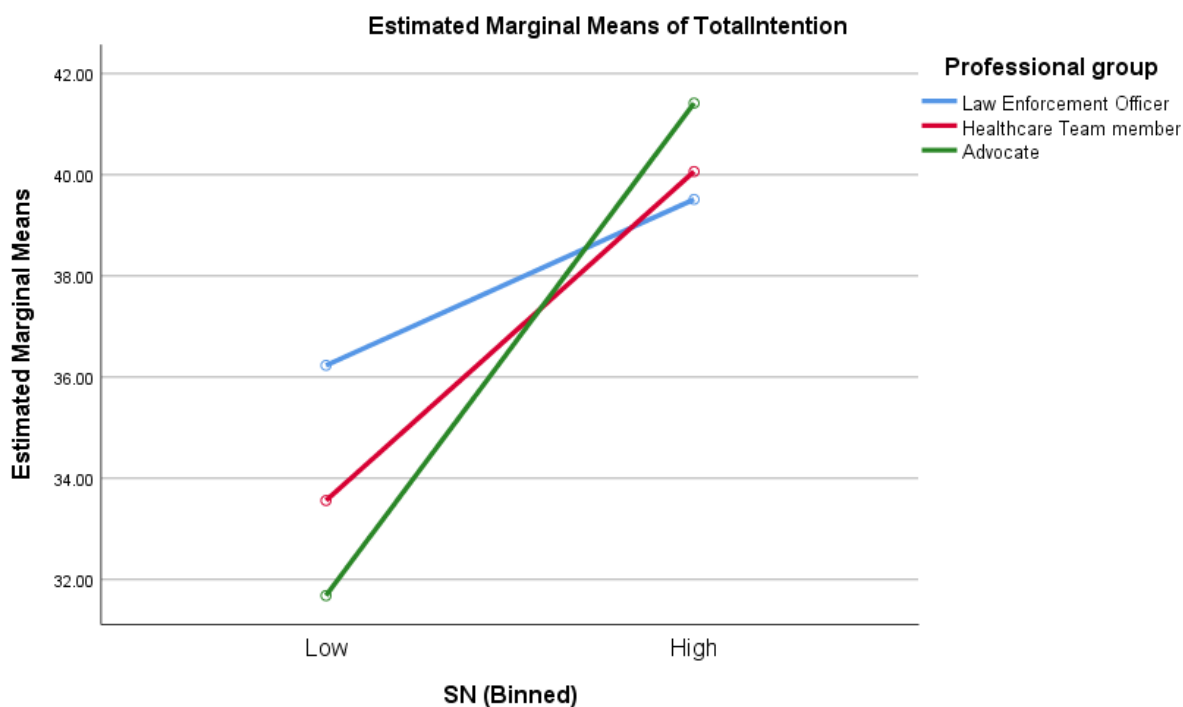
The next 2 x 3 factorial ANOVA was performed using SPSS GLM to assess whether intention (Y) could be predicted from professional group affiliation (A_1= LEO, A_2= HCT, A_3= Advocate) and PBC(B_1= low, B_2=high), and the interaction between professional group and PBC. The Levene test indicated a significant violation of the homogeneity of variance assumption, p = .000.

There was no statistically significant interaction between profession group and PBC score for Intention score, $F(2,192)$ = .2.112, p = .124, partial η^2= .022. The main effects were reviewed for PBC and intention. All pairwise comparisons were run where *p*-values are Bonferroni-adjusted. There was a statistically significant main effect for PBC on intention, $F(2,193)$ = 11.154, p < .001, η^2= .177. High PBC scores were

associated with a mean intention score 5.96 points higher than someone who had a low

PBC score, a statistically significant difference, *p* <.001. The marginal means for

Intention score were 33.85 ± .693 for low PBC score and 39.82 ± .620 for high PBC.

Table 12
Estimated Marginal Means, PBC and Professional Group
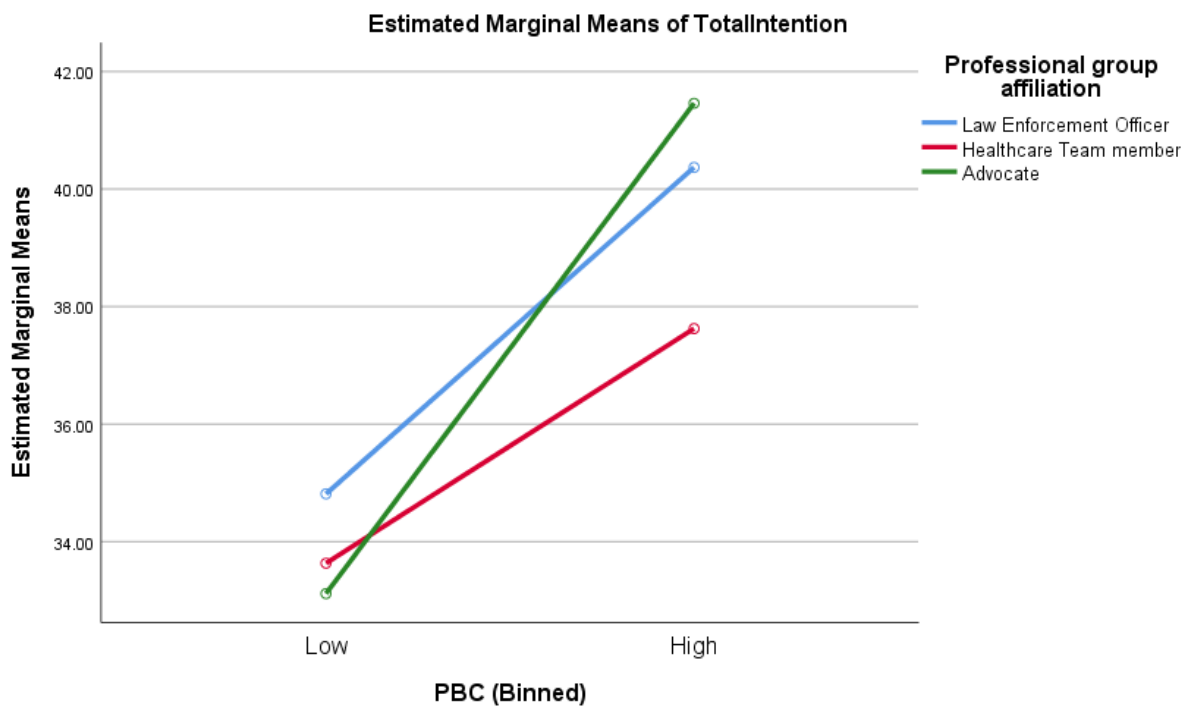
Chapter Four Conclusion

Chapter Four included results of the primary and secondary aims of the study,

including the results of the five research questions and nine hypotheses.

CHAPTER FIVE

Interpretation of Findings

Chapter Five includes the interpretation of the empirical evidence gathered to answer the research questions and evaluate the support of the hypotheses. Following this discussion, the findings will be examined with consideration of the guiding theoretical framework, the Theory of Planned Behavior. The implications of the research for nursing practice and education will be discussed. Implications for vulnerable populations will be presented. Strengths and limitations of the study will be addressed. Finally, suggestions will be made for future research.

Exploratory Factor Analysis

RQ1: What are the initial psychometric properties of the newly developed DINS?

H1: Exploratory factor analysis will reveal a four factor scale. The final four factor model included seven items that loaded on factor 1, six items that loaded on factor 2, four items that loaded on factor 3, and five items that loaded on factor 4. The items that loaded on each factor were then interpreted. Comrey and Lee (in Pett et al., 2003) suggest the following guidelines for assessing the factor loadings in an orthogonal rotation: no item <.30 should be part of a defining factor "because less than 9% of that item's variance is shared with the factor" (p.208). Fair item-to-factor loadings are .45; good is .55; very good is .63, and excellent is .71 (Pett et al., 2003). The significance of the loading can also be estimated based on sample size used in the EFA. For a power level of 80 percent with the use of a.05 significance level, and a sample size of approximately

200, a factor loading of .4 would be considered significant (Hair, Black, Babin, & Anderson, 2014). This is only one portion of consideration for interpreting a factor.

