The Role Social Capital Plays in the Psychological Capital of Registered Nurses
Experiencing Second Victim Syndrome

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Dedication

      This dissertation is dedicated to the memory of my 'Gram', Marguerite Marconi Durham. Her love of family was unwavering, her kindness was unparalleled, her intelligence was unmatched, and her strength was unbelievable. She exemplified grace, and she was a woman years ahead of her time. I aspire to be half the woman she was. She was my biggest fan, and I was hers.

stressful process enjoyable and I am a better scholar thanks to your insight, expertise, coaching and mentoring. I am forever in your debt.

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Abstract of Dissertation

The Role Social Capital Plays in the Psychological Capital of Registered Nurses
Experiencing Second Victim Syndrome

This study used an ex-post facto survey for data collection and structural equation modeling for data analysis to explore the combined relationship of psychological capital and social capital on the severity of second victim syndrome experienced by registered nurses. Specifically, this study sought to answer the following research question "To what extent does the relationship between psychological capital and social capital combine to predict the severity of SVS experienced by registered nurses following a precipitating event?" A second research question, aimed at explicating the relationships between the subconstructs of the three constructs of interest was "What are the relationships between the subconstructs of psychological capital, social capital and second victim syndrome?"

The online survey consisted of three instruments: the Psychological Capital Questionnaire, the Social Capital Outcomes for Nurses, and the Second Victim Syndrome Experience and Support Tool. Following data cleaning, there were 1167 surveys with sufficient data for analysis via SPSS v25 and 999 cases with full data for SEM analysis via AMOS v25. First, correlational analyses were conducted. Based on these results, multiple structural equation models were created and tested.

The structural equation models demonstrated that psychological capital, on its own, had no effect on the severity of second victim syndrome. However, social capital, on its own, had a statistically significant effect on the severity of second victim syndrome. Moreover, the combined effect of social capital and psychological capital on

second victim syndrome was statistically significant. Stated another way, the combined effect of psychological capital and social capital predict the severity of second victim syndrome experienced by registered nurses. Specifically, social capital impacts nurses' psychological capital, and this combined effect inversely impacts the severity of second victim syndrome.

The results of this study have practical implications that include unit-based peer support programs and an increased focus on supportive workplace cultures. Programmatic efforts should also focus on social capital at the team level as well as the importance of building self-efficacy through increasing mastery experiences, modeling of behavior, social persuasion and monitoring one's physiological responses.

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Chapter 1: Overview

This quantitative non-experimental survey research study was undertaken to explore the combined relationship and effect of psychological capital and social capital on the severity of second victim syndrome experienced by registered nurses following a precipitating event. This chapter begins with an exploration of the problem, the purpose of the research and research question, as well as a description of the significance of the study. It will then explain the theoretical foundation of the three constructs of interest: psychological capital, social capital, and second victim syndrome before presenting the conceptual framework, after which the methodology will be described, and potential limitations will be presented.

Statement of the Problem

In a letter to the editor of the *New England Journal of Medicine* in 1984, Dr. David Hilfiker bravely wrote about the medical errors he committed in his career:

I have not been successful in dealing with the paradox. Any patient encounter can dump me back into the situation of having caused more harm than good, yet my role is to be a healer. Since there has been no permission to address the paradox openly, I lapse into neurotic behavior to deal with my anxiety and guilt. Little wonder that physicians are accused of having a God complex; little wonder that we are defensive about our judgments; little wonder that we blame the patient or the previous physician when things go wrong, that we yell at the nurses for their mistakes, that we have such high rates of alcoholism, drug addiction and suicide. At some point we must bring our mistakes out of the closet. We need to give ourselves permission to recognize our errors and their consequences. We need to

find healthy ways to deal with our emotional responses to those errors. Our

profession is difficult enough without having to wear the yoke of perfection.

(Hilfiker, 1984, p. 122)

Medical errors have been occurring as long as medicine has been practiced. Despite a long-held false belief that medical care is error-free, there is an emerging recognition that the complex and fractured healthcare system of today significantly increases the risk of error (Edrees, Paine, Feroli, & Wu, 2011; Jones & Trieber, 2012; Schiess et al., 2018; Scott et al., 2009; Serembus, Wolf, & Youngblood, 2001; Treiber & Jones, 2010). As noted by James (2013), "It should be no surprise that PAEs [preventable adverse events] that harm patients are frighteningly common in this highly technical, rapidly changing, and poorly integrated industry" (p. 122).

Given healthcare's errorless imperative "… where perfection is the expectation and errors are considered anomalies …" (Jones & Trieber, 2012, p. 288), clinicians that commit an error are often blamed and shamed by their colleagues, institution and profession (Davidson, Agan, Chakedis, & Skrobik, 2015; Elmir, Pangas, Dahlen, & Schmied, 2017; Pinto, Faiz, Bicknell, & Vincent, 2013; Rassin, Kanti, & Silner, 2005; Schiess et al., 2018; Sirriyeh, Lawton, Gardner, & Armitage, 2010). They are characterized as poor performers, a characterization that has since been disproven (Paparella, 2011; Serembus et al., 2001). As a result, the impact errors have on the practitioner was not considered and actions towards them were often punitive (Edrees et al., 2011), which led to poor disclosure to peers, administration and most importantly, the patient or patient's family (Bari, Khan, & Rathore, 2016; Harrison et al., 2014; Manser, 2011; Rassin et al., 2005; Schiess et al., 2018; Wu, Boyle, Wallace, & Mazor, 2013).

The healthcare industry's belief that errors were infrequent ended in 2000 when the Institute of Medicine determined that preventable adverse events resulted in the death of "… at least 44,000 and perhaps as many as 98,000 Americans …" (*To err is human: Building a safer health system*, 2000, p. 26) each year. According to the Institute of Medicine, "More people die in a given year as a result of medical errors than from motor vehicle accidents (43,458), breast cancer (42,297), or AIDS (16,516)" (p. 1), making this a serious public health issue. This landmark publication brought immediate attention to a significant, yet mainly ignored truth in the healthcare industry. More recent data from James (2013) estimates at least 210,000 and more likely 400,000 deaths annually from preventable adverse events, and 10 to 20 times that number that are seriously harmed, mainly due to poor disclosure and reporting, making the impact of medical errors an even greater public health crisis than originally thought.

Second Victim Syndrome

Clearly the need to reduce errors is an important area of research and program development, and efforts focused on error reduction must continue. However, there is also a critical need to understand the impact making these errors has on the healthcare professionals involved. Despite Dr. Hilfiker's impassioned plea in 1984, other than a handful of other disclosures by medical professionals, nothing changed until 2000, when the Institute of Medicine report was released and second victim syndrome was given a name by Dr. Albert Wu in an editorial discussing the distress experienced by a medical resident following an error (Wu, 2000). These two publications spurred interest in the study of second victim syndrome given the sheer magnitude of the problem and how little was known about it.

Scott et al. (2009) developed a consensus definition of second victim syndrome and this definition remains frequently cited within the associated literature:

> Second victims are healthcare providers who are involved in an unanticipated adverse patient event, in a medical error and/or a patient related injury and become victimized in the sense that the provider is traumatized by the event. Frequently, these individuals feel personally responsible for the patient outcome. Many feel as though they have failed the patient, second guessing their clinical skills and knowledge base. (Scott et al., 2009, p. 326)

Importantly, second victim syndrome can also occur in healthcare providers in the absence of an error. As noted by Hall and Scott (2012),

> Even in the absence of a mistake in care, many health workers may be affected by the adverse outcomes in patients based on the relationship between provider and the patient, past clinical experiences, or similarity of the patient to a family member. (p. 384)

Second victim syndrome can result from a medical error committed by a healthcare provider but can also arise in the absence of an error in response to an unanticipated adverse event or a near-miss, where an error could have happened but was prevented (Burlison, Scott, Browne, Thompson, & Hoffman, 2017; Hall & Scott, 2012; Manser, 2011). Second victim syndrome may also occur following a less severe error with a patient with whom the healthcare provider has a strong affinity for or identification with. As a result, this research will refer to the events that can result in second victim syndrome as precipitating events, which the researcher defines as a medical error, near-miss, preventable adverse events or strong affinity for, or identification with, a patient.

It is estimated that second victim syndrome occurs in between 15% to 40% of all cases of preventable adverse events (Seys et al., 2013), therefore there are a large number of clinicians experiencing second victim syndrome each year. Research places the number of clinicians that have experienced second victim syndrome at some point in their career between 30% and 60%, which makes second victim syndrome a significant issue for healthcare providers and institutions (Burlison, Quillivan, Scott, Johnson, & Hoffman, 2016; Cabilan & Kynoch, 2017; Daniels & McCorkle, 2016; Hall & Scott, 2012; Jones & Treiber, 2018; Pratt & Jachna, 2015; Quillivan, Burlison, Browne, Scott, & Hoffman, 2016; Seys et al., 2013). There is consensus in the literature that the full impact of second victim syndrome remains unknown due to the continued poor reporting by practitioners that do not feel they have the peer or institutional support to disclose (Bari et al., 2016; Harrison et al., 2014; Manser, 2011; Rassin et al., 2005; Rodriquez & Scott, 2018; Schiess et al., 2018; Wu et al., 2013).

Symptomatology experienced in second victim syndrome can be quite severe and include guilt, shame, fear, anxiety, grief, depression, sleeplessness, dwelling, nausea and social withdrawal (Clancy, 2012; Pratt, Kenney, Scott, & Wu, 2012; Quillivan et al., 2016; Scott, Hirschinger, & Cox, 2008; Wu et al., 2013). It can progress to post traumatic stress disorder (PTSD) in some clinicians (Manser, 2011; Paparella, 2011; Pratt et al., 2012; Scott et al., 2008; Wu et al., 2013). There is compelling evidence that second victim syndrome can last for years, further impacting the clinician's professional practice well after a precipitating event (Edrees et al., 2011; Pinto et al., 2013; Pratt & Jachna, 2015; West et al., 2006). Many institutions have begun to address this issue by implementing support programs for second victims (Edrees et al., 2011; Scott et al.,

2008; Scott et al., 2010; Seys et al., 2012; Wears & Wu, 2002) but little research exists on why some healthcare providers experience second victim syndrome after a preventable adverse event while others do not (Schiess et al., 2018).

Research on second victim syndrome identified the importance of a person's psychological state, most often their self-efficacy and resilience (Austin, Smythe, & Jull, 2014; Kable, Kelly, & Adams, 2018; Pinto et al., 2013; Schiess et al., 2018; Winning et al., 2018), and their available social support mechanisms as critical to their ability to recover from SVS (Burlison et al., 2017; Kable et al., 2018; Pinto et al., 2013; Quillivan et al., 2016; Rassin et al., 2005; Scott et al., 2009; Scott et al., 2010; Scott & McCoig, 2016; Serembus et al., 2001; Sirriyeh et al., 2010; Ullström, Andreen Sachs, Hansson, Øvretveit, & Brommels, 2014; West et al., 2006; Winning et al., 2018). Given the role a person's psychological state and social support play in their ability to recover from second victim syndrome, this study explored the combined predictive relationship of psychological capital and social capital on the severity of second victim syndrome experienced by registered nurses following the occurrence of a precipitating event.

Psychological Capital

Psychological capital is a relatively young concept, developed in 2004 by Luthans and Youssef (2004). In an attempt to integrate positive psychology with the resource-based theory of the firm, which historically focused on human capital, or the knowledge, skills and competencies of individuals, and social capital, or the relationships individuals have within and outside their organizations, psychological capital is seen as who an individual is, or who they are becoming (Luthans, Avey, Avolio, & Peterson, 2010). Luthans, Luthans, and Luthans (2004) posited that psychological capital was an integral

part of the capital available to organizations. They note "... psychological capital lies beyond human and social capital and basically consists of 'who you are' rather than what or who you know" (Luthans et al., 2004, p. 46) and define psychological capital as:

> PsyCap is an individual's positive psychological state of development and is characterized by: (1) having confidence (self-efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (2) making a positive attribution (optimism) about succeeding now and in the future; (3) persevering toward goals and, when necessary, redirecting paths to goals (hope) in order to succeed; and (4) when beset by problems and adversity, sustaining and bouncing back and even beyond (resiliency) to attain success. (Luthans et al., 2004, p. 3)

Social Capital

Social capital has been defined in many ways by social science scholars; in a publication by Adler and Kwon (2002), they provide 20 definitions of social capital. For this study, social capital is defined as "... the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit" (Nahapiet & Ghoshal, 1998, p. 243). This definition was chosen because it does not distinguish between internal and external relationships, as many definitions of social capital do, but also because it speaks not only to the relationships or 'networks' an individual has, but also explicity refers to the benefits available to the actor from that network, and thus seems a more robust definition for the purposes of this research.