Factor 1. The size of the factor loadings were assessed first. Each of the seven items had very good to excellent item-to-factor loadings (range .671 to .832). Five of the seven items had been originally developed based on the theoretical construct of SN. Two of the items had been developed guided by the PBC construct. These items (Q33_7: In my work environment, there is a clearly defined method to document/report cases of strangulation when identified; Q33_1: There are resources in my work environment that help me to complete the screening for strangulation in IPV cases) had been written with the intent to reflect controllability issues within the construct of PBC. Both of these items may have been interpreted as expectations (in terms of "defined method" and "resources" to use to screen). If respondents interpreted these items to refer to expectations for their performance of the screening in their work environment, these items would fit better with SN. The factor was named SN due to the theoretical fit with items that loaded.

Factor 2. All six items that loaded on factor two had factor loadings in the excellent range (range .724 to .866). Each item was originally developed to reflect the theoretical construct of intention. All items were retained on this factor and the factor was named Intention.

Factor 3. Four items loaded on factor three. All four items had very good to excellent factor loadings (range .645 to .794). Each of the items was created to reflect the ATT construct. Six items were originally created for the ATT subscale, but two did not load on factor 3. The four items that loaded on factor three were named ATT.

Factor 4. Five items loaded on factor 4. All five items were originally developed for the PBC construct. Two factors had very good loadings (.662 and .693). Two items had fair loading (.493 and .513) and two items had factor loadings falling just below fair (.379 and .381). The highest loading factor (Q33_3: It is impossible to screen for a history of strangulation) loaded only on factor 4. The remaining four items had multiple loadings. Two of the items, (Q33_8: I have complete control over screening for a history of strangulation; Q33_4: If I wanted to, I could screen for cases of strangulation) had higher loadings on factor 1 (named SN) than factor 4. Conceptually, these items fit best with factor 4 and were chosen be retained on this factor despite the lower loading. Factor 4 was named PBC.

Overall, the four factor model fit the hypothesized model guided by the TPB. SN accounted for the greatest amount of common variance explained (39.00%), or the shared variance among observed variables. Intention accounted for 9.86%; ATT for 6.70%; and PBC for 5.62% for a cumulative explanation of 61.19% of the variance explained by the model. There is no standard criteria for how much explained variance is adequate, but the percentage of variance explained by the retained factors is suggested to be between 40 – 70% (Warner, 2013).

H2: Controllability and self-efficacy will both load on the same factor.

All four self-efficacy items loaded on one factor which was subsequently named PBC. The five controllability items loaded on three separate factors: two on SN, two on their own factor (which were removed as discussed in Chapter 4), and one on PBC. This was not unexpected. Previous literature has indicated that PBC may be a multidimensional concept (Kraft, Rise, Sutton & Roysamb, 2005; Rhodes & Blanchard,

2010; Trafimow, Sheeran, Conner, & Finlay, 2002). This helps to explain why the self-efficacy and controllability items did not load on one factor. It does not explain why the controllability items loaded on three separate factors.

The responses to the open ended question "What else impacts your control over screening for strangulation?" were reviewed to gain insight in the variation in loading. Three main themes were identified in the responses: knowledge/training deficits, work environment impact, and victim factors.

Knowledge or training deficits were mentioned fifteen times and included responses such as "…my ignorance and nervousness to ask" and "I don't know enough about strangulation's [sic]" as factors that impact the respondents control over screening for NFS.

Work environment impact was more broad and included "scene safety/security"; "ED census and staffing issues"; and "Time constraints in the ED". Issues relating to screening prompts were also mentioned: "Having a proper screening tool"; "defined process and procedure"; and "could use better scripting in having conversations" were all identified. Work environment issues were cited 26 times by respondents.

Finally, the victim was listed as having an impact on the control over screening 29 times. The following are some examples of the perception of how victims impact the professionals' control over screening: "…many times the victims of these incidents did not want to voluntarily release information about what actually took place"; "Victims sometime fail to provide information or refuse to provide information"; "Victim cooperation is often a challenge. This observation is not meant to blame the victim as there are many motivations for not cooperating with law enforcement". Additional

responses include: "Convincing the victims to tell me they were strangled"; and "I only talk to the clients about what they are willing to tell me, I don't want to force the issue". Further discussion of the respondents' identification of the victim as impacting their control of screening practices will take place later in this interpretation of the findings.

Researchers have supported a distinction between "control" and "difficulty" in the PBC (Armitage & Conner, 2001; Trafimow et al., 2002). Based on the comments above, the controllability items may not have been inclusive of "difficulty" in screening. The listed comments indicate that the participants may have perceived that screening is difficult to perform, and not a matter of controllability.

Overall, the EFA supported the four factor model for the correlations among variables that were included in this study. The four factor model explained 61% of the variance, indicating more variables must contribute to the model and were not identified in this study.

H3: The DINS total score and each of the four subscale scores (ATT, Subjective Norm, Perceived Behavioral Control, and Intention) will have a Cronbach's alpha reliability of ≥ .70. Cronbach's alpha calculation revealed that the DINS total score (.93) and the four subscales (.73 - .93) demonstrated acceptable internal consistency. This indicates that the total instrument and the subscales could not be markedly improved by deleting any additional items. The high overall Cronbach's alpha, intention subscale (.93) and SN subscale (.91) may indicate redundant items. The redundancy can be a focus for future review.

H4: The DINS average inter-item correlations will be ≥ .30. The mean inter-item correlations greater than .3 for the DINS (.35) and the subscales (.34 - .70) indicates

acceptable correlation of each item with each subscale and the total score. The high inter-item correlation (above .5) on the SN (.52) and intention (.70) subscales may indicate redundant items. This finding matches the previous internal consistency findings (discussed in Hypothesis 3 interpretation) and will be assessed in future review.

H5: All DINS items will positively correlate with the respective subscale total score demonstrated with an item-total correlation of ≥ .40. One item on the SN subscale had a corrected item-total correlation of .37, which indicates that the item is measuring something different from the subscale as a whole. The item was originally written as a SN item, and there was no evidence of incorrect scoring of the item. The item had been reverse coded correctly. The item was removed.

Two items on the PBC subscale had low corrected item total correlations (.29 and .25). These items were checked for incorrect scoring prior to removal. The items removed from the PBC were originally written as ATT items, but had loaded on the PBC subscale when factor analysis was performed. It follows that the items were measuring something different from the subscale of PBC. After removal, the reliability estimates were re-run with an improvement in the corrected item-total correlations for each respective subscale to greater than .4.

Aim 2

RQ2: How well is intention to screen for NFS history predicted when the entire set of six predictor variables is included?

The overall regression model was run with six independent variables. The entire model was statistically significant, explaining 43% of the variance in intention. The R^2 value of .43 was obtained with standard regression, which means each predictor variable

was assessed while controlling for the other variables in the model. This finding is comparable to the reported R^2 in a meta-analysis of the TPB in the domain of health and the efficiency of the theory to explain health-related behaviors (Godin & Kok, 1996). This meta-analysis included 56 studies with 87 applications regarding intention, 76 which reported R^2 values. The overall explained variance in intention for the meta-analysis was $R^2 = .409$ (Godin & Kok, 1996). In a second meta-analysis of the TPB including 185 independent studies, the overall explained variance was $R^2 = 39\%$ (Armitage & Conner, 2001).

The review of the correlation matrix allowed for examination of the relationship of the independent variables. Professional group affiliation will be reviewed in greater depth in later analysis of research question 4. The professional groups were dummy coded and therefore do not provide much information in the correlation matrix review.

The background variable of knowledge did demonstrate a positive significant relationship with the background variable of prior training, the antecedents to intention, and intention. The relationships are all significant ($r = .247$ to $.333$). Knowledge deficit has been cited as a reason that screening was not performed in other IPV research (Alvarez, Fedock, Grace, & Campbell, 2017; Sprague et al., 2012; Waalen, Goodwin, Spitz, Petersen, & Saltzman, 2000), though it has not previously been assessed in NFS. The background factor of prior training also had statistically significant relationships with knowledge, the antecedents to intention, and intention ($r = .241$ to $.449$).

Despite the finding of significant background variable relationship to the antecedents to intention and intention, the background variables do not significantly contribute to the prediction of intention. This is not unexpected. Ajzen states that while

background variables may impact beliefs (indirect measures not included in this study) which may impact antecedents to intention (direct measures), it is not theorized to impact the antecedents to intention or intention directly (Ajzen, 2005).

Despite the lack of predictive usefulness of background variables, the written comments provide some support for the relationship of a lack of training or knowledge on their intention to screen: "I would like to [screen] but I don't think there is adequate education offered to me to feel comfortable in screening patients"; "I feel that until I am educated in how to screen any specific words phrases and techniques to use I am unable to do so effectively"; and "I do not think my coworkers know the statistics and facts about strangulation so they are uninformed. It's not that they don't care, they just don't know". These comments may be interpreted as an impact of knowledge deficit on the antecedent of PBC, not intention. The impact on the respondents' comfort in screening and effectiveness with screening may indicate issues of difficulty with screening instead of a direct impact on intention.

RQ3: How much variance does each predictor variables uniquely account for?

The antecedents to intention are all significantly related to intention and are all significantly predictive of intention. The antecedents to intention all demonstrated a significant, positive relationship with intention. This is the expected relationship based on the theoretical constructs. These significant relationships to intention (ATT, $r = .46$; PBC, $r = .56$; SN, $r = .54$) are comparable to the correlations reported in two published meta-analyses in which the overall average correlations between intention and ATT was .46 - .49; PBC was .43 - .46, and SN was .34 (Armitage & Conner, 2001; Godin & Kok, 1996).

Attitude was the strongest predictor for intention in this sample, followed by PBC and SN. ATT was determined to be the most significant predictor in other studies utilizing the TPB in healthcare related domains (Levin, 1999; Sauls, 2007; Sanders, 2006; Ward et al., 2010). Overall, the findings are expected based on theoretical constructs and hypothesized relationships and predictive value of the independent variables. The available literature on the use of the TPB to impact healthcare intention support the findings as well.

RQ4: Are there differences in screening intention based on professional group?

RQ5: Are there professional group differences in predictive variables impact on intention (background factors and antecedents to intention)?

Research questions four and five will be interpreted together. There was a statistically significant difference in intention for the three professional groups, with HCT members having a statistically significant lower mean score on intention than LEO and advocates.

There were no other statistically significant group differences in predictive variable impact on intention. However, there was main effect differences on intention with all predictive variables. This finding is congruent with the correlation matrix and regression model reviewed for previous research questions.

The review of the main effects allowed for identification of the amount of difference in scores of intention based on the predictive variable. It makes sense that those who have had prior training on NFS had a mean intention score 2.6 points higher than someone who had not been trained. The respondents' who indicated that they had prior training on NFS provided comments reflecting their perceived importance of

screening: "Surviving strangulation once is known to be an indicator that the next time might not be survivable. If we as healthcare employees respect the profession and want to protect our patients it is imperative that we screen our patients for strangulation because the next time we see that patient they may be in a vegitative [*sic*] due to asphyxiation". Another wrote, "Screening is important because of the frequency of reported cases, the severity, the risk of escalation and because some women have minimized the the [*sic*] behavior because it didn't cause severe consequences like passing out".

Knowledge has a significant effect on intention scores as well, with high knowledge scores associated with a mean intention score 3 points higher than someone with a low or medium knowledge score. This is also reflected in comments provided by respondents' and has overlap with those who also had prior training (as expected): "I typically screen for this or ask about this because it is a strong indicator he could kill her in the future. (7.5 times more likely to kill and not necessarily by strangulation). Almost all of my clients who have been strangled, refer to it as choking. This results in discussion about how dangerous he may be to her and more safety planning. The majority of clients in this situation realize he is very dangerous to them, they are afraid of him or what he may do in the future and most of them are already doing some form of their own safety planning." This helps to illustrate the link between training and knowledge, as well as the resulting impact on intention.

Attitude was the best predictor of intention in this model. The effect of this was noted in the results of the mean effects on intention: a respondent with a low ATT score had an associated mean intention score 4 points lower than someone with a medium ATT score and over 6 points lower than someone with a high ATT score. Some respondents'

intention scores and written comments on the question "please describe your opinion about screening for strangulation" provided additional insight to this finding: (quotation originally provided in all caps and unchanged here) "THIS SOUNDS LIKE A VICTIM ADVOCACY TRAP THAT IS GOING TO MAKE MY JOB EVEN MORE DIFFICULT THAN IT ALREADY IS (YOU GASP READING THIS… HOW DARE THEY EVEN THINK ABOUT THEMSELVES… POLICE SIGNED UP FOR THIS… THEY AREN'T ALLOWED TO COMPLAIN… VICTIMS NEVER LIE)". Another respondent stated "I think it is important to screen for safety, not how exactly the pt [*sic*] is being harmed. Ie [*sic*] strangulation vs being punched. Harm is harm". Conversely, respondents with higher intention scores provided comments indicating more positive attitudes (and higher ATT scores): "Strangulation is a highly violent act – it's important to know if someone has experienced it so they can be educated on how dangerous their relationship is". Another respondent wrote "It is essential and at times could be life impacting if we can refer someone to proper medical care or resources. We also value it as a tool for measure [*sic*] lethality risk and trying to safety plan for victims".

Finally, high PBC scores were associated with a mean intention score almost 6 points higher than someone who had a low PBC score. Some of the comments that were provided in the open ended question about perceived control seemed to address their ATT towards screening and towards the victims of violence. As reviewed previously in this chapter, 29 respondents' comments reflected their perception of the victim willingness to disclose or their truthfulness in disclosure as factors impacting the professionals' control of the screening. As stated earlier, this may reflect issues of

perceived "difficulty" in screening more than issues of controllability of screening for NFS. This is supported by the following written quotation:

> "I believe it is beneficial to screen for incidents of strangulation, but only if evidence exists to go down that road. Sometimes when you open a door for a victim to walk through, such as asking about incidents of strangulation, the victim will seize the opportunity and take an investigation into an unwanted, time consuming and fruitless direction as a way of getting back at someone. As I stated above, if evidence of strangulation is present, or if the victim makes an unsolicited remark about being strangled then I think it should be followed up on, but the question about being strangled should not be thrown out in a matter-of-fact way."

A different respondent indicated that while the victim willingness to disclose or veracity in reporting may impact controllability in certain circumstance, victim advocacy groups and societal influences may further influence a victims' response:

> "THAT FACT IS…DOMESTIC PARTNERSHIPS ARE COMPLEX AND PEOPLE REPORT THINGS FOR A VARIETY OF REASONS. SOMETIMES THE VICTIM'S ARE TELLING THE TRUTH, OTHER TIMES THEY ARE TRYING TO REGAIN SOME SORT OF CONTROL. OUR SOCIETY HAS A BAD HABIT OF COACHING "VICTIMS" INTO WHAT TO SAY, CAUSING ISSUES. AT WHAT POINT DOES A VICTIM BECOME A SUSPECT, IF THEY ARE EMBELLISHING THE TRUTH IN ORDER TO GET THEIR OPPOSITE IN TROUBLE WITH THE LAW AND TO HAVE THEIR RIGHTS TAKEN AWAY. THIS IS THE ISSUE THE POICE HAVE TO DEAL WITH.

YOUR COMPANY (LIKELY SOME VICTIM ADVOCACY GROUP) NEEDS

VICTIMS. TRYING TO ARTICULATE SOME LESS THAN FLATTERING

NARRATIVE IS HARD AND VICTIM ADVOCATE GROUPS DONT [*sic*]

WANT TO TREAD IN THAT GRAY AREA. ITS [*sic*] EASIER TO SAY

"DONT [*sic*] REVICTIMIZE THE VICTIM" AND TAKE THEIR WORD AS

GOSPEL, ITS HARDER TO FIND THE TRUTH, EVEN WHEN THE VICTIM

ISN'T REALLY A VICTIM AND IS A SCORNED LOVER AND WAS

COACHED (EITHER BY TV, SOCIAL MEDIA, OR VICTIM ADVOCACY)

TO BEND THEIR NARRATIVE. GETTING CHOKED IS BAD… I GET IT.