Both pyschological and social capital have been studied in registered nurses, the target population in this study (Hofmeyer, 2013; Sheingold, Hofmeyer, & Woolcock,

2012; Sheingold & Sheingold, 2013; Sweet & Swayze, 2017), but there are no studies that have explored the combined role psychological capital and social capital play in explaining SVS among registered nurses.

<div align="center">**Purpose and Research Questions**</div>

This research study explored the combined role that psychological capital and social capital play in the severity of second victim syndrome experienced by registered nurses after a precipitating event. Much of the literature on second victim syndrome described the symptomatology as a range of symptoms over a varied length of time (Clancy, 2012; Pratt et al., 2012; Quillivan et al., 2016; Scott et al., 2008; Wu et al., 2013). Thus, second victim syndrome, in this study, was conceptualized as an experience rather than a syndrome and was seen to fall along a continuum, with symptoms ranging from mild to severe (Burlison et al., 2017; Cabilan & Kynoch, 2017; Daniels & McCorkle, 2016; Jones & Treiber, 2018; Jones & Trieber, 2012; Kable et al., 2018; Pratt & Jachna, 2015; Pratt et al., 2012; Scott & McCoig, 2016; Ullström et al., 2014). This hypothesis was supported by recent literature by Rodriquez and Scott (2018) and Wu et al. (2017) who refer to second victim syndrome as a phenomenon and not a syndrome.

Mild symptoms are those physical, emotional or cognitive symptoms that are of brief duration and neither impact the professional's ability to continue working nor result in prolonged physical distress (Pratt et al., 2012). Severe symptoms are those that result in significant physical, emotional or cognitive distress and are enduring for long periods of time, sometimes up to years later (Edrees et al., 2011; Pratt & Jachna, 2015; West et al., 2006). Severe second victim syndrome has been characterized as post-traumatic stress disorder (PTSD) or PTSD-like (Manser, 2011; Paparella, 2011; Pratt et al., 2012; Scott et

al., 2008; Wu et al., 2013). The researcher believes that every healthcare practitioner that experiences a precipitating event experiences second victim syndrome, but some are better able, due to their psychological and social capital, to recover with minimal symptoms of psychological, physical, or emotional distress.

A recent metasynthesis of the literature by Schiess et al. (2018) explored qualitative studies of second victim syndrome. The authors found that personal traits of the healthcare professional, including self-efficacy and resilience, and support from peers and their institutions mediate the severity of second victim syndrome. These findings are supported in other studies of second victim syndrome (Austin et al., 2014; Kable et al., 2018; Pinto et al., 2013; Winning et al., 2018) but none of these studies attempted to explicate these relationships. The literature supports the hypothesis that psychological capital and social capital are constructs that interact and explain the severity of second victim syndrome following a precipitating event.

Therefore, the research question of interest was "To what extent does the relationship between psychological capital and social capital combine to predict the severity of second victim syndrome experienced by registered nurses following a precipitating event?" A second research question, aimed at explicating the relationships between the subconstructs of the three constructs of interest was "What are the relationships between the subconstructs of psychological capital, social capital and second victim syndrome?" The null and alternate hypotheses for this study were as follows:

H_0: The combined contributions of psychological capital and social capital do not predict the severity of second victim syndrome experienced by registered nurses following a precipitating event.

H_a: The combined contributions of psychological capital and social capital predict the severity of second victim syndrome experienced by registered nurses following a precipitating event.

Statement of Potential Significance

While second victim syndrome has emerged as a topic of significant and important research and conceptualization, there has been limited research that explores the relationship between factors that impact the severity of second victim syndrome. Therefore, there is both theoretical and practical significance to this study.

Theoretical Significance

Thanks to the pioneering work of Dr. Wu and the Institute of Medicine report in 2000, there has been a significant amount of research into the phenomenon of second victim syndrome. Most of the quantitative research has sought to measure the incidence and prevalence of SVS, while much of the qualitative research has focused on understanding the response of clinicians following a preventable adverse event or precipitating event and how institutions can support second victims following an event, but less conceptual and theoretical work on the development of SVS and the constructs involved has been conducted (Elmir et al., 2017; Halpern, Maunder, Schwartz, & Gurevich, 2012; Serembus et al., 2001; Sheen, Slade, & Spiby, 2014; West et al., 2006).

Most recently, Schiess et al. (2018) conducted a study to develop a transactional model of the second victim experience. This transactional model was developed to

outline the process involved in the second victim experience and is the first known

conceptual model of the second victim experience. While the model explores and

explains the experience of second victim syndrome and identifies the role of

psychological and social factors as impacting the second victim recovery, it does not

quantify or test these relationships. Therefore, this study expands the literature on second

victim syndrome by exploring the role psychological capital and social capital, and each

subconstruct of the constructs, plays in the second victim syndrome experience of

registered nurses.

        Additionally, as noted above, the researcher envisions second victim syndrome as

a continuum rather than a syndrome, with severity falling along the continuum from mild

to severe. This study contributes to the literature by further explicating the second victim

syndrome experience, thus identifying areas for future research and investigation and

identifies gaps and opportunities to refine the current instrument used to measure second

victim syndrome.

Practical Significance

        A significant amount of the research to-date on second victim syndrome has been

conducted to explore how to implement institutional programs to support second victims

after an event has occurred (Edrees et al., 2011; Mira et al., 2015; Scott et al., 2008; Seys

et al., 2012; Wears & Wu, 2002) but little research has been conducted on the individual

level constructs or factors that cause or contribute to the severity of second victim

syndrome as a means of developing programs intended to complement error reduction

strategies. While it is not possible to eliminate precipitating events, it is relevant and

equally important to understand which factors contribute to SVS severity as a means of

preventing the future recurrence of severe SVS in registered nurses. With additional

knowledge on the relationship between psychological capital and social capital,

institutions and individuals can begin to develop training and development programs to

assist individuals to develop the psychological and social capital needed to minimize the

severity of SVS.

Additionally, this study provides an opportunity to explore psychological capital

and social capital in a sample of registered nurses. Psychological capital and social

capital are constructs that have protective properties in other negative affective states, so

the data collected in this study can be used in future studies to explore psychological

capital and social capital and their relationship with demographic factors such as age,

gender, tenure, practice location and type of nursing license, i.e., registered nurse versus

advance practice registered nurses, nurse practitioners, certified registered nurse

anesthetists, and clinical nurse specialists. These analyses will contribute to the

knowledge of significant differences in nurses' psychological capital and social capital

for different demographic groups, thus providing the necessary knowledge for the

development of programs to reduce job stress and other negative affective states, such as

burnout.

Conceptual Framework

The conceptual model for this study hypothesizes that there is an interaction and

relationship between psychological capital and social capital and that this combined

interaction influences the severity of second victim syndrome experienced, as seen in

Figure 1.

PsyCap (P) and SocCap (S)   Mild SVS

High P/High S
High P/Low S
High S/Low P   SVS
Low S /Low P

Precipitating Event

Severe SVS
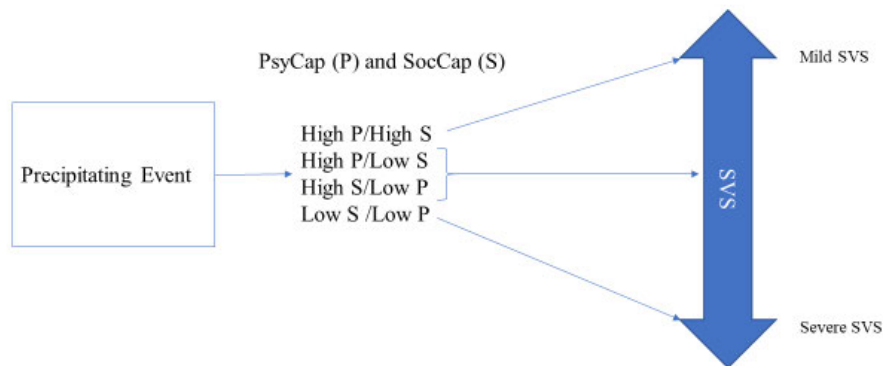
Figure 1. A conceptual framework of the impact of psychological and social capital on the severity of second victim syndrome

Methodology

This research study is an ex post facto, cross-sectional, non-experimental survey design (Cohen, Manion, & Morrison, 2007). Permission to use three valid and reliable scales to measure psychological capital, social capital, and second victim syndrome was sought and granted. The psychological and social factors impacting second victim syndrome can be measured via the constructs of psychological capital and social capital. These constructs are measured via the Psychological Capital Questionnaire (PCQ) (Luthans, Avolio, Avey, & Norman, 2007) and the Social Capital Outcomes for Nurses (SCON) (Sheingold & Sheingold, 2013). Both instruments have been studied in the nursing population (Gilbert, 2017; Laschinger & Grau, 2012; Rahimnia, Karimi Mazidi, & Mohammadzadeh, 2013; Sheingold & Sheingold, 2013; Shin & Lee, 2016; Sweet &

Swayze, 2017). Second victim syndrome was measured via the Second Victim Experience and Support Tool (SVEST) (Burlison et al., 2017).

The three instruments were combined into one online survey that was made available to registered nurses via 12 United Stated-based professional nursing associations. When combined, these 12 nursing associations had approximately 225,000 total members. The nursing associations made the study invitation and survey link available to their members in varying ways – on their website, via newsletter, etc. The actual number of nurses that saw the study invitation and survey link during the seven-week survey administration period in Fall 2018 was unknown.

Following the survey administration, the data was exported into SPSS for examination and cleaning. Scale scores were computed where there was complete data. Psychometric analyses were conducted and compared with published psychometric data for each survey instrument. Then, correlational analyses were computed to explore relationships between the constructs/subconstructs and SVS. Based on these results, structural equation models were created and tested using AMOS v25.

Limitations

As previously discussed, there has been little research to quantify the individual level factors that contribute to the severity of second victim syndrome and therefore, this study is of critical importance to the nursing profession. However, there are three limitations that should be discussed – instrumentation, indirect survey administration, and truthfulness of respondents.

The survey was comprised of three separate valid and reliable measurement tools, that, when combined with six demographic questions, total 109 individual items. Thus, it

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is long. Additionally, the survey began with the measurement of second victim syndrome. Combined, these two design decisions may have contributed to a lower survey completion rate.

The researcher was not able to control the administration of the survey. Once the invitation and survey link were provided to the nursing associations, the researcher was not able to guide the survey administration or enhance the number responses (such as by sending a reminder email). Thus, the number of registered nurses that saw the survey invitation is unknown and the completion rate might have been affected.

There is a risk that survey respondents may minimize their experiences, especially if the second victim syndrome was because of an error made by the respondent. The importance of the topic, the population of study, registered nurses – who are known to be the most trusted and ethical profession in the United States (Gallup, 2017), and the guarantee of anonymity of study responses attempted to mitigate this risk.

Definition of Key Terms

Key terms used in this study are defined in Table 1.

Table 1

Key Definitions

Term	Definition	Reference
Medical Error	"A preventable adverse event that affects a patient by prolonging treatment or causing discomfort, disability, or death."	Kaldjian et al. (2008, p. 718)
Near-Miss	"An event or situation that could have resulted in an accident, injury, or illness, but did not, either by chance or through timely intervention."	Engel, Rosenthal, and Sutcliffe (2006, p. 87)
Precipitating Event	A medical error, near-miss, preventable adverse events or strong affinity for or identification with a patient that can result in SVS	Author defined – thus no reference
Preventable Adverse Event	"The commission of an identifiable error that caused an adverse event"	James (2013, p. 123)
Psychological Capital	"PsyCap is an individual's positive psychological state of development and is characterized by: (1) having confidence (self-efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (2) making a positive attribution (optimism) about succeeding now and in the future; (3) persevering toward goals and, when necessary, redirecting paths to goals (hope) in order to succeed; and (4) when beset by problems and adversity, sustaining and bouncing back and even beyond (resiliency) to attain success."	(Luthans, Youssef, & Avolio, 2007, p. 3)
Second Victim Syndrome (also referred to as Second Victim Phenomenon or Experience in this manuscript)	"Second victims are healthcare providers who are involved in an unanticipated adverse patient event, in a medical error and/or a patient related injury and become victimized in the sense that the provider is traumatized by the event. Frequently, these individuals feel personally responsible for the patient outcome. Many feel as though they have failed the patient, second guessing their clinical skills and knowledge base."	Scott et al. (2009, p. 326)
Social Capital	"… the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit"	(Nahapiet & Ghoshal, 1998, p. 243)

Chapter 2: Literature Review

This quantitative, ex post facto, cross-sectional, non-experimental survey study intended to explore the relationship between psychological capital and social capital and their combined impact on the severity second victim syndrome experienced by registered nurses following a precipitating event. Specifically, social capital is believed to impact a nurse's psychological capital that, in turn, contributes to the severity of the nurse's second victim experience. To elucidate the phenomena, a literature review of the three constructs under study was undertaken to explore and identify the relationships between them. Chapter 2 provides a review of the literature of second victim syndrome, psychological capital and social capital.