ITS DANGEROUS TOO. BUT SOMETIMES…JUST SOMETIMES PEOPLE

MAKE THINGS UP FOR A VARIETY OF UNSAVORY REASONS."

Further investigation on the impact of victim factors (including willingness to disclose

and veracity in disclosure) in screening for violence is needed as it is outside of the scope

of this study at this time.

Discussion Conclusion

The quantitative findings indicate that the Theory of Planned Behavior provided

an appropriate framework to guide the development and evaluation of the DINS. The

results of psychometric testing provided support for preliminary validity and reliability

for the DINS in this sample. The overall regression model demonstrated significant

prediction of intention with background variables (professional group, knowledge, and

prior training) and antecedents to intention (ATT, PBC, and SN) explaining 43% of the

variance. Only the antecedents to intention were significantly and uniquely contributing

to the variance in intention. Further exploration of the unexplained variance is needed and should be included in future studies.

Differences in intention between the professional groups were identified, with HCT members noted to have a statistically significant lower mean intention score. No other significant group differences were noted among the predictor variables. Main effects of each predictor variable on intention were reviewed and discussed in terms of respondent written comments.

Theoretical Considerations

The TPB (Ajzen, 1991; Ajzen, 2005) provided an appropriate framework for examining the factors that influence a professionals' intention to screen for a history of NFS in IPV cases. Background factors, antecedents to intention, and intention were represented by study variables. This study focused on the influence on background factors and direct measures (antecedents to intention) on the intention of LEO, HCT, and advocates.

While the antecedents to intention provided predictive ability of professionals' intention to screen, there is a need to explore other sources of variance in intention. The possible impact of "difficulty" in performing screening, as differentiated from self-efficacy or controllability, needs to be explored further in future studies. The impact of victim factors needs to be explored. This was identified in the open-ended comment section of the study. It may have greater impact than realized on the items created to assess the antecedents to intention. Future studies may focus on how to explore the possible issue of victim factors and how that might impact perceived difficulty in screening, specifically related to the antecedents to intention of ATT or PBC.

Implications for Vulnerable Populations

The professionals in this sample serve victims of IPV in their respective practices. Victims of NFS are vulnerable to many issues, including worsening violence, medical complications, and poor legal outcomes. The identified vulnerabilities cannot be mitigated if a history of NFS is not identified in IPV cases. Screening for NFS does not occur in every IPV case, and some of the respondents indicated that screening only occurs if "circumstances warrant it". Approximately 22% of LEO, 7% of HCT, and 35% of advocates indicate they currently screen for NFS in IPV cases. 53% of LEO, 27% of HCT, and 21% of advocates indicate they screen when circumstances warrant a screen for NFS. Unfortunately, there may be no visible signs or symptoms of NFS in approximately 60 – 90% of cases (Strack et al., 2001; Holbrook & Jackson, 2013). Only 5 – 29% of victims seek medical care for NFS, indicating that a lack of identification of a history of NFS by LEO or advocates may impact help-seeking for medical consequences of NFS.

The findings of this study reflect what has been reported in literature for screening for IPV. One researcher found that 74% of registered nurses stated that they only screened women who "at first glance" showed signs that they may have been a victim of IPV (Natan et al., 2016). Victims of IPV may not be identified, impacting identification of NFS as this screening is done in cases where IPV has been identified. One concerning vulnerability for victims of NFS is the increased lethality. A history of NFS increases the likelihood of homicide in the future. Only 19% of respondents that stated they screened for NFS indicated that that they do this screening as a part of the risk/lethality assessment for victims. Lethality assessment tools have been researched to determine predictive

validity, and have been shown to have greater accuracy than clinicians' prediction or victims' prediction. The intention of lethality assessment is to provide greater awareness of risk and an advocacy intervention (Messing, Campbell, Wilson, Brown, & Patchell, 2017). A victim may not be able to protect themselves from further harm if both they and their clinician underestimate the risk. Research has shown that 41% of IPV homicide victims had used healthcare agencies in the year prior to death (not specifically for IPV). The same study showed almost one third of homicide victims called the police and more than 44% of abusers were arrested in the year prior to the homicide (Sharps et al., 2001). If victims are not assessed for history of IPV and have a lethality assessment (including NFS as a predictor), they continue to be at risk.

Implications for Nursing Practice

The results of this study have a number of implications for healthcare team members and for nursing practice. There were 82 HCT respondents. Seventy two of those 82 indicated that they were in the nursing profession. Healthcare team members were found to have a statistically significant lower mean score on intention to screen for a history of NFS in IPV cases than LEO and advocates. Attitude was the strongest predictor of intention in this study, followed closely by PBC and SN. Healthcare team members had the lowest scores on all antecedents for intention of the three professional groups.

As stated above, victims of IPV and NFS may not present to any healthcare facilities as a direct result of the assault. If they do, their injuries are not visible in the majority of cases. Only 7% of HCT participants in this study indicated they currently screen for NFS in IPV cases. Twenty seven percent indicate that they screen for NFS

when circumstances warrant it. A lack of visible injury in the majority of NFS cases indicates the likelihood that cases of NFS are not identified by HCT members if a victim is in their care. There is a gap in practice in this study sample population related to screening for NFS.

The identification of a history of NFS in IPV cases would allow for referral for specialized services and resources for the victim, including lethality assessment. Nurses are uniquely positioned to screen for NFS in IPV cases and enhance the safety of survivors. The use of screening with the development of a NFS protocol when the history is identified has the potential to reduce homicide risk and protect survivors.

Respondents indicated that increased education or training and specific policy and procedure would positively impact screening for NFS. When reviewing the responses to the open ended questions, a lack of education or training was listed 34 times by respondents. The importance of a policy/procedure, specific screening tool, or scripting was indicated 25 times. Protocols, tools, and scripting improve standardization and communication with patients in healthcare settings. This has been demonstrated to improve patient outcomes (ACOG, 2015).

Knowledge and training were assessed in this study. The findings indicate that those with a high knowledge score had a mean intention score 3 points higher than someone with low or medium knowledge. The mean intention score was over 2.5 points higher for respondents who indicated prior training about NFS over someone without training. Despite the significant differences between those with low/medium and high knowledge and those with or without training, knowledge and prior training were not significant predictors of intention to screen in this study. As indicated earlier, this finding

is consistent with the theoretical constructs of the guiding TPB. However, training and education may indirectly impact a participants' attitude about screening. Attitude was the strongest predictor of intention in this sample. PBC was also a significant predictor of intention. Increased training and education, accessible tools or protocols, or scripting may impact self-efficacy, thus increasing PBC.

Implications for Nursing Research

The primary aim of this study was to conduct initial psychometric testing of the newly developed DINS. The EFA revealed a four factor scale as hypothesized based on the guiding theoretical framework, providing support for construct validity in the instrument development. Two items were removed when loading only on one factor. An additional three items were removed based on reliability estimates. The remaining 22 item DINS requires further psychometric testing. Confirmatory factor analysis (CFA) should be performed to test the utility of the identified underlying dimensions in a new population and assess the extent to which the organization of the identified factors fit the data (Pett et al., 2003).

Reliability indices indicated support for consistency across the items of the DINS with this sample following data reduction for three poor correlating items (low item-total correlations with their respective subscale). Two subscales (SN and intention) did have high internal consistency correlation, which may indicate redundancy of items and the need for item reduction. This will be assessed further in future studies.

The secondary aim of the study was the examination of the influence of background factors and antecedents to intention on intention to screen. In this study, the hypothesized model was able to account for over 40% of variance in intention. Further

study is needed to explore the remaining variance that had not been explained by this model.

One area for future study of the unexplained variance in the model is the potential impact of victim factors (such as willingness and veracity in disclosure) on the intention of the professional to screen for a history of NFS in IPV cases. Focus on identifying the impact of victim factors on perceived difficulty (potentially captured in PBC) in screening is necessary.

There is an identified gap in research regarding evidence about the safety, effectiveness, and costs/benefits of screening interventions for IPV (Taft et al., 2013 & O'Doherty et al., 2015). There is a further gap in the research regarding screening for NFS. This identified gap in the literature underscores the importance of future research to identify the safety of NFS screening, the effectiveness in increased identification of cases, and the impact on uptake of services for victims of violence. This may include the creation and evaluation of an intervention to increase knowledge or training on NFS. It may also include the creation of policy and procedure for HCT members to identify and respond to a history of NFS. A longitudinal study would allow for the measurement of the impact of an intervention on intention to screen for NFS as well as actual screening behavior. Added measures to assess the impact of the screening on uptake of services and improved outcomes would also need to be considered.

Implications for Nursing Education

The findings of the study may be utilized in nursing education in various ways. Specific education about the topic of NFS can be introduced at all levels of nursing education. As noted previously, in this study lack of knowledge and/or training was one

of the most frequently cited factors that impacts screening. The topic of IPV and NFS may be integrated in the curriculum in undergraduate nursing education in classroom, clinical, and simulation. Nurse educators can identify the impact of IPV and NFS on the patient health outcomes. They can work with students to identify the interprofessional response to victims of violence, and the importance of coordination of care and services to decrease victim vulnerabilities to worsening health outcomes, legal outcomes, or violence.

In the graduate level of nursing education, the focus of the education may be on sign and symptoms of NFS in clinical practice. Focus on the reported lack of visible injury in the majority of cases could help to increase the recognition of screening importance.

Nurses currently in practice may benefit from education about policy and procedure for their organization, including reporting requirements and referral options when a case is identified.

Targeted interventions are those interventions that have been developed for a defined population subgroup that takes into account characteristics that are shared by that subgroup (Kreuter & Skinner, 2000). In this study, three professional groups were identified (HCT, LEO, and advocates) that may differ in their response to screening for a history of NFS in IPV cases. When focusing on the nurse population, it was noted that there was a significantly lower intention to screen for a history of NFS. A targeted intervention of those antecedents to intention that were identified as most predictive of intention may create the greatest change of behavior. In this study, attitude was the strongest predictor. A targeted intervention could focus on ways to impact participants'

attitudes regarding screening. One educational approach that has shown promise for promoting attitude change is simulation. Simulation promotes experiential learning, critical thinking, and dialogue. Well-designed simulations include a needs assessment, scenario design, pre-briefing, simulation, and debriefing (INACSL Standards Committee, 2016). The newly developed DINS may be used as a pre-test, or a needs assessment, to assist with development of a targeted simulation experience for the particular group. Following the standards of best practice for a simulation experience centered on screening for IPV and NFS, the DINS could be re-administered to allow for measurement of change in background factors, antecedents to intention, and intention. This pre and post-test design would help to address both educational needs in nursing, but research as well.

Strengths and Limitations

A strength of this study is the focus on a gap in the literature regarding screening for NFS in IPV cases. The importance of identifying NFS as a risk factor for increased lethality has been gaining more attention. The topic is timely and the focus helps to fill gaps about professionals' intention to screen for NFS. The sample of various professionals (HCT, LEO, and advocates) most likely to provide care or services to victims of NFS is also a strength. This allows for examination of current practice in the identification of NFS history by those professionals. It also allowed for the examination of differences in intention among those groups. However, this study sample may not have included all professionals likely to interact with NFS victims. Emergency medical responders and dispatchers may also identify victims of NFS and should be considered for inclusion in future studies.

Purposive sampling is a potential limitation to this study. Purposive sampling allowed for focus on the characteristics of interest, in this case, professional group affiliation and work with victims of violence. This may have contributed to under-representation or over-representation of groups within the sample. We are not able to discern the reasons for participation in the research. It may be that those who chose to participate already believe in the importance of the topic and will have higher intention than others in the same profession who chose not to respond. Conversely, if someone were to have a particular grievance with having to screen for cases of NFS, they may have more interest in participation to express those opinions. In either case, bias is an issue. It limits the generalizability of the findings beyond the study sample.

Another possible limitation of the sample is sample size resulting in inadequate statistical power to conduct the psychometric analysis of the DINS. Some sources indicate that a minimum of 300 participants is necessary for an EFA (Comrey & Lee, Tabachnick &Fiddell as cited in Pett et al., 2003). However, analysis of the factorability of the data was positive as noted by the results of the Bartlett's test of sphericity, KMO test, and MSA.

The DINS is a newly developed tool. The use of a newly developed tool for quantitative data collection may be considered a limitation. The DINS demonstrated initial face and construct validity and preliminary internal consistency. The DINS requires additional psychometric testing in future studies.

The DINS was assessed to have a 12th grade readability level. Each professional included in this study has a minimum requirement of a high school education for their respective role. However, this may still impact the ability of respondents to read and

comprehend the DINS items. The difficult readability may be a limitation in this study. Attempts to reduce the readability level prior to confirmatory psychometric analysis should be undertaken.

The measurement model for this study was able to account for 40% of the variation in intention to screen for NFS. This is comparable to meta-analyses of TPB as the theoretical framework (Armitage & Conner, 2001; Godin & Kok, 1996). Future studies should focus on identification of additional sources of variation. One possible way to do this would be to create and include items of the TPB constructs of indirect measures of behavioral, normative, and control beliefs (Ajzen, 2006). It is possible that the indirect belief measures may also significantly influence antecedents to intention among this population of interest.

Chapter Five Conclusion

This chapter provides a discussion of study findings. Study rationale, theoretical considerations, implications for vulnerable populations, future research, nursing practice, and education are included. Strengths and limitations are presented.

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Appendix A: Integrative Review, Empirical Literature

Author	Objective	Sample/ Characteristics	Method	Analysis	Findings
1. Block, C.R. (2000) *Rating: 2/2*	Examination of risk factors that would place a physically abused woman or her partner in immediate danger of death or life-threatening injury (one objective)	Random screening 2600 women for inclusion: Total 705 participants: n = 497 abused women n = 208 non-abused control group n = 87 IPV homicide cases	Quasi-experimental Retrospective (calendar review) Prospective (series of interviews) Chart review (homicide cases) and proxy interview	Descriptive statistics Chi Square Gamma statistic t test	Risk factors for fatal incident: Weapon use, strangulation, alcohol or drug use Past violence was predictive of homicide (85%) with recency (51% within one month), frequency, use of weapon (26% gun, 28% knife) or strangulation (18%) as highest predictors
2. Strack, McClane, & Hawley (2001) *Rating 2/2*	Evaluation of strangulation cases to determine signs and symptoms of attempted strangulation Use of signs and symptoms to corroborate victim's allegations for purposes of prosecution	14000 cases reviewed for indication of "choking" or strangulation n = 300 DV cases involving attempted strangulation	Descriptive, non-experimental	Descriptive statistics Frequencies	Majority of victims were women (99%) 97% "choked" manually; 3% ligature Symptoms not reported in 67% of cases Pain only 18% Breathing 5% Swallowing 2% 149 observed injuries 114 photographed; 45 usable photos Prior history DV 89% cases Medical attention sought 5% of cases