Literature Search

Databases available to doctoral students at the George Washington University (GWU) were used as the primary source for the literature review. Databases utilized in the literature review included the Cumulative Index to Nursing & Allied Health Literature (CINAHL), PubMed, Medline, Business Source Complete, ABI/Inform, PsychInfo and Web of Science. External databases such as Google Scholar were used to supplement the literature available in the GWU databases. The search was limited to peer-reviewed, full-text articles in English, between 2000 and 2018. Additional sources of literature included the reference lists of selected publications and those provided by scholars and experts in the field of second victim syndrome, psychology or methodology.

Search terms used for the literature review included: "second victim", "second victim syndrome", "second victim syndrome AND registered nurses", "emotional response AND medical errors", "psychological capital", "social capital", "psychological

capital AND social capital", "psychological capital AND social capital AND healthcare professionals", "psychological capital AND social capital AND nurses", "relationship between psychological capital and social capital". The search terms and resulting literature numbered in the hundreds and the author catalogued literature deemed to be relevant in EndNote X8.

The literature review will be broken into four main sections: it will begin with an explanation of the construct of psychological capital, following which an analysis of social capital will be undertaken, then an in-depth exploration of second victim syndrome will be presented. Lastly, an evaluation of the three constructs in combination will be provided. The next section will explore the construct of psychological capital.

Psychological Capital

Theoretical Underpinnings

Psychological capital is referred to as a cousin to other capitals: economic, human and social as seen in Figure 2, which are seen to be sources of competitive advantage for organizations (Luthans et al., 2004; Luthans & Youssef, 2004). While the historic focus of competitive advantage centered on economic capital, organizations and their leaders have recently become more aware "… that human resources are no longer just a cost of doing business, but are an indispensable asset, and, an investment that needs to be effectively managed so they can yield the high return of sustainable competitive advantage" (Luthans & Youssef, 2004, p. 2).
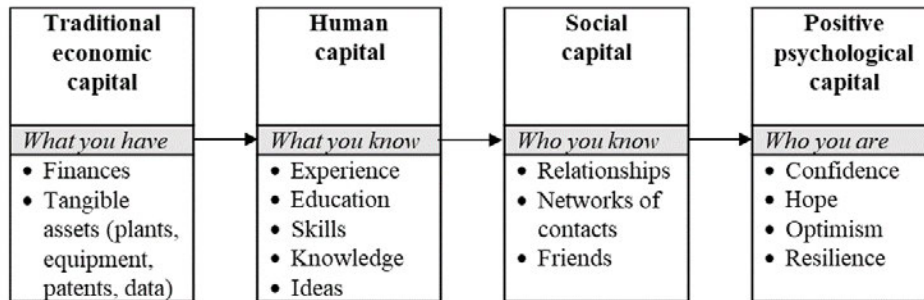
Figure 2. Expanding capital for competitive advantage (Luthans et al., 2004, p. 46)

Developed by Luthans and Youssef (2004), psychological capital is part of the field of positive psychology which was initially posited by Abraham Maslow in 1954 (Khandelwal & Khanum, 2017). In his book *Motivation and Personality* (Maslow, 1954), Maslow notes:

> Because contemporary psychology is overly pragmatic, it abdicates from certain areas that should be of great concern to it. In its preoccupation with practical results, with technology and means, it has notoriously little to say, for example, about beauty, art, fun, play, wonder, awe, joy, love, happiness, and other 'useless' reactions and end-experiences. (p. 131)

In 1998, Martin Seligman, then President of the American Psychological Association (APA), revived the term positive psychology as the theme of his presidency to combat what he perceived to be the negative focus in the field of psychology at the time (Khandelwal & Khanum, 2017; Luthans et al., 2004; Luthans & Youssef, 2004). Dr. Seligman wanted to return the focus of psychology to prevention, how to prevent mental illness, substance abuse or schoolyard violence, and the promotion of human strength and virtues (Seligman & Csikszentmihalyi, 2000). To understand the theoretical foundation of psychological capital, a review of positive psychology and positive organizational behavior is needed, and thus is provided in the following sections.

Positive psychology. Prior to World War II (WWII), psychology focused on three main areas: treating mental illness, assisting individuals to achieve happy and productive lives and helping them achieve their potential (Luthans & Youssef, 2004; Luthans, Youssef, et al., 2007). Unfortunately, following WWII, there was significant need to focus on the medical model of psychology, with a primary focus on the first goal of treating mental illness. This focus became the driving force of psychology, and the other two goals faded into the background (Seligman & Csikszentmihalyi, 2000) until Seligman's call for change in 1998. According to Seligman and Csikszentmihalyi (2000):

> What psychologies have learned over 50 years is that the disease model does not move psychology closer to the prevention of these serious problems. Indeed, the major strides in prevention have come largely from a perspective focused on systematically building competency, not on correcting weakness. (p. 7)

With renewed interest in a focus on what role positivity could play in human well-being, theory-building and empirical research flourished (Avey, Luthans, Smith, & Palmer, 2010; Avey, Luthans, & Youssef, 2009; Khandelwal & Khanum, 2017; Luthans et al., 2004; Luthans & Youssef-Morgan, 2017; Luthans & Youssef, 2004; Luthans, Youssef, et al., 2007). Research has demonstrated that happy people are healthier, both mentally and physically, have higher self-perception and live longer (Avey et al., 2010; Seligman & Csikszentmihalyi, 2000). Emerging from the theoretical and empirical work related to positive psychology were two theoretical streams, positive organizational scholarship (POS) and positive organizational behavior (POB).

Positive organizational scholarship is primarily focused at the organizational level and scholars focus on organizational characteristics for surviving crises and adversity,

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while POB is seen as an individual phenomenon (Luthans & Youssef-Morgan, 2017; Luthans & Youssef, 2004). "POS is an umbrella concept that integrates a variety of positive scientific perspectives, including positive traits, states, processes, dynamics, and outcomes, all of which are of relevance to organizations" (Luthans & Youssef-Morgan, 2017, p. 340). Psychological capital is derived from POB (Luthans & Youssef-Morgan, 2017; Luthans, Youssef, et al., 2007).

Positive organizational behavior. Positive organizational behavior is defined as "… the study and application of positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement in today's workplace" (Luthans & Church, 2002, p. 59). POB recognizes that much of the early psychology literature, i.e. Maslow (1954), McGregor (1960) and Herzberg (1966), as well as more recent scholarship are positively oriented (Luthans, Avolio, et al., 2007). Further, to differentiate POB from other organizational behavior (OB) variables, the following criteria were applied to POB constructs: they are grounded in theory and research, they can be measured validly, they are unique to the OB field, are state-like rather than trait-like, and make a demonstrable contribution to individual-level performance (Avey et al., 2010; Khandelwal & Khanum, 2017; Luthans, 2002; Luthans, Avolio, et al., 2007; Luthans & Church, 2002; Luthans, Vogelgesang, & Lester, 2006; Luthans & Youssef-Morgan, 2017; Luthans & Youssef, 2004; Luthans, Youssef, et al., 2007).

Psychological capital is regarded to be state-like rather than trait-like, meaning that it is relatively stable over time and can be developed in individuals (Avey, 2014; Avey et al., 2009; Luthans et al., 2010; Luthans, Avolio, et al., 2007; Luthans et al., 2004;

Luthans & Youssef, 2004; Luthans, Lebsack, & Lebsack, 2008; Newman, Ucbasaran, Zhu, & Hirst, 2014) and according to Luthans, Youssef, et al. (2007), "The state-like criterion of POB is perhaps the biggest differentiator from positive psychology and POS, which tend to be more dominated by dispositional trait-like constructs" (pp. 14-15).

Following the definition of positive organizational behavior and the associated criteria for identification and definition of POB constructs, and while many other positive psychological constructs have been evaluated, scholars identified four constructs that were the best predictors of well-being or positive psychology; these four constructs are self-efficacy or confidence, optimism, hope and resilience (Avey et al., 2010; Luthans & Church, 2002; Luthans & Youssef-Morgan, 2017; Luthans, Youssef, et al., 2007; Luthans et al., 2008). Each individual variable has been found to be discriminant and valid, but combined they are stronger than they are individually (Avey et al., 2009; Avey, Reichard, Luthans, & Mhatre, 2011; Luthans, Avolio, et al., 2007). Further,

> The empirical evidence to date supports the multidimensional nature of PsyCap
> .… Specifically, the four components of PsyCap were modeled separately, in
> various combinations, and then in a model where they were fit to overall PsyCap.
> In each case, the model with PsyCap as a second-order factor fit the data the best.
> (Avey et al., 2011, p. 131)

This is best understood in the context of Hobfoll's (2002) psychological resource theory, which demonstrates that some constructs are best understood and have greater construct validity when considered as part of a larger second-order or multidimensional construct (Avey et al., 2010; Avey et al., 2011). In the next section, the four components of psychological capital will be defined and explored.

The Four Components of Psychological Capital

Psychological capital consists of four components: self-efficacy, hope, optimism and resiliency (Avey et al., 2009; Luthans et al., 2010; Luthans et al., 2004; Luthans & Youssef, 2004; Luthans, Youssef, et al., 2007; Newman et al., 2014). These subconstructs individually contribute to an individual's psychological capital, but it is the combined effect of psychological capital that influences performance. As noted by Dawkins, Martin, Scott, and Sanderson (2013):

> It is reported that overall PsyCap produces higher correlations with performance outcomes than its components independently (Luthans, Avolio, et al., 2007). Consequently, PsyCap arguably has a synergistic effect, whereby the whole may be greater than the sum of its parts …. Thus, although individual constructs may be psychometrically valid in their own right, they may be better understood as 'markers' of an overarching multidimensional core construct (p. 350).

Each subconstruct will be reviewed below.

Self-efficacy. Bandura first theorized about self-efficacy in 1997 (Avey et al., 2009; Khandelwal & Khanum, 2017; Luthans et al., 2004; Luthans, Youssef, et al., 2007) and while Bandura did not equate self-efficacy and confidence, psychological capital scholarship views self-efficacy as confidence in one's abilities and some refer to self-efficacy as confidence (Luthans et al., 2004; Luthans & Youssef, 2004) or simply as efficacy (Avey et al., 2010; Avey et al., 2009). Self-efficacy is defined as "… one's confidence in his or her ability to mobilize the motivation, cognitive resources, and courses of action necessary to execute a specific course of action within a given context"

(Luthans & Youssef, 2004, p. 16) and is positively related to work performance (Luthans et al., 2004; Luthans & Youssef, 2004).

There are five components, or findings related to the concept of efficacy. First, while an individual may have a general level of self-efficacy, it is recognized to be domain-specific. That is, in one domain, such as leadership, an individual may be extremely confident in their abilities, but that confidence will not automatically translate to another domain, say, public speaking (Luthans, Youssef, et al., 2007; Stajkovic & Luthans, 1998). Second, efficacy is linked to experience and mastery. Given that efficacy is an individual's perception of their future probability of success, experience with the task is required to positively predict success. A third finding related to self-efficacy is that there is always room for improvement, even in domains where individuals have expertise. Fourth, individuals may and unconsciously change their efficacy through others voiced assessments of them. "What other people tell you about yourself affects your own self-evaluation. If others believe you can succeed, many times, they can persuade you to think the same way" (Luthans, Youssef, et al., 2007, p. 37). It would stand to reason, then, that negative feedback or being blamed for an action will result in a negative self-evaluation. Lastly, confidence is influenced by a variety of factors, including one's physical or psychological well-being at the time.