					25% cases rejected for prosecution when little corroboration
3. Wilbur, Higley, Hatfield, Surprenant, Taliaferro, Smith, Paolo (2001) *Rating 2/2*	Evaluate strangulation as a method of DV abuse to determine the incidence of strangulation occurrences within the cycle of DV; the subjective medical symptoms experienced; elective utilization of healthcare following strangulation	n = 62 women at DV women's shelter	Descriptive, non-experimental Survey and interviews	Descriptive statistics Frequencies	68% of women had history of strangulation Average duration of relationship prior to strangulation was 5.2 years Average length of abuse prior to strangulation was 3.1 years 87% threatened with death 70% thought they would die 54% manual strangulation Substance abuse by abuser was co-morbidity in 93% cases 29% sought medical help Various medical symptoms noted
4. Smith, Mills, Taliaferro (2001) *Rating: 2/2*	Examine the correlation between the number of times a victim of IPV has been strangled and symptom development	n = 101 women recruited from hospital and shelter Reflecting on 2 week time frame subsequent to strangulation	Descriptive, correlational, cross-sectional Survey and interviews	Descriptive statistics, analysis of variance, t test	Neck and throat injuries; Neuro symptoms; Psychological symptoms: Statistically significant findings: Scratches, red linear marks on neck, sore throat, pain, voice changes; dizziness, memory loss, tinnitus, weakness, muscle spasms; nightmares

					Symptoms increase with increase incidents of strangulation Survivors present for medical related to pain, swelling, and changes to voice
5. Hansen, S.H. (2001) *Rating: 0/2*	Description of cases in which the absence of laryngeal crepitus may indicate mass in the retrolarygeal space or hypopharynx, indicating laryngeal trauma	Case 1 = 37 yo male police officer – assaulted at work Case 2 = 25 yo female – IPV Case 3 = 25 you female – IPV	Case Study	NA	All three cases described event and following symptoms Absence of laryngeal crepitus resolved with time Recommended as additional evaluation
6. Funk & Schuppel (2003) *Rating: 1/2 Low rigor, high relevance*	Case review of strangulation victim with classic findings of injury	1 case = 24 yo women assaulted 1 hour prior to presentation in ED; 7 mos pregnant	Case study	NA	Manual strangulation, physical assault, verbal threats Reddened right eye, eyelid drooping with subconjunctival hemorrhage, petechiae right frontal region, 2 cm abrasion to right neck, ecchymosis to left clavicle 5cm to left lateral neck, voice raspy C/o pain, swelling in throat, difficulty breathing and swallowing, feeling lightheaded, loss of

					consciousness, sore throat, headache Care recommendations provided
7. Tieulie, Thi Huong, Hausfater, Duhaut, Fur, Wechsler, Pelroth, Pette (2003) *Rating: 1/2* *Low rigor, high relevance*	2 Cases of bilateral carotid thrombosis secondary to repeated attempts of strangulation	Case 1 = 31 yo woman c/o psychiatric manifestations, memory loss, and aphasia Case 2 = 41 yo woman with sudden hemiplegia and aphasia	Case Study Interviews	NA	Angiocomputerized tomography suggested carotid dissection Both had risk factors of atherosclerosis: smoking, estrogen pill, dyslipidemia and/or cardiovascular family hx Both sig hx strangulation (repeated) 6 and 8 years prior to event
8. Platner, Bolliger, & Zollinger, (2005) *Rating: 0/2*	Examination of all strangulation cases to determine if findings and symptoms can be related to fierceness of assault or mode of strangulation	n = 134 cases non-fatal strangulation reviewed for findings and symptoms at forensic clinic	Descriptive, non-experimental Retrospective chart review	Descriptive Frequency statistics	Findings and symptoms placed in one of four classes from Class I (superficial findings) to Class IV (neurologic impairment) Based on findings, three classifications identified: light, moderate, and severe strangulation
9. Glass, Laughon, Campbell, Block, Hanson, Sharps, Taliaferro (2008)	Examine non-fatal strangulation by an intimate partner as a risk factor for major assault, or attempted, or completed homicide	Completed homicide cases, n = 310 Attempted homicide cases, n = 194 Abused controls, n = 427	Case Control design Secondary analysis of data from 11 city case control study	Frequency statistics, t test, Chi Square, ANOVA, multivariate logistic regression	Women who were victims of completed or attempted homicide were far more likely to have a history of strangulation compared to abused control women Odds of becoming an attempted homicide

Rating 2/2					increased by 7 fold with history of strangulation Higher odds risk for white and Latina women (13.72 and 21.16) vs. African American (4.65)
10. Christe, et al. (2009) *Rating: 1/2* *High rigor, low relevance*	Determine objective radiologic signs of danger to life in survivors of manual strangulation and to establish a radiologic scoring system for the differentiation between life-threatening and non-life-threatening strangulation	n = 56 survivors of strangulation attempts; continuous sample of victims admitted to institute for forensic examination, documentation, and reconstructions of sequence of events – not all IPV	Correlation between forensic determination of danger to life and radiologic findings	Fisher's exact test, Wilcoxon rank sum test, receiver-operating characteristic (ROC) cutoff scores, kappa coefficient, Chi square test	Forensic exam = 27% cases life-threatening Loss of consciousness showed the most significant associations with the MRI findings Moderate association could be found for clinical and MRI findings of dysphagia, intramuscular bleeding, sore throat, and subcutaneous hemorrhage No association between voice changes and edema of the glottis or between skin abrasion and intracutaneous bleeding
11. Shields, Corey, Weakley-Jones, & Stewart (2010) *Rating 2/2*	Examination of living strangulation victims	n = 102 case reviews of non-fatal strangulation cases in 10 year period at clinical forensic medicine program	Descriptive, non-experimental	Descriptive statistics, frequencies	Manual strangulation in 79% of cases Subjective complaints included difficulty breathing, loss of consciousness, difficulty swallowing, hoarseness, difficulty speaking, an dizziness

		Prototypical fatal strangulation case also described			97% of cases had blunt force trauma in addition to strangulation Physical exam: subconjunctival hemorrhage, intraoral injuries, neck pain
12. Briddell, Mallon, DeFatta, Chowdhurry, Nagorsky (2012) *Rating: 0/2*	Case study	64 yo man presenting 3 mos post strangulation with dysphagia and cough	Case Study	NA	C/O tenderness on palpation of left jugulodigastric area Direct laryngoscopy and surgery performed – laryngeal fracture repaired Patients can have dyspnea, dysphonia, dysphagia, and/or odynophagia
13. Thomas, Joshi, Sorenson (2014) *Rating: 2/2*	Exploration of women's experiences of, thoughts about, and reactions to being strangled	31 women screened for participation with Conflict Tactics Scale n = 17 African American DV shelter residents	Grounded theory	Eight in depth interviews Focus groups Line by line coding Lower and higher level concept identification	Almost all had multiple strangulations Identified perceived triggers: men wishing to control partner, jealousy, infidelity, ending relationship, failure to comply with demands Reports of partners' statements: threats, accusations, directives Victims thoughts and reactions during incident: thought they would die, disbelief and shock, focus on survival

					Ending of incident: rarely prior to LOC, someone else intervened Victims' subsequent reactions: immediate and lasting fear, altered behavior to avoid violence, identified own vulnerability Perceived motivations for strangulation: exert power and control, serves as a warning, control beyond the assault, feel they will not get caught, coercive control

Appendix B: Integrative Review, Non-empirical Literature

Author	Objective/Topic	Method/ Type of publication	Findings
1. McClane, Strack, Hawley (2001) *Rating: 2/2*	Suggested protocol for evaluation and treatment of surviving victims of strangulation	Review of Literature	Importance to distinguish strangulation from choking Patients presenting to healthcare often under evaluated and dismissed Misdiagnoses of findings Importance of documentation (emotional demeanor, physical s/sx, verbal response) Recognition of stages of thought reported in last moments of alertness during strangulation: denial, realization, primal, resignation Suggested clinical eval: Pulse ox; xrays of chest, neck, nose, soft tissue; CT neck; MRI neck; carotid Doppler US; pharyngoscopy; fiberoptic laryngobronchoscopy
2. Hawley, McClane, Strack (2001) *Rating: 2/2*	Review of injuries recognizable at autopsy in cases of strangulation in DV victims	Autopsy review – no case studies, general information	Findings on autopsy: contusions to top and back of shoulders (depending on hold/position of victim); petechiae in skin, conjunctiva of eye, deep internal organs; petechiae undersurface of scalp; fingernail marks commonly associated with the victims attempts to remove assailants hands/arm/object; finger touch pad contusions on victims neck; possible to get skin cells of assailant from victims neck at scene; superficial or deep injuries to neck often only seen with dissection Medical resuscitation and organ procurement both limit ability of pathologist to detect homicidal injury Description of sequelae of events leading to death described, including discussion of anoxic brain encephalopathy
3. Taliaferro, Mills, Walker (2001)	Commentary about strangulation being a	Commentary	Authors described the paucity of literature about manual strangulation in general