Stajkovic and Luthans (1998) conducted a meta-analysis of 114 studies to measure the correlation between self-efficacy and work-related performance. Their hypothesis was that there is an overall positive correlation between self-efficacy and work-related performance (p. 241). The authors found a significant weighted average correlation coefficient of $G(r_+) = 0.38$, $p < .01$. after correcting for attenuation. This

moderate correlation, if translated to an effect size estimate, resulted in a 28% gain in performance in the presence of self-efficacy, which is greater than the effect of performance on goal-setting (10.39%), feedback interventions (13.6%) or organizational behavior modification (17%) (pp. 252-253). Further, this correlation is a better predictor of work-related performance than many of the personality trait constructs used in OB research.

Hope. Hope is based on the work of Snyder in 1991 and is seen as a positive motivational state based on three factors: goals, agency and pathways (Khandelwal & Khanum, 2017; Luthans et al., 2004; Luthans & Youssef, 2004; Luthans, Youssef, et al., 2007). Agency is described as an individual's determination to achieve a goal, while pathways are the capacity to build cognitive routes to achieve those goals (Peterson & Byron, 2008). While separate components of hope, they are hypothesized to be reciprocally related (Peterson & Byron, 2008). An individual with strong agency has the willpower to achieve their goals, and when faced with obstacles, develop alternate pathways to success and thus is action-oriented (Khandelwal & Khanum, 2017; Luthans et al., 2004; Luthans & Youssef, 2004; Luthans, Youssef, et al., 2007).

Oftentimes hope is seen as an affective state, to be invoked when it appears an individual's goals will not be achieved through traditional means (Luthans, Youssef, et al., 2007; Peterson & Byron, 2008). Hope has been defined as either active or passive. Active hope is more aligned with the definition above and represents the active pursuit of goals, while passive hope can be conceptualized as wishful thinking. According to Luthans, Youssef, et al. (2007), the difference between active and passive hope is the use of pathways when goal-setting.

There is much empirical evidence that demonstrates the relationship between hope and performance, including more recent research demonstrating a positive relationship between hope and workplace performance (Luthans, Youssef, et al., 2007; Peterson & Byron, 2008). In three replicated studies conducted by Peterson and Byron (2008) in three occupations in three job levels (service workers, non-managerial professionals and executives) in three industries (retail, mortgage banking and telecommunications), hope was moderately positively correlated with job performance in all three studies, after controlling for cognitive ability and self-efficacy, with correlation coefficients of 0.34, 0.36 and 0.37, respectively. All correlations were statistically significant at $p < 0.05$. Hierarchical regression was conducted and demonstrated that "Hope contributed significant incremental variance in job performance beyond the variance explained by cognitive ability and self-efficacy (Study 1: $\Delta R^2 = .05$, $p < .01$; Study 2: $\Delta R^2 = .09$, $p < .01$; and Study 3: $\Delta R^2 = .06$, $p < .05$)" (p.793).

In a fourth study conducted by Peterson and Byron (2008), the authors attempted to strengthen the results of the first three studies but to further explore the hope-performance relationship. This study was conducted in 76 management executives within a Fortune 100 company. As part of a leadership development program, the executives were provided with a baseline survey. One month later, they were provided with a realistic scenario, developed in conjunction with the executives' managers, and asked to identify and present a solution(s). They were given two weeks to present their proposed solution(s). Solutions were scored for quantity and quality, in conjunction with the executives' managers. In this study, "As expected, more hopeful employees generated more solutions and higher quality solutions in response to a novel and realistic work-

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related program (β = .71, *p* < .001; and β = .54, *p* < .001)" (Peterson & Byron, 2008, p. 795).

Optimism. Optimism is grounded in the work of Seligman, the father of the positive psychology movement (Khandelwal & Khanum, 2017; Luthans et al., 2004; Luthans & Youssef, 2004; Luthans, Youssef, et al., 2007). It is defined as "… a positive explanatory style that attributes positive events to internal, permanent, and pervasive causes and negative events to external, temporary, and situation-specific ones" (Khandelwal & Khanum, 2017, p. 89). According to Luthans et al. (2004), thanks to the theorizing and research of Seligman, optimism is more closely related with overall positive psychology than the other components of psychological capital.

Optimists attribute positive outcomes with internal capabilities and see them as enduring and when negative things happen, they attribute those to external factors that are non-lasting (Khandelwal & Khanum, 2017; Luthans, Youssef, et al., 2007; Luthans et al., 2008; Youssef & Luthans, 2016). There is some overlap in the concept of agency in both hope and optimism (Youssef & Luthans, 2016). Where hope typically focuses on the self, optimism is "… not limited to the self but also include external causes such as other people or situational factors" (Youssef & Luthans, 2016, p. 779). Some scholars, such as Seligman and Schneider, have identified the need to have both flexible optimism, or the ability to balance both optimism and pessimism and the capacity to use each alternative depending on the situation at hand, and realistic optimism, which is the recognition that there is a negative side to possessing too much optimism (Luthans et al., 2008).

In a study conducted by Youssef and Luthans (2016) undertaken to assess the impact of hope, optimism and resilience on work performance measured objectively

through the managers of the participants, "… only employee optimism was significantly positively related to performance" (p. 791) (R^2 =.14, ΔR^2 = .04 (p values <.01)). That is, in this study, optimism alone significantly impacted objectively measured work performance.

In another exploratory study, conducted in 78 registered nurses, intended to measure optimism and rated performance, defined as overall performance, commitment to the mission of the hospital, and customer satisfaction, there was a strong and statistically significant correlation between optimism and the three performance measures ($p < .001$) (Luthans et al., 2008). Further, there was a statistically significant difference in the mean optimism scores between the nurses with the higher performance scores and the lowest performance scores ($p < 0.05$). These findings demonstrate a strong correlation between nurses' optimism and their rated performance.

Resilience. The last component of psychological capital is resilience. Resilience is defined as "… the capacity to rebound or bounce back from adversity, conflict, failure, or even positive events, progress, and increased responsibility" (Luthans, 2002, p. 702). Resilience has historically been viewed as trait-like, meaning one either has resiliency or does not, but recent research has demonstrated that resilience is developable (F. Luthans et al., 2006; Luthans, Youssef, et al., 2007). Resilience is different from the other three components of psychological capital in that it is reactive rather than proactive; it occurs in response to a negative experience (Khandelwal & Khanum, 2017).

There are several factors that contribute to the development of resilience (Luthans, Avey, Avolio, Norman, & Combs, 2006; F. Luthans et al., 2006; Luthans, Youssef, et al., 2007; Vanhove, Herian, Perez, Harms, & Lester, 2016). Assets that

contribute to the development of resilience include cognitive abilities, temperament, positivity, creativity, initiative and social relationships/social support (F. Luthans et al., 2006; Luthans, Youssef, et al., 2007; Vanhove et al., 2016). Specifically, human capital and social capital are assets in the development of resilience, "these assets include human capital such as knowledge, skills, and abilities and social networks of support or social capital" (F. Luthans et al., 2006, p. 11). The importance of social capital in the development of resilience supports and reinforces its use in this research study.

Empirically, resilience has been less studied in adults but that has been changing over the last 10 years (Vanhove et al., 2016). In an exploratory study of 422 Chinese factory workers, researchers measured the relationship between resilience, hope and optimism as individual variables and job performance, rated by their supervisors (Luthans, Avolio, Walumbwa, & Li, 2005). Results demonstrated that while all three POB variables were correlated with supervisory related performance, resiliency was the most strongly, albeit moderately, correlated with performance (hope, $r = 0.17$, $p < .01$; optimism, $r = 0. 16$, $p < .01$; and resiliency, $r = 0.24$, $p < .01$) (p.14).

Empirical Evaluation of Psychological Capital

Empirically, the research on psychological capital reviewed for this paper was primarily correlation or multiple regression studies evaluating the relationship between psychological capital and work performance (Luthans, Avolio, et al., 2007), psychological well-being (Avey et al., 2010), emotions/behaviors (Avey et al., 2009), intentions to stay and commitment to organizational mission (Luthans & Jensen, 2005) and psychological capital differences by generation and shift worked in registered nurses (RNs) (Sweet & Swayze, 2017). These studies demonstrated strong correlations between

positive and negative psychological capital and performance, emotions/behaviors and psychological well-being and demonstrated additional variance beyond demographics and other measures in two studies (Avey et al., 2010; Avey et al., 2009). The study of psychological capital and performance also provided reliability and validity data for the instrument used to measure psychological capital, the Psychological Capital Questionnaire (Luthans, Avolio, et al., 2007). Finally, a meta-analysis of 51 studies in over 12,500 employees found that psychological capital is "… significantly and strongly related to employee attitudes generally considered desirable by human resource management" (Avey et al., 2011, p. 146).

The study on psychological capital differences by generation and shift worked in registered nurses demonstrated that Baby Boomer nurses had the highest level of psychological capital as measured by the PCQ, with Millennials having lower levels of psychological capital than Baby Boomers and Generation X nurses (Sweet & Swayze, 2017). While the authors did not speculate as to the reasons for this, one contributing factor might be that these lower levels of psychological capital are a result of lower levels of social capital, where the nurses' professional and personal networks are not as deep or as extensive. This hypothesis is supported by a research study by Kowalski et al. (2010) that demonstrated a statistically significant positive relationship between social capital and age, tenure and experience and another study by Sheingold and Sheingold (2013) that found that younger registered nurses (22-31 years of age) had lower levels of social capital than their older, longer-tenured colleagues. These research results are important in the context of the research question given the changing demographic of the nursing

workforce, where significant numbers of Baby Boomers are retiring and being replaced by Millennial and Generation Y nurses (Buerhaus, Auerbach, Staiger, & Muench, 2013).

In another study conducted in registered nurses, Luthans and Jensen (2005) conducted a stepwise multiple regression study of psychological capital in 71 nurses. Psychological capital was measured by self-efficacy, hope and optimism, the three constructs of psychological capital at the time of the study, and variables of organizational commitment, measured by intention to stay and commitment to the mission. Commitment to mission was measured by performance appraisal data provided by the human resource department. The study results demonstrated that psychological capital was statistically significantly and strongly related to both commitment to mission and intention to stay and provide support for the author's assertion that psychological capital may protect against burnout and other negative emotional states. While not clearly linked to second victim syndrome, these findings provide some support for the proposed research study given that SVS is a negative emotional, physical and psychological state.

Antecedents of Psychological Capital

There has been increasing interest in understanding the antecedents of psychological capital to fully understand the construct, but also to inform developmental activities aimed at improving psychological capital (Avey, 2014; Avey et al., 2011; Newman et al., 2014). In a study conducted by Avey (2014), four antecedents of psychological capital were explored: individual differences (self-esteem and proactive personality), leadership, job design (task complexity) and demographics. Avey (2014) tested these antecedents in two studies, one in 1,264 engineers in the northwestern United States and the second in 524 technology employees from one large telecommunications

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firm in China. Both studies demonstrated that individual differences, leadership and job design were predictive of psychological capital, in that order. Demographics, in both studies, were less or not important. Age, in the first study, was a statistically significant predictor of psychological capital but all three demographic variables only contributed 2% of the unique variance in overall psychological capital. As noted by Avey (2014) "…the findings suggest not only that PsyCap is a multidimensional construct but also that it is a multiestablished construct (i.e., established first in multiple other domains)" (p. 146). Thus, there are factors or domains that influence an individual's psychological capital.

In a focused review of the literature, Newman et al. (2014) also explored the antecedents of psychological capital. The authors evaluated 66 publications of psychological capital, of which 60 were empirical studies. Their results indicate that workplace factors appear to be a factor in the development of psychological capital, which was supported by five publications they reviewed. Specifically, workplace support, buddying, supervisor support, a supportive workplace climate and perceived external prestige were all associated with higher levels of psychological capital.

> There is growing evidence that the provision of workplace support facilitates
> PsyCap development in employees, as it gives them greater hope to seek out new
> and different pathways to achieve their goals and serves as a resource that allows
> them to bounce back quickly after a setback…". (p. S125)

Lastly, Luthans, Youssef, et al. (2007) acknowledge that while they believe psychological capital goes beyond social capital, the role of social interactions is critical to psychological capital development. "Although it is clear that social impact can

facilitate PsyCap, unfortunately it is equally true that a dysfunctional social context can also dampen or even destroy PsyCap" (p. 176). Of critical import is the role social capital plays in an individual's psychological capital. Indeed, Maslow, in his hierarchy of human needs, noted that "If both the physiological and the safety needs are fairly well gratified, then there will emerge the love and affection and belongingness needs … He will hunger for affectionate relations with people in general, namely, for a place in his group…" (Maslow, 1943, pp. 380-381). This need to belong is fundamental and as Berscheid (2003) notes:

> Satisfaction of this need (e.g., as in the formation of a new friendship or romantic
> relationship or acceptance by a larger group) is usually manifested in the
> experience of positive emotions and feelings, whereas its frustration (e.g.,
> rejection by others) typically results in the experience of negative emotions and
> feelings. (pp. 40-41)

The literature clearly indicates that social relationships and social capital play a role in an individual's overall psychological capital.

Social Capital

Theoretical Underpinnings

Social capital has its roots in the study of sociology. Social capital is less tangible than other types of capital like human capital and psychological capital because it exists in the relationships between and among people, and not just within an individual (Coleman, 1988; Grootaert, Narayan, Nyhan Jones, & Woolcock, 2004; Kreuter & Lezin, 2002). "Whereas economic capital is in people's bank accounts and human captial is inside their heads, social capital inheres in the structure of their relationships" (Portes,

1998, p. 7). However, like other forms of capital, social capital is critical for the achievement of greater productivity and further, to the development of human capital (Adler & Kwon, 2002; Coleman, 1988; Grootaert et al., 2004; Luthans & Youssef, 2004; Nahapiet & Ghoshal, 1998; Sheingold & Sheingold, 2013).

Two motivations for making resources available to others are defined by Portes (1998) as consummatory versus instrumental. Consummatory motivations are grounded in societal norms, whereby individuals feel obligated to act in a certain manner. This is also seen in bounded solidarity, which has a heavily altruistic foundation, bounded by the limits of the community within which they identify. Consummatory motivations have been linked to Marx's 1894 work on emergent class consciousness. Instrumental motivations, on the other hand, have been linked to Durkheim's 1893 theory of social integration and see social capital as based on a common social structure, called enforceable trust, or based on social exchange, called reciprocity exchanges, where the donor assumes they will be repaid in the future (Portes, 1998).

Social capital is a multifaceted construct and there are three dimensions of social capital: networks, norms and trust (Hofmeyer, 2013; Luthans & Youssef, 2004; Seys et al., 2013). Networks are referred to as the ties that bind individuals with others within and outside the organization. These social networks "… establish the inter-linkages that allow for the sharing and exchange of ideas and resources at the cognitive … affective … , and behavioral … levels" (Luthans & Youssef, 2004, p. 11). Norms are required to provided the underlying infrastructure of the relationships and create the necessary mutual expectations. Lastly, trust is the agent that ties the individuals together and is critical for the elimination of barriers, promotion of communication and sharing.

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There are three interrelated concepts related to measuring social capital based on the type of relationship or network: bonding, bridging and linking (Adler & Kwon, 2002; Engbers, Thompson, & Slaper, 2016; Grootaert et al., 2004; Hofmeyer, 2013; Sheingold & Sheingold, 2013) and each will be reviewed in the next sections.

Bonding capital. Bonding capital refers to the strong ties between individuals within the same groups, such as families, colleagues, neighbors and friends (Hofmeyer, 2013; Sheingold & Sheingold, 2013). As noted by Hofmeyer (2013) "It is not surprising that nurses are drawn to others in the workplace, develop strong ties and help each other out" (p. 785). In the context of nursing, bonding capital would be the social capital shared between nurses on the same team or on the same clinical unit.

Considering the sociological theories underpinning social capital presented above, bonding capital for registered nurses is highly motivated by the value introjection example of consummatory motivation. Nursing, as a community, values the physical, emotional and spiritual health of their patients above all else. Nursing is bound by a strong set of professional standards, values, and a code of ethics. "The internalized norms that make such behaviors possible are then appropriable by others as a resource" (Portes, 1998, p. 7). These norms are what allow nurses to know they will always act as an advocate for their patients and share an understanding of what nursing is. This value introjection is hypothesized to be one of the contributors to severe second victim syndrome in nurses. Nurses that make errors run contrary to the value introjection of the profession.

Bonding capital can also be likened to the consummatory motivation of bounded solidarity in that the social capital is 'bounded' by a shared community, where the

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individual feels an altruistic obligation to help and support other members of the community and this form of social capital is heavily rooted in Marx's theory of emergent class consciousness. "By being thrown together in a common situation, workers learn to identify with each other and support each other's initiatives" (Portes, 1998, p. 7). Identification with a group or community is a powerful motivator for social capital between and among its members. Bonding capital would see registered nurses bounded by their nursing profession, their institution, the unit they work on and the team members they work with consistently.

Bridging capital. Bridging capital, on the other hand, refers to weaker ties occurring between individuals with similar social standing but are located in other networks (Hofmeyer, 2013). As noted by Sheingold and Sheingold (2013), bridging capital is "… a metaphor that refers to the horizontal connection between groups of more or less equal social standing" (p. 791). In the case of registered nurses, bridging capital would be the capital shared with other registered nurses both inside and outside of the institution in which they work, but would also include other healthcare team members such as physicians, physiotherapists, social workers, occupational therapists, etc.

In addition to value introjection and bounded solidarity, bridging capital also has a component of instrumental motivation that factors into the social capital of professional colleagues. Specifically, reciprocity exchange is also a motivation for social capital exchange. This motivation sees social capital as "… primarily the accumulation of obligations from others according to the norm of reciprocity" (Portes, 1998, p. 7). This reciprocity involves assisting colleagues with an unspoken understanding that the favor will be returned when needed by the person that provides the help. Healthcare is

extremely interdisciplinary and these disciplines are motivated, in part, by reciprocity exchange.

      Linking capital. Linking capital refers to the social capital that one possesses vertically, or with individuals in differing levels of power and influence (Hofmeyer, 2013; Sheingold & Sheingold, 2013). Linking capital is used to access resources needed to get ahead. In the case of registered nurses, these relationships would include charge nurses, unit managers, hospital adminstration and with regulatory bodies governing nursing. Linking capital is also critical in the context of second victim syndrome. Reporting of adverse events is critical, and strong linking capital is required for nurses to openly admit to errors. "Research has shown that the majority of nurses are willing to report errors but the likelihood of reporting errors is influenced by the perceived punative organizational climate" (Ernstmann et al., 2009, p. 341).

      Linking capital, like bonding and bridging capital, will have motivation from value introjection, but will also be motivated by enforceable trust. Enforceable trust is the second component of instrumental motivation, or the motivation to provide social capital rooted in Durkheim's theory of social integration (Portes, 1998). In enforceable trust, "… the expectation of repayment is not based on knowledge of the recipient, but on the insertion of both actors in a common social structure" (Portes, 1998, p. 8). The enforceable trust is not enforced legally, but rather through the norms and structures of the group.

      The literature is clear that individuals need a blend of all three types of capital to gain access to resources, gain cooperation, mediate knowledge transfer and integrate newcomers and float nurses, who are those nurses that do not work exclusively on the

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unit in question but rather 'float' there when needed (Hofmeyer, 2013; Sheingold &
Sheingold, 2013).

While social capital can be a rich means of social support, it does have also have
negative effects (Adler & Kwon, 2002; Engbers et al., 2016; Grootaert et al., 2004;
Nahapiet & Ghoshal, 1998; Portes, 1998). Some of the negative effects of social capital
include the entrenchment of ways of acting or thinking, social stratification, it is resource
intensive to develop and maintain, marginalization of those outside of the network, and
abuse of power. It also stands that social capital is a means by which to either support a
colleague when an error is made, or to 'blame and shame' them and therefore impact
their standing in the network. While the benefits of social capital and numerous and
demonstrable, one cannot overlook the risks that can arise from social capital.

Social Capital in Nursing

Sheingold et al. (2012) identified the need for an instrument to measure the
contextual and social dimensions of the nursing profession. The authors evaluated eight
contemporary instruments used in nursing but felt that "… many current instruments do
not adequately measure the formal and informal social relationships between nurses and
other integrated healthcare team members" (p. 1). They suggested that a greater focus on
social issues via the construct of social capital would allow for evidence generation
intended to shape practice and policy decisions related to workforce issues in nursing.
The use of social capital to explore workforce issues in nursing has also been called for
and researched by a number of scholars, but until recently there was no standardized
instrument by which to measure social capital in nurses (Hofmeyer, 2014; Hofmeyer,

2013; Kowalski et al., 2010; Stromgren, Eriksson, Bergman, & Dellve, 2016; Van

Bogaert, Kowalski, Weeks, Van Heusden, & Clarke, 2013).

Sheingold and Sheingold (2013) identified five dimensions of social capital,

based on both the theoretical foundation of social capital and the six dimensions of the

social capital scale, the Social Capital – Integrated Questionnaire (SC-IQ), originally

developed by the World Bank based on the concepts of bonding, bridging and linking

social capital (Grootaert et al., 2004). The SC-IQ tool was developed to be adapted by

researchers to evaluate social capital in a number of different settings (Sheingold &

Sheingold, 2013). Sheingold and Sheingold felt that while these six dimensions have

contributed to the ability to measure the nursing practice environment, signficant gaps

remained. "Most importantly, these surveys do not address norms, social relations and

networks (formal and informal) that may be key predictors of important outcomes"

(Sheingold & Sheingold, 2013, p. 792). As a result, the authors conceptualized the

following five dimensions to better represent the specific aspects of the nursing practice

environment that were critical in the concept of social capital.

External trust, solidarity and empowerment. This component focuses on

relationships based on trust, solidarity and reciprocity with healthcare professionals

outside of nursing and the practice unit and includes hospital executives (Sheingold &

Sheingold, 2013). The self-efficacy and empowerment of nurses results from how they

are viewed by management and employees outside of their clinical unit but within the

hosptial or institution. Empowerment is generated by a broad sense of trust in the external

community members and a belief they will act in the nurse's best interest. This domain

area relates to both bridging and linking social capital given its primary locus is outside the nurse's clinical practice unit.

Active participation and affiliation. This component of nurse social capital reflects the greater nursing community and participation with others. These external affiliations may be beyond the clinical unit but within the hospital, within the broader community and in the political arena (Sheingold & Sheingold, 2013). Professional nursing memberships and legislative activities are reflected in this domain. This domain area aligns most closely with bridging and linking social capital given it reflects nurses' membership in the larger nursing profession.

Internal trust, solidarity and harmony. This domain reflects the bonding capital found within a nurse's direct practice environment, or clinical unit (Sheingold & Sheingold, 2013). Factors related to this domain include trust, inclusion and an absence of conflict with teammates. This domain reflects bridging capital in that there is also evaluation of the trust of other registered nurses on different clinical units within the same institution, given the close bond that exists among nurses even when they work on different clinical units.

Social cohesion with co-workers. Social cohesion represents social activities occurring outside of the workplace (Sheingold & Sheingold, 2013). Factors evaluated here indicate that nurses, at least a portion of them, build their social capital both inside and outside the work setting. This domain is primarily representative of bonding capital between teammates and colleagues.

Conflict. The conflict component represents nurses' perceptions of conflict and its role vis à vis social cohesion and inclusion (Sheingold & Sheingold, 2013). The

authors noted that factors evaluated here were less robust than other subconstructs and noted "future efforts should be directed at carefully examining nurses' perceptions of conflict and its meaning relative to concepts of social cohesion, inclusion and resoultion" (Sheingold & Sheingold, 2013, p. 795). Conflict is a component that is applicable to bonding, bridging and linking social capital.

This body of work, and the Social Capital Outcomes for Nurses (SCON) instrument, specific to the nursing profession, was extremely helpful in the proposed research study given its recognition and measurement of the social networks and professional identity specific to the nursing profession.

Empirical Evaluation of Social Capital

Most of the empirical evidence reviewed on social capital has been quantitative correlation or multiple regression studies to measure relationships between social capital and the construct of interest. There were no studies identified that examined social capital and second victim syndrome, most of the studies identified examined social capital and burnout in registered nurses (Kowalski et al., 2010; Van Bogaert et al., 2013), job satisfaction in registered nurses and healthcare professionals (Shin & Lee, 2016; Stromgren et al., 2016) and risk management in registered nurses (Ernstmann et al., 2009). One study was conducted to develop and validate the Social Capital for Nurses (SCON) instrument, the proposed social capital tool for this study (Sheingold & Sheingold, 2013).

This body of research has clearly demonstrated the importance of social capital in registered nurses. In a study conducted by Shin and Lee (2016), the authors conducted a hierarchical multiple regression study in 432 registered nurses in Korea to evaluate the

effect of social capital on quality of care and job satisfaction. This study utilized the SCON instrument to measure social capital. Social capital explained 50% and 24%, respectively, of the variance in job satisfaction and quality of care (p. 934). In another study, conducted by Kowalski et al. (2010) in 959 registered nurses in Germany, social capital was negatively associated with emotional exhaustion, one of the three domains of burnout (OR: 0.549, CI: 0.403-0.746). A study by Van Bogaert et al. (2013) was conducted in 1201 nurses in Belgium to examine the mediating effect of social capital and other factors on job outcomes and quality of care, as assessed by nurses. Structural equation modeling (SEM) demonstrated that social capital was a mediator, as were workload and decision latitude, between nurse practice environment and the outcome variables of quality of care and job outcomes, through burnout variables. The authors concluded that social capital has a potentially protective role against emotional exhaustion and that the investment in social capital could improve patient outcomes by facilitating better work processes (p. 1675).

Stromgren et al. (2016) conducted a longitudinal study in 865 healthcare professionals in Sweden, of which 477 completed the second questionnaire one year later, resulting in a sample of 477 healthcare professionals in the study. Their results demonstrated that social capital "… was an important factor associated with job satisfaction, work engagement and engagement in clinical improvements of patient safety and quality of care in hospital care contexts" (p. 123) and that the prospective analysis demonstrated that an increase in social capital increased the job satisfaction and clinical improvements in both patient safety and quality of care. In a study conducted by Ernstmann et al. (2009) in 959 nurses in Germany, the authors found a statistically

significant correlation between social capital and risk management ($r = 0.472$), which was the highest correlation coefficient between measured variables, which included demographic and practice location variables.

In a study to validate the SCON instrument, Sheingold and Sheingold (2013) administered the SCON instrument to 325 nurses in Washington, D.C. to validate the tool and to evaluate the impact of social capital on job satisfaction and intention to stay using a multiple regression model. The results of the study demonstrated that the social capital scale, as developed, had a statistically significantly positive impact on job satisfaction ($R^2 = 0.557$, $p = .000$). However, when the social capital scales were entered individually and not as an aggregate score, the unique variance attributed to social capital was even larger ($R^2 = 0.642$, $p = .000$). Said differently, the aggregate social capital scale explained 55.7% of the unique variance in job satisfaction, but the individual scales entered separately explained 64.2% of the unique variance in job satisfaction. The subconstruct that seemed to be the biggest predictor was the External Trust/Solidarity and Empowerment dimension of social capital. One critical and signficant finding of Sheingold and Sheingold's (2013) study was that:

> The post hoc tests demonstrated that the least tenured nurses (5 years or less) and the youngest nurses (22-31 years of age) had signficantly lower scores for these factors that did their more tenured and older counterparts. In contrast, the younger group had signficantly higher scores for the Social Cohesion factor. Together, these results suggest that key aspects of social capital, such as trust, solidarity and participation are built with time on the job .… (p. 797)

These findings were validated in a study using the SCON scale in registered nurses in Korea (Shin & Lee, 2016). These findings are signficant due to the the aging nursing workforce, increased attrition from nurses retiring from the profession will result in a large number of young and inexperienced nurses in the workplace. Considering the results of Sweet and Swayze's (2017) study, discussed above, where Millennial nurses had lower levels of psychological capital in comparison to Baby Boomer's and Generation X nurses, the findings of lower levels of social capital in younger and less-tenured nurses raises the question as to how social capital influences or impacts psychological capital and provides some support for the author's theoretical supposition that social capital directly influences an individual's psychological capital.

Second Victim Syndrome

Theoretical Underpinnings

Second victim syndrome was first named by Dr. Albert Wu in 2000 (Wu, 2000) after seeing the distress experienced by a medical resident who made a medical error. Previously, there had been a handful of publications in the mid-1980's and 1990 that discussed healthcare providers' personal experiences with medical errors (Hilfiker, 1984; Scott et al., 2009) but Dr. Wu's publication was the first to name the phenomenon. Dr. Wu's editorial, coupled with the landmark Institute of Medicine publication "To Err is Human: Building a Safer Health System" (*To err is human: Building a safer health system*, 2000), which demonstrated the actual prevalence of the magnitude of errors in the medical system, resulted in an increase in research interest in SVS.

Given that SVS is a nascent theoretical construct, initial research on SVS focused on its occurrence as the outcome of an error by the practitioner but in 2009, Scott et al.

published the seminal article of SVS and in it described the natural history of SVS. In this publication, the authors identified that SVS can occur in the absence of a medical error because of near-misses (incidents that could have resulted in error but did not because of intervention or chance) or due to the relationship or perceived connection between the practitioner and the patient. This is exemplified in this case captured in Scott et al. (2009):

> *I remember feeling horribly sad that I couldn't do more for this child. This hit me harder than most of them. For some reason I really related with this family – I guess one reason is that the child was the age of my oldest daughter and I guess that I felt that this could have been my family. They were a nice family and didn't deserve to have this outcome. I cried a lot over this case and I guess I still cry when I think about her.* (p. 326)

In an effort to characterize SVS, Scott et al. (2009) conducted a qualitative exploratory study in 31 second victims. Through the course of their research, several themes emerged that uncovered a pattern of response and recovery in second victims. These themes remained consistent across second victims although each second victim had their own coping mechanisms through the stages. The stages of second victim syndrome identified by Scott et al. (2009) and the characteristics of each are summarized in Table 2. Numerous other empirical studies of SVS identified similar stages of recovery or reinforced the applicability of Scott et al.'s stages (Clancy, 2012; Kable et al., 2018; Pratt & Jachna, 2015; Rassin et al., 2005; Schiess et al., 2018; Sirriyeh et al., 2010).

The literature described a range of severity in the symptomatology experienced, from mild/moderate emotional distress to significant distress and suicide (Burlison et al.,

2017; Cabilan & Kynoch, 2017; Daniels & McCorkle, 2016; Jones & Treiber, 2018; Jones & Trieber, 2012; Kable et al., 2018; Pratt & Jachna, 2015; Pratt et al., 2012; Scott & McCoig, 2016; Ullström et al., 2014). Researchers learned that symptoms can last for years, impacting the clinician's ongoing professional practice (Edrees et al., 2011; Pratt & Jachna, 2015; West et al., 2006). Symptomatology experienced in SVS can be quite severe and include guilt, shame, fear, anxiety, grief, depression, sleeplessness, dwelling, nausea and social withdrawal (Clancy, 2012; Jones & Trieber, 2012; Pratt et al., 2012; Quillivan et al., 2016; Scott et al., 2008; Wu et al., 2013). SVS can progress to post traumatic stress disorder (PTSD) in some clinicians (Manser, 2011; Paparella, 2011; Pratt et al., 2012; Scott et al., 2008; Wu et al., 2013).

Table 2

The Stages and Characteristics of Second Victim Syndrome

Stage of SVS	Characteristics
Stage 1 Chaos and accident response	Error realized/event recognized Tell someone → get help Stabilize/treat patient May not be able to continue care of patient Distracted
Stage 2 Intrusive Reflections	Re-evaluate scenario Self-isolate Haunted re-enactments of event Feelings of internal inadequacy
Stage 3 Restoring personal integrity	Acceptance among work/social structure Managing gossip/grapevine Fear is prevalent
Stage 4 Enduring the inquisition	Realization of level of seriousness Reiterate case scenario Respond to multiple "why's" about the event Interact with many different "event" responders Understanding event disclosure to patient/family Physical and psychosocial symptoms
Stage 5 Obtaining emotional first aid	Seek personal/professional support Getting/receiving help/support Litigation concerns emerge

Stage 6
Moving on (one of three trajectories chosen)
	• Dropping out
	  - Transfer to a different unit or facility
	  - Consider quitting
	  - Feelings of inadequacy
	• Surviving
	  - Coping, but still have intrusive thoughts
	  - Persistent sadness, trying to learn from event
	• Thriving
	  - Maintain life/work balance
	  - Gain insight/perspective
	  - Does not base practice/work on one event
	  - Advocates for patient safety initiatives

Note. Reprinted in part from Scott et al. (2009)

The following case demonstrates how SVS can irreparably change a nurse's

ability to continue nursing (Hall & Scott, 2012).

Erin…, a recently graduated nurse, was completing her orientation checklist

when the silence of the hospital's emergency room (ER) was interrupted by the

ambulance radio. En route to their facility was a 10 year-old girl who had been

accidently shot in the left shoulder by her younger cousin. Moments after Erin

and her preceptor began preparing the trauma room, their young patient arrived,

breathing on her own but minimally responsive. As the patient was being

transferred to the ER gurney, large amounts of blood began pouring from the

wound beneath the left clavicle. Almost immediately, the girl went into cardiac

arrest. Erin initiated chest compressions for the first time on an actual patient.

This experience was much different that the simulation experiences she had easily

mastered. Erin tried to focus on maintaining smooth steady chest strokes despite

the blood that covered the chest. When the patient's name was mentioned,

suddenly a stark realization overcame the entire team: their patient was the

daughter of one of the emergency department staff members! After 30 minutes, all

team members were aware that the resuscitation efforts were unsuccessful, and

she was pronounced dead. Erin was so distressed that she had to lean on the

gurney for support as she prepared the body for the parents' visit. An hour later,

as she completed her charting, she tearfully expressed to her preceptor how awful

this experience had been. Her preceptor replied "Welcome to nursing, Honey.

You have to buck it up." Erin left work that evening feeling very alone. Unable to

sleep, she sat in darkness, rehearsing the tragic scene over and over again in her

mind. By daybreak, convinced that she was not psychologically fit to be a nurse,

she decided she would not take her nursing boards. (pp. 383-384)

A significant amount of the literature reviewed focused on institutional level

response and policy for second victims, with the development of a culture of disclosure

and the need for support programs for these clinicians identified as a priority (Edrees et al., 2011; Hall & Scott, 2012; Manser, 2011; Scott et al., 2008; Seys et al., 2012; Wears & Wu, 2002). None of the theoretical literature reviewed explored causal factors of SVS experienced and only a few explored factors that increased the severity of the SVS response (Quillivan et al., 2016; Schiess et al., 2018; Seys et al., 2013; Treiber & Jones, 2010). Only recently has the first theoretical framework of second victim syndrome been developed (Schiess et al., 2018).

In their development of a theoretical model for SVS, Schiess et al. (2018) began by conducting a metasynthesis of existing literature, with 19 manuscripts meeting the screening criteria as determined by two of the authors with strong interrater reliability (k = .96). Following an in-depth review of all the manuscripts by all the authors, a theoretical model emerged. The authors grounded their transactional model of SVS in a safety culture but note that the safety culture is also an endpoint of the model. The model is broken into three stages: appraising the situation, restoring integrity and continuing professional life. Development is iterative across all three stages.

The three stages align well with Scott et al.'s (2009) six stages of SVS recovery. The alignment is captured in Table 3. Of critical import, between Schiess et al.'s two stages of appraising the situation and restoring integrity is the evaluation of the psychological and social resources available to them. "Horizontally, iterative development beings with *appraising the* situation, extending first to *restoring integrity*, then *continuing professional* life. Between *appraising the* situation and *restoring integrity, healthcare professionals weigh their internal and external* resources" (Schiess et al., 2018, p. 3). This is the area of interest for the proposed research study.

Table 3

Correlations between Scott's Six Stages of Recovery and Schiess' Transactional SVS Model

Six Stages of Recovery (Scott et al., 2009)	Transactional 'second victim' experience (Schiess et al., 2018)
Chaos and Accident Response	Appraising the Situation
Intrusive Reflections	
Restoring Personal Integrity	Restoring Integrity
Ending the Inquisition	
Obtaining Emotional First Aid	
Moving On	Continuing Professional Life

During stage 1: Appraising the Situation, activities include the recognition of the event, and the immediate medical response, following which the second victim experiences the physiologic and psychologic response to the error. The response is often significant and frequent responses include fear, anxiety, sleeplessness, gastrointestinal (GI) upset: nausea, vomiting, diarrhea, depression, guilt/shame, decreased concentration and depression. The second victim's ability to move through this stage and into stage 2 is mediated by their psychological and social resources, or said differently, their psychological and social capital.

In the second stage, Restoring Integrity, the second victim is dealing with emotions while also dealing with the event (Schiess et al., 2018). Depending on the amount of psychological capital and social capital available to them, this can be constructive, assuming they have sufficient psychological and social capital, or destructive if there is a lack of psychological and social capital. The aim of this stage is for the second victim to return to work as quickly as possible with intact self-esteem.

Depending on the severity of the error, there are a variety of other parties, i.e. legal, and varying levels of disclosure to the patient/family.