Rating: 1/2 *One point* *originality of* *content, 0* *informational*	common means of DV		Identify the groundbreaking work of Strack and McClane to bring focus to IPV and actual incidence of manual strangulation Possible long term outcomes may be anoxic brain damage, memory disturbance consistent with left temporal lobe lesion Call for more research
4. Turkel, A. (2007) *Rating: 2/2*	Guidelines and physical signs for investigating strangulation, description of the state of the law, and stressing of the urgency of prevention	Informational	Dangers associated with strangulation (medical) Investigating strangulation: documentation essential; interview essential; medical exam important State of the law: prosecutors can charge attempted homicide when facts are sufficient Role of prevention: education
5. Strack, G. (2007) *Rating: 2/2*	How to improve the investigation and prosecution of strangulation cases	Review of studies Information for prosecution	Lack of physical evidence caused criminal justice system to treat strangulation cases as minor incidents Strangulation study (300 cases) reviewed Medical perspective: description of physiology of neck and strangulation; signs and symptoms Training curriculum: suggested for officers and prosecutors – treat case as felony; conduct thorough interview and investigation at scene; use follow up questions; look for injuries; take photos; identify dominant aggressor; encourage medical attention; note experience in record; obtain copies of 911 tape for voice changes; use forensic nurses; use an expert witness
6. WICADV (2008) *Rating: 1/2*	Wisconsin Strangulation and Suffocation Law	Review of statute	Types of strangulation identified Symptoms listed Key elements of strangulation and suffocation statute identified

			Words and phrases defined
One point informational			
7. Laughon, Renker, Glass, Parker (2008) *Rating: 1/2 One point informational*	Modification of the Abuse Assessment Screen (AAS)	Informational	Background of AAS development and initial psychometric properties reported Modifications of AAS described: inclusion of "choking" to AAS = "have you been pushed, shoved, slapped, hit, kicked, choked, or otherwise physically hurt by your partner or ex-partner"? Psychometric testing needed with change
8. Laughon, Glass, Worrell (2009) *Rating: 2/2*	Review and analysis of laws related to strangulation in all 50 US	Review and recommendations	Difficulties in prosecution identified Policy importance: deterrence, punishment, and protection Strengthening statute to promote prosecution (wording, etc.) Better documentation increases prosecution More research needed to investigate implications of changes in statutes in certain states
9. Vilke & Chan (2011) *Rating: 2/2*	To evaluate the literature for evaluation of choking and strangulation-related injuries and their association with carotid dissection (CD)	Clinical review of literature	CD can cause permanent neurological disabilities in 40 – 80% of survivors; mortality of CD is 20 – 40% Incidence is low 1.5 – 10% of all carotid injuries Typical presentation – neuro findings; pain over carotid; evidence of injury to the region; cerebral infarction will occur in 82% of dissection cases regardless of cause; most common complaints neck, jaw, or head pain, Horner's syndrome, and tinnitus Imaging and treatment options listed
10. State of Maine (2012) *Rating: 2/2, though somewhat specific to region*	Report to Joint Standing Committee on Criminal Justice and Public Safety	Governmental report from interdisciplinary task force	Observation and recommendations for policy: clear statutory language; accountability for perpetrators; deterrence; protection of victims; education and training for effective medical intervention, criminal justice management, and advocacy support; public awareness Review of all states statutes in US re: strangulation Identification and recommendations of best practice

11. Wilkinson, J. (2013) *Rating: 1/2* *One point informational*	Strangulation injury presentation documents (powerpoint)	PPT handout from presentation	Identification of s/sx of strangulation Appropriate medical and anatomical terms to document and explain strangulation injury Identification of strategies to assist in documenting more subtle signs of injury consistent with strangulation Effective investigation and prosecution cases involving strangulation injury
12. Colpitts & Niemczyk (2013) *Rating: 0/2*	Review of new legislation in Maine re: strangulation, risk assessment	Brief re: new legislation	Informal case review of strangulation Definition of strangulation in statute Explanation of protection orders

Appendix C: DINS

Dear Participant:

As you know, violence is a very serious problem in our society. One form of violence prevalent in our society is intimate partner violence (IPV). According to the Centers for Disease Control (CDC), more than 1 in 4 women and more than 1 in 10 men have experienced sexual violence, physical violence, or stalking by an intimate partner (2011).

Strangulation is one form of physical violence that has been identified as a risk factor for increased severity and lethality of intimate partner violence (Block, 2000; Campbell & Glass, 2009). Victims of IPV with a history of nonfatal strangulation are at a greater risk for future severe violence or death than IPV victims without that history. This survey was created to help better understand how professionals who are more likely to encounter victims of IPV screen for cases of nonfatal strangulation.

This survey is <u>anonymous</u>. Your responses will not be linked to any identifying information. You will be asked questions about your background, your knowledge about strangulation, your current work environment, and your opinion about screening for nonfatal strangulation. Your participation in this survey research is completely voluntary. You may withdraw from participation at any time. The total time to complete the survey is *approximately 15 minutes*. Your completion of the survey indicates your consent for study participation.

If you choose to complete the survey online (instead of the paper format), know that collection of data and survey responses using the internet involve the same risks that a person would encounter in everyday use of the internet, such as hacking or information unintentionally being seen by others.

While completing the survey, please utilize the following definitions:

Intimate partner – a person with whom one has a close personal relationship that can be characterized by the following: emotional connectedness; regular contact; ongoing physical contact and sexual behavior; identify as a couple; familiarity and knowledge of each other's lives.

Strangulation – a form of asphyxia characterized by closure of the blood vessels or air passages of the neck as a result of external pressure on the neck.

If you have any questions about this study, please contact the principle investigator:

Jennifer Delwiche MSN, RN, CNE

Email: Jennifer.delwiche@marquette.edu

Phone: (920)838-4334

Or Dr. Kristin Haglund, PhD at Kristin.haglund@marquette.edu

If you have questions or concerns about your rights as a research participant, you can contact Marquette University's Office of Research Compliance at (414) 288-7570.

> **Section 1:** Background information
>
> This section contains questions referring to your professional background. Please answer all questions to the best of your ability.

1. What is your gender?
   - ☐ Male
   - ☐ Female
2. What is your professional group affiliation?
   - ☐ Law Enforcement Officer
   - ☐ Healthcare team member
     Please identify role on healthcare team (for example: Registered Nurse, Medical Assistant, MD, NP, etc.):

     _____
     _____
   - ☐ Advocate
   - ☐ Other

     _____
     _____

3. How many years have you been practicing in your professional role?

   _____

4. In your professional role, do you provide care and/or services to victims of intimate partner violence?

   - ☐ Yes
   - ☐ No
   - ➡ *If No is selected*, thank you for your participation. This is the end of your study participation!

5. Have you ever encountered an intimate partner violence (IPV) victim in your professional practice?
   - ☐ Yes

     If yes, approximately how many times have you encountered an IPV victim in your professional practice?

     _____
   - ☐ No

6. Have you ever encountered a victim of strangulation in your professional practice?
   - ☐ Yes

If yes, approximately how many times have you encountered a victim of strangulation in your professional practice?