In Stage 3: Continuing Professional Life, there are three paths that a second victim may take. The path they chose, whether leaving the profession, surviving – staying but with significantly decreased satisfaction in their work, or thriving is dependent upon their process of re-evaluation and perceived meaning (Schiess et al., 2018).

Empirical **Evaluation of Second Victim Syndrome**

Twenty-five studies of SVS were identified and reviewed. Nine were quantitative studies (Bari et al., 2016; Burlison et al., 2016; Burlison et al., 2017; Edrees et al., 2011; Mira et al., 2015; Quillivan et al., 2016; Serembus et al., 2001; West et al., 2006; Winning et al., 2018), six were qualitative (Kable et al., 2018; Pinto et al., 2013; Rassin et al., 2005; Scott et al., 2009; Treiber & Jones, 2010; Ullström et al., 2014), eight were integrated reviews of the qualitative and/and quantitative empirical literature (Cabilan & Kynoch, 2017; Chan, Khong, & Wang, 2016; Davidson et al., 2015; James, 2013; Serembus et al., 2001; Seys et al., 2012; Seys et al., 2013; Sirriyeh et al., 2010), one was mixed-methods (Scott et al., 2010) and one was a constructivist grounded theory qualitative study (Luu et al., 2012). The empirical literature is summarized in Table 4.

Table 4

Empirical Evaluation of Second Victim Syndrome

Study	Methodology	Strengths	Weaknesses	Significance
Bari et al., 2013	Quantitative: Cross-sectional survey	Measured the emotional response to error.	Study conducted in pediatric residents only: limits generalizability.	Explored the emotional/behavioral responses to errors. No exploration of psychological or social contributors to emotional response.
Burlison et al., 2017	Quantitative: Cross-sectional survey to validate new SVS instrument	Developed and validated the Second Victim Experience and Support Tool (SVEST).	Two dimensions of the scale have borderline Cronbach's alpha coefficients.	Contributed measurement tool to SVS community. Identified factors related to psychological and social contributors to recovery.
Burlison et al., 2016 (publish ahead of print)	Quantitative: Hierarchical linear regression	This study assessed the relationship between distress from SVS and work-related outcomes of turnover intention and absenteeism using 12 items measuring psychological distress, physical distress and reduced self-efficacy from the SVEST instrument to achieve a 'second victim distress' dimension of SVS.	Study conducted in 164 nurses (49.7% of the population) at one pediatric hospital, which may limit generalizability to the greater population of RNs.	Demonstrated the statistically significantly related outcome of turnover intentions and absenteeism from SVS distress. Demonstrated, with statistical significance, that organizational support fully mediates distress-turnover intentions and distress-absenteeism.
Cabilan and Kynoch, 2017	Literature Review	A meta-synthesis of nine qualitative studies of second victims. This synthesized review uncovered four findings: 1. There is an emotional burden from SVS that can last a long time and may alter the nurses' perceptions and workplace relations. 2. The support received impacts the nurses' feelings about the event. 3. Nurses are willing and want to disclose their error but the support they receive is critical to their ability to do so.	Nurses that committed errors were included in the study. Nurses experiencing SVS through other means were not included. May impact the generalizability of this study to the full population of second victims.	Demonstrates both the psychological capital and social capital impact of SVS.

		Further, less likelihood of disclosure if no harm to patient occurred. 4. Reconciliation is the aim of every nurse who makes an error.		
Chan et al., 2016	Literature Review	Literature review of 30 studies. Finding include that nurses have a profound psychological response from error. Frequently occurring responses include: fear, guilt, distress, anxiety, frustration, anger, feeling insufficient (p. 245). Coping strategies include both problem-focused and emotion-focused strategies. Supportive measures are critical for recovery.	Most of the studies included consisted of convenience samples, which impacts generalizability; however the study explored overarching themes from 30 studies that should increase generalizability.	Validated the need for colleague and supervisor support and emotional first aid. Identified that women experience SVS more than men, and that nurses experience SVS more than other healthcare practitioners.
Davidson et al., 2015	Literature review of three case studies	Explores concepts of blame related to provider errors or perceived errors. Identifies moral distress as stemming from blame. Second victims often self-assign blame and the authors believe blame can cause SVS.	Evidence based on three case studies and link to SVS remains theoretical.	Identifies moral distress because of a blaming culture as one cause of SVS.
Edrees et al., 2011	Quantitative: Cross-sectional survey	Highlighted lack of awareness of SVS, even among HCPs. Identified the need for support after an event, but that institutional services carry a social stigma and informal.	Convenience sample consisting of attending of a SVS session at a conference: not generalizable.	Demonstrated the value of institutional support to second victim response.
James, 2013	Literature review	Based on a literature review of 4 studies of large datasets, the estimated number of PAEs in the U.S. resulting in patient harm was significantly increased from approx. 45,000-90,000 annually to 210,000-400,000 per year.	Some estimates and assumptions were required due to evidence of errors that are not captured in medical records.	Using 4 key studies, the estimate of PAE in U.S. patients significantly increases the estimate provided by the IoM.
Kable et al., 2017	Semi-structured interviews	Four themes were identified from the interviews: rescuing patients, effects on nurses, professional responsibility, and needs of nurses.	Single site study in 10 RNs may limit generalizability.	The four themes identified align with Scott et al.'s (2009) stages of SVS recovery.
Luu et al., 2012	Constructivist grounded theory via semi-	Identified four stages of response, characterized as both cognitive and	Study conducted in 20 surgeons: may impact	Identified four stages of recovery, which align with Scott et

	structured interviews	emotional: the kick, the fall, the recovery and the long-term impact.	generalizability.	al.'s (2009) stages of recovery.
Mira et al., 2015	Quantitative: Cross-sectional survey	Explored emotional reactions to SVS. Confirmed the magnitude of SVS in practicing HCPs.	Study conducted in primary care and hospital setting in Spain: may limit generalizability.	Contributed to other studies on the magnitude of SVS. Demonstrated that RNs show greater solidarity with second victims, thus providing support for the role of social capital in SVS.
Pinto et al., 2013	Semi-structured interviews	Identified and explicated emotional impact of errors in surgeons.	Study conducted in 27 surgeons: may impact generalizability.	Identified psychological factors, such as confidence or personality, which contribute to the severity of response. Identified social factors, such as team and institutional reactions, which contribute to the severity of response.
Quillivan et al., 2016	Quantitative: Hierarchical linear regression	Explored the relationship between culture of safety within institution and second victim syndrome in RNs, measured by SVEST. Results demonstrated that poor patient safety culture increased the severity of SVS. Mediation analysis demonstrated full mediation of the relationship between nonpunitive response to error and distress variables by organizational support and partial mediation of the relationship between nonpunitive response to error and psychological distress by organizational support.	Study conducted in 169 nurses (47.2% of the population) at one hospital, which may limit generalizability to the greater population of RNs.	Use of SVEST in mediation regression analysis. Demonstration of mediation of organizational support on relationships between punitive responses to error and distress variables of psychological, physical and professional distress. Evidence of the presence of both social and psychological factors in SVS.
Rassin et al., 2005	Semi-structured interviews	Findings were organized chronologically in three time periods, thus providing a timeline of reactions. Findings categorized into eight categories over the three time periods.	Study limited to RNs in one institution and the error of interest was medication errors: may impact generalizability.	The eight categories align with Scott et al.'s (2009) stages of SVS. Study provides a link between SVS and PTSD.

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Rodriquez & Scott, 2017	Quantitative nonrandom survey	This is the first known study that surveys HCPs that have changed career paths following an adverse clinical event. The results demonstrated that these HCPs reported a lack of social support following the event. This study used a lens of emotional labor to examine the issue and found that suppressed emotions and shame contribute to their change in career path.	Exploratory study in a nonrandom sample limits the generalizability of the study.	This study is the only known study that explores the experience of HCPs that changed career paths following an adverse clinical event and demonstrates the impact a lack of social support plays in their trajectory.
Schiess et al., 2018	Qualitative Metasynthesis	A theoretical framework of SVS was developed from a metasynthesis of 19 qualitative studies.	The framework was not based on any quantitative studies, which may also have contributed to the theorizing.	This literature review and metasynthesis provides the first theoretical framework of SVS. The transactional model aligns with Scott et al.'s (2009) stages of SVS recovery. The theoretical model clearly identifies the role psychological and social resources play in the SVS experience.
Scott et al., 2009	Semi-structured interviews	Six stages of SVS identified that define the natural history of SVS.	Single site study may impact generalizability.	Seminal study of the effects of errors on second victims. The stages identified have been validated either in full or in part by numerous other studies.
Scott et al., 2010	Mixed-method: semi-structured interviews and survey administration	Identified a pattern of emotional response and eight themes for infrastructure characteristics to support second victims.		The quantitative and qualitative data illuminated the phenomenon and contributed to the development of a SVS response program
Serembus et al., 2001	Secondary case study analysis of previous research study	Secondary analysis of 11 cases of fatal mediation errors made in respondents to a previous study demonstrated and reinforced emotional responses identified in other studies of SVS.	The results of the study are not generalizable but are informative.	Validated and reinforced emotional reactions to SVS. This study focused on HCPs whose errors resulted in patient death.

Seys et al., 2013	Literature Review	Review of 31 articles demonstrated that second victim support can reduce distress. Team members, managers and institutional leadership should provide support to second victims, both immediately and in the mid/long term.		Provides support for the value social capital provides to the second victim.
Seys et al., 2012	Literature Review	Literature review of 41 manuscripts to explore the phenomenon of SVS including prevalence, error effects on second victims, and coping strategies.		Comprehensive summary of the extant literature of SVS.
Sirriyeh et al., 2010	Literature Review	24 studies were reviewed demonstrated and validated the psychological impact of errors on second victims.	The publication referred to 23 and 24 manuscripts reviewed. It was unclear if 23 studies or 24 studies were included in the literature review.	The literature reviewed provided support for Scott et al.'s (2009) six stages of SVS recovery.
Treiber & Jones, 2010	Open-ended surveys	Six clear themes were identified: taking responsibility but framing outside of the self, framing as 'new' professional, emotional devastation, massive fear response, frustration with technology and regulation and lessons learned (P. 1331).	Study limited to RNs in one state and the error of interest was medication errors: may impact generalizability. Self-selection bias was evident in the responses, which may influence response accuracy.	The authors conclude that blame helps nurses survive making an error, although most nurses did accept ultimate accountability for the error.
Ullström et al., 2014	Semi-structured interviews	Findings confirm that long-lasting emotional distress results from precipitating events. Insufficient support contributes to emotional distress and closure.	Study conducted in 21 HCPs in one institution: may impact generalizability.	Study provides a strong link between lack of peer support and symptoms. Participants noted peer support as critical post event.
West et al., 2006	Quantitative: Longitudinal cohort study	Residents experiencing errors had an associated decrease in QOL, increased burnout and symptoms of depression.	Study conducted in internal medicine residents only: limits generalizability.	Identified emotional impact of making an error. Identified personal factors, such as confidence, impact response to errors.
Winning et al., 2017	Quantitative: Cross-sectional survey. ANOVA and chi-squares to compare groups. Hierarchical	HCPs experiencing or observing an error had an associated decrease in QOL, increased burnout and symptoms of depression.	Self-reporting may lead to social desirability bias. The population worked in NICUs part of a large academic health	Findings demonstrated that peer support moderated anxiety and depression in second victims.

linear regressions to test moderating variables	center. Most of the sample was female (96%) and White (95%). Generalizability may be limited.

The empirical and theoretical literature on SVS demonstrate a range of emotional reactions that occur in approximately 30% to 60% of healthcare providers that are involved in precipitating events (Burlison et al., 2016; Cabilan & Kynoch, 2017; Daniels & McCorkle, 2016; Hall & Scott, 2012; Jones & Treiber, 2018; Pratt & Jachna, 2015; Quillivan et al., 2016). Interestingly, much of the literature indicates a gender difference in the occurrence of SVS, with females more likely to develop SVS than males (Chan et al., 2016; Coughlan, Powell, & Higgins, 2017; Luu et al., 2012; Mira et al., 2015; Pratt et al., 2012; Seys et al., 2013). Given that a significant proportion of the nursing population is female, this is an area of future research interest.

The theoretical and empirical literature on SVS has demonstrated strong evidence of the role social and psychological capital play in the severity of the SVS experience (Burlison et al., 2016; Burlison et al., 2017; Cabilan & Kynoch, 2017; Chan et al., 2016; Edrees et al., 2011; Mira et al., 2015; Pinto et al., 2013; Quillivan et al., 2016; Schiess et al., 2018; Scott et al., 2009; Seys et al., 2012; Ullström et al., 2014; West et al., 2006; Winning et al., 2018), thus, the next section will make explicit the relationship between social capital, psychological capital and SVS.

Psychological Capital, Social Capital and the Second Victim Experience

The theoretical and empirical evaluation of SVS provides overwhelming evidence demonstrating that psychological and social capital appear to be protective mechanisms in the severity of SVS experienced by registered nurses. At each stage of SVS as defined

by Scott et al. (2009), there is evidence of subconstructs of psychological and social

capital embedded within each. These stages, their characteristics, the type of social

capital to be leveraged and the components of social capital and psychological capital

embedded within the stages are described in Table 5.

Table 5

Second Victim Stages of Response/Recovery and Related Correlation with Psychological and Social Capital

Stage	Stage Characteristic	SCON Subconstruct(s)	PsyCap Subconstruct(s)
Stage 1 Chaos and accident response	Error realized/event recognized Tell someone → get help Stabilize/treat patient May not be able to continue care of patient Distracted	Internal Trust, Solidarity and Harmony External Trust, Solidarity and Empowerment	Hope Optimism Self-Efficacy
Stage 2 Intrusive Reflections	Re-evaluate scenario Self isolate Haunted re-enactments of event Feelings of internal inadequacy	Internal Trust, Solidarity and Harmony	Hope Optimism Self-Efficacy
Stage 3 Restoring personal integrity	Acceptance among work/social structure Managing gossip/grapevine Fear is prevalent	External Trust, Solidarity and Empowerment Internal Trust, Solidarity and Harmony Active Participation and Affiliation Conflict Social Cohesion	Hope Optimism Self-Efficacy Resilience
Stage 4 Enduring the inquisition	Realization of level of seriousness Reiterate case scenario Respond to multiple "why's" about the event Interact with many different "event" responders Understanding event disclosure to patient/family Physical and psychosocial symptoms	External Trust, Solidarity and Empowerment Active Participation and Affiliation Internal Trust, Solidarity and Harmony	Hope Optimism Self-Efficacy Resilience
Stage 5 Obtaining emotional first aid	Seek personal/professional support Getting/receiving help/support Litigation concerns emerge	External Trust, Solidarity and Empowerment Active Participation and Affiliation Internal Trust, Solidarity and Harmony	Hope Optimism Self-Efficacy Resilience
Stage 6 Moving on (one of three trajectories chosen)	<u>Dropping out</u> Transfer to a different unit or facility Consider quitting Feelings of inadequacy <u>Surviving</u> Coping, but still have intrusive thoughts Persistent sadness, trying to learn from event <u>Thriving</u> Maintain life/work balance Gain insight/perspective Does not base practice/work on one event Advocates for patient safety initiatives	Conflict External Trust, Solidarity and Empowerment Internal Trust, Solidarity and Harmony Internal Trust, Solidarity and Harmony External Trust, Solidarity and Empowerment Active Participation and Affiliation	 Hope Optimism Resilience Hope Optimism Self-Efficacy Resilience

As can be seen in Table 5, social and psychological capital are hypothesized to occur across the second victim experience. Several theoretical and empirical articles have demonstrated that social support is critical to the second victim's ability to recover emotionally, physically and psychologically (Burlison et al., 2017; Kable et al., 2018; Pinto et al., 2013; Quillivan et al., 2016; Rassin et al., 2005; Rodriquez & Scott, 2018; Scott et al., 2009; Scott et al., 2010; Scott & McCoig, 2016; Serembus et al., 2001; Sirriyeh et al., 2010; Ullström et al., 2014; West et al., 2006; Winning et al., 2018). Further, a number of SVS articles have demonstrated that an individual's psychological capital, expressed primarily as self-efficacy and resilience, are also critical to the recovery process (Austin et al., 2014; Kable et al., 2018; Pinto et al., 2013; Schiess et al., 2018; Winning et al., 2018). However, what is less clear is how they interact to protect the second victim from progressing to more severe forms of SVS that are likened to PTSD (Manser, 2011; Paparella, 2011; Pratt et al., 2012; Scott et al., 2008; Wu et al., 2013). In fact, Daniels and McCorkle (2016) noted:

> More research could help explore and understand why some practitioners thrive and return to work strong and resilient vs. why some lean toward outcomes such as professional paralysis, dropping out, or disappearing, and in the worst cases commit suicide. (p. 108)

This represents the fundamental question of interest in this research study. Why do some nurses experience crippling second victim syndrome that causes them to leave the profession or in the worst-case scenario, commit suicide, while others seem able to recover and resume a healthy professional practice? It is believed that the combined effect of an individual's psychological and social capital directly impacts the severity of

second victim syndrome. The researcher believes that the social capital available to the registered nurse at Scott et al.'s (2009) third, fourth and fifth stages of recovery directly impacts the nurse's existing psychological capital and therefore the severity their second victim experience. As seen in Table 5, every subconstruct of psychological capital and social capital is believed to be present at these stages of the second victim experience. The social capital available from peers, colleagues, management, hospital leadership and the profession are critical to the ability of the nurse to maintain or increase his/her psychological capital and recover from the precipitating event. This theory is supported by Schiess et al.'s (2018) Transactional Second Victim Model and is further supported by Hirschinger et al. (2015) who note "Providing emotional support for healthcare clinicians who may be suffering as second victims is critical for psychological and physical recovery after an event" (Hirschinger, Scott, & Hahn-Cover, 2015, p. 26).

The researcher believes that the culture of 'shame and blame' present in healthcare results in a lack of social capital available to the second victim, which directly influences the nurse's psychological capital and their ability to fully recover and 'thrive' following a precipitating event. Within healthcare exists an 'errorless imperative' where shaming and blaming practitioners who make errors leads to punitive and disciplinary actions rather than supportive ones (Davidson et al., 2015; Elmir et al., 2017; Pinto et al., 2013; Rassin et al., 2005; Schiess et al., 2018; Sirriyeh et al., 2010). Therefore, the research question of interest is "To what extent does the relationship between psychological capital and social capital combine to predict the severity of SVS experienced by registered nurses following a precipitating event?" The secondary

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research question is "What are the relationships between the subconstructs of psychological capital, social capital and second victim syndrome?"

The proposed research study is a non-experimental survey research study to explore the relationship between psychological capital and social capital and their combined effect on the severity of SVS experienced in registered nurses (RNs) following the occurrence of a precipitating event. In Chapter 3, the methodology will be defined and explained in detail.

Chapter 3: Methodology

Overview

Empirical evidence on second victim syndrome (SVS) demonstrates a link between psychological factors, such as resilience and self-efficacy, and social support, especially from peers, as critical to the ability of the second victim to recover following the occurrence of SVS (Burlison et al., 2016; Burlison et al., 2017; Cabilan & Kynoch, 2017; Kable et al., 2018; Pinto et al., 2013; Quillivan et al., 2016; Rassin et al., 2005; Rodriquez & Scott, 2018; Scott et al., 2009; Scott et al., 2010; Scott & McCoig, 2016; Serembus et al., 2001; Sirriyeh et al., 2010; Ullström et al., 2014; West et al., 2006; Winning et al., 2018). Despite an overwhelming body of evidence of the role psychological and social factors play in SVS severity, little research has been conducted to explore and quantify how these factors interact and impact an individual nurse's second victim experience.

This research study was an ex post facto, non-experimental, cross-sectional survey research study to explore the relationship between psychological capital and social capital and their combined effect on the severity of SVS experienced in registered nurses (RNs) following the occurrence of a precipitating event. Precipitating events encompass near misses, preventable adverse events and any unanticipated adverse patient outcome that can result in SVS, regardless of whether caused by RN error or resulting harm to the patient (Burlison et al., 2017; Hall & Scott, 2012; Manser, 2011). Correlation analyses of constructs across the three instruments were conducted in SPSS v25 to determine the strength and direction of each bivariate relationship. The relationships that were

determined to be significant with overall SVS at the $p < .01$ level were tested further utilizing structural equation modeling in AMOS v25.

The conceptual model for this study demonstrates the hypothesized relationship between psychological capital and social capital after a precipitating event and its impact on the severity of SVS experienced by a registered nurse. This quantitative study aimed to explicate this relationship and contribute to the knowledge of the influence of psychological capital and social capital on SVS severity.
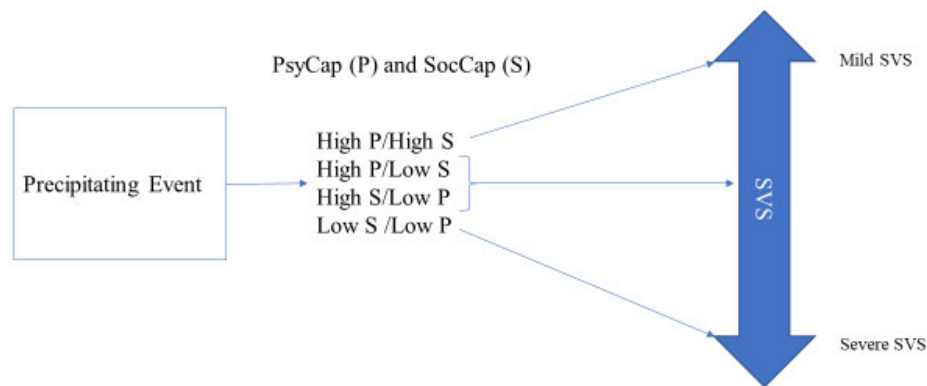
Figure 3. Conceptual framework

Research Question and Hypothesis

The research question for this study was "To what extent does the relationship between psychological capital and social capital combine to predict the severity of SVS experienced by registered nurses following a precipitating event?" The secondary research question was "What are the relationships between the subconstructs of

psychological capital, social capital and second victim syndrome?" The null and alternate

hypotheses for this study were as follows:

H_0: The combined contributions of psychological capital and social capital do not

predict the severity of second victim syndrome experienced by registered nurses

following a precipitating event.

H_a: The combined contributions of psychological capital and social capital predict

the severity of second victim syndrome experienced by registered nurses

following a precipitating event.

Research Procedures

Research Design

Surveys are a popular research design to answer quantitative research questions.

"Survey research designs are procedures in quantitative research in which investigators

administer a survey to a sample or to the entire population of people to describe the

attitudes, opinions, behaviors, or characteristics of the population" (Creswell, 2015, p.

379). Cross-sectional surveys are surveys in which data is collected at one point in time,

which allows for the collection of data over a relatively short period of time. Ex post

facto research is research that occurs retrospectively. "In *ex post facto* research the

researcher takes the effect (or dependent variable) and examines the data retrospectively

to establish causes, relationships or associations and their meanings" (Cohen et al., 2007,

p. 266). The ex post facto design was appropriate given the precipitating event and the

SVS experience occurred in the past and the research study explored the combined

contribution of psychological capital and social capital on the severity of SVS

experienced. It would not have been possible, nor would it have been ethical, to study a

nurse's SVS experience by causing a precipitating event with the intention of conducting an experimental or longitudinal study. Therefore, to answer the research questions and hypothesis, this research used an ex post facto, cross-sectional, non-experimental survey design (Cohen et al., 2007).

Survey research is not without potential errors. Specifically, errors are most often related to sampling procedures. Given that it is almost impossible to survey an entire population, surveys collect data from a sample of individuals intended to be representative of the full population (Creswell, 2015). This target population is the population from which the study participants will be selected. There are four possible errors that result from the sampling procedures utilized in survey research that may limit the inferences that can be drawn from the sample and generalize the results to the full population, and each is described in more detail below.

Coverage error. Coverage error occurs when a segment of the population is excluded from survey participation due to errors or omission in the list of the full sample (Dillman, Smyth, & Christian, 2014). In this study, the nursing associations made the study invitation and survey link available via email or association website. According to Dillman et al. (2014) 85% of adults use the Internet, at least occasionally. Further, 70% of adults have high-speed Internet as of 2014. While this provides excellent coverage for this survey, approximately 30% of adults do not have high-speed Internet at home. Given the population for this study was registered nurses belonging to professional nursing societies, it was assumed that most of the sample has access to Internet at home or at work to be able to complete the survey. However, registered nurses that were not

members of these 12 nursing associations (or no nursing associations) were not made aware of the study and thus did not complete the online survey.

Sampling error. Sampling error occurs when only some of the sample are selected for study participation (Dillman et al., 2014). "Sampling error is an unavoidable result of obtaining data from only some rather than all members on the sample frame and exists as a part of all sample surveys" (Dillman et al., 2014, p. 5). Researchers can minimize sampling