_____

☐ No

7. Have you had any prior training regarding identifying or treating victims of strangulation?
   ☐ Yes

   If yes, was your prior training regarding strangulation victims (*choose all that apply*):
   ☐ Mandatory
   ☐ Optional
   ☐ Done independently (not as part of professional role requirements)

   ☐ No

8. Do you currently screen for/ask people about a history of IPV when in your professional care?
   ☐ Yes
   ☐ Yes, but only if circumstances warrant it
   ☐ No
   ➡ **If No** is selected, please skip to question 11, "If a history of IPV is identified…"

9. What approximate percentage of the time do you screen for (ask about) a history of IPV?

   _____

   _____

10. When screening for a history of IPV, do you use a specific screening tool?

    ☐ Yes

    If yes, what is the specific <u>screening tool</u> for a history of IPV that is used? [for example, Abuse Assessment Screen (AAS); Hurt, Insult, Threaten, and Scream (HITS); Partner Violence Screen (PVS); etc.]:

    _____

    __

    ☐ No

11. If a history of IPV is identified, do you currently screen for/ask people about a history of strangulation?
    ☐ Yes

☐ Yes, but only if circumstances warrant it

☐ Yes, as a part of a risk or lethality screening tool

    If yes, what risk or lethality screening tool do you currently use? [For example, Lethality Assessment Program (LAP) Maryland Model screening tool; Domestic Violence Inventory; Domestic Violence Risk Assessment; Danger Assessment Instrument; etc.]:

    _____

☐ No

    ⟶ (**If No**, this section is complete. Please continue to Section 2: Knowledge about Strangulation, page 4)

12. What approximate percentage of the time do you screen for (ask about) a history of strangulation?

_____

Section 2: Knowledge about strangulation

For this section, please answer each question to the best of your ability. Some may be difficult to answer. Please provide an answer and do not skip questions.

_____

1. In 2008, the Strangulation and Suffocation Act was passed in Wisconsin. This made strangulation:
   a. Battery misdemeanor
   b. Substantial battery misdemeanor
   c. Disorderly conduct misdemeanor
   d. Reckless endangering safety misdemeanor
   e. Class H felony

2. Nonfatal strangulation increases the odds of becoming an attempted or completed homicide victim by:
   a. 1x
   b. 3x
   c. 5x
   d. 7x

3. What approximate percentage of intimate partner homicide victims presented to an Emergency Department of a healthcare facility during the two years prior to their death?
   a. 5%
   b. 15%
   c. 25%
   d. 45%
   e. 65%

4. The symptoms of nonfatal strangulation may appear:
   a. Immediately
   b. In a few hours
   c. In a few days
   d. Months after the strangulation
   e. All of the above

5. In one review of 300 strangulation cases the following was found: 35% of victims had injuries too minor to photograph and 50% of victims had no visible injury.
   a. True
   b. False

6. Choking, suffocation, and strangulation are terms that can be used interchangeably by professionals in documentation of victim history.
   a. True
   b. False

7. Strangulation is defined as "aspiration of an object resulting in the internal blockage of the airway"
   a. True
   b. False

8. Strangulation can result from manual pressure (bare hands), ligature (belts or scarves), or hanging.
   a. True
   b. False

9. Strangulation cases are easy to detect and have distinct, consistent symptoms. Most cases can be easily detected by signs and symptoms alone, such as: hoarse or raspy voice; loss of bladder or bowel function; petechiae on the face or eyes; bruising or scratching around the neck.
   a. True
   b. False

10. The application of 4 pounds of pressure is required to occlude jugular veins, and 5 to 11 pounds of pressure to occlude arteries (roughly the pressure required to can vegetables or recommended pressure for very light polishing of a motor vehicle).
    a. True
    b. False

Section 3: Factors impacting identification

Each question in this section refers specifically to **SCREENING FOR CASES OF STRANGULATION IN IPV CASES**. Please review each statement and identify the degree to which you agree with that statement. The statements may sound repetitive, but please answer each one. There will be an area to add any comments that you wish to help further explain your responses.

These statements will be in reference to your ability to successfully perform screening for NFS as well as the control you have regarding screening:							
	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
There are resources in my work environment that help me to complete screening for strangulation in IPV cases (i.e. checklists, forms, screening alerts, etc.)							
I am unable to screen for cases of strangulation due to barriers in my work environment.							
It is impossible to screen for a history of strangulation in IPV victims.							
If I wanted to, I could screen for cases of strangulation in IPV victims							
Time constraints in my work environment prohibit me from screening for strangulation cases							
The physical space in which I perform screening for/identification of strangulation is prohibitive (privacy issues, safety issues, etc.)							
In my work environment, there is a clearly defined method to document/ report cases of strangulation when identified							

I have complete control over screening for a history of strangulation in IPV victims						
I have no control over screening for a history of strangulation in IPV victims						

What else else impacts your control over screening for strangulation?

_____

_____

_____

These statements are in reference to <u>YOUR opinion</u> related to screening for/identification of strangulation cases.							
	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
It is unpleasant to screen IPV victims for a history of strangulation							
It is beneficial to identify a history of strangulation in IPV victims							
Screening for cases of strangulation is worthless							
Screening for strangulation in IPV cases should always happen							
It is valuable to screen for cases of strangulation							
It would be detrimental to screen for cases of strangulation							

Please describe your opinion about screening for strangulation:

_____

_____

_____

These statements are in reference to <u>your perception of the opinion of OTHERS</u> you work with regarding screening for strangulation.							
	Strongly disagree 1	2	3	4	5	6	Strongly agree 7

My supervisor expects me to screen victims of IPV for a history of strangulation							
The people in my profession whose opinions I value would not approve of screening for strangulation in IPV victims							
My peers are extremely likely to screen for a history of strangulation							
The people in my profession whose opinion I value already screen IPV victims for a history of strangulation							
My peers are unlikely to screen for a history of strangulation							
My supervisor has no expectations about screening for strangulation in IPV victims							

What do other people in your profession think about screening for strangulation in IPV cases?_____

_____

_____

These statements relate to <u>your intention to screen</u> for cases of strangulation in IPV cases in the future:							
	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
In the future, I intend to screen for a history of strangulation in IPV cases							
It is likely that I will screen for a history of strangulation in IPV cases							
In the future, I do NOT intend to screen for a history of strangulation in IPV cases							
It is unlikely that I will screen for a history of strangulation in IPV cases in the future							

I want to screen for a history of strangulation in IPV cases						
I expect to screen for a history of strangulation in IPV cases						

Please add any additional information about what your future practice may be in regards to screening for strangulation history:

_____

THANK YOU for your participation in this research study!

Appendix D: Explanatory Email

Dear _____,

My name is Jennifer Delwiche. I am conducting research with a study entitled, "*What Factors Influence Professionals to Screen for a History of Nonfatal Strangulation?*".

As you know, violence is a very serious problem in our society. One form of violence is intimate partner violence (IPV). According to the Centers for Disease Control (CDC), more than 1 in 4 women and more than 1 in 10 men have experienced sexual violence, physical violence, or stalking by an intimate partner (2011).

Strangulation is one form of physical violence that has been identified as a risk factor for increased severity and lethality of intimate partner violence. Victims of IPV with a history of nonfatal strangulation are at a greater risk for future severe violence or death than IPV victims without that history.

Despite the recognition that a history of nonfatal strangulation is an important risk factor for worsening violence and possible death, there is a gap in the literature about screening for this history by the professionals who serve victims.

This study will focus on those professionals most likely to encounter victims of violence: law enforcement officers, healthcare team members, and victim advocates. In an effort to better understand how these professionals identify a history of nonfatal strangulation, a survey was created. This survey, named the Delwiche Intention to Screen for Nonfatal Strangulation history (DINS), will measure how perceived control over screening, attitude towards screening, and the social norms regarding screening are related to the professional's intention to screen. Due to your role as a professional who may serve victims of violence, I am asking for your assistance in completion of this survey.

This study has been approved by the Institutional Review Board of Marquette University in Milwaukee, WI. Attached is a link to this study, which I am asking you to forward your healthcare team members. The survey, completed through Qualtrics, will take approximately 15 minutes to complete and is completely anonymous. The link to the survey is provided below. I am also attaching an informational sheet about the study for your team members to review.

I appreciate your support by forwarding this email and study link to your healthcare team. I also encourage you to forward the email and study link to any other professionals you know who may be interested in participating in the research.

Please do not hesitate to let me know if you have any additional questions. Thank you for your consideration!

Sincerely,

Jennifer Delwiche MSN, RN, CNE
Phone number: (920)838-4334
Jennifer.delwiche@marquette.edu
STUDY LINK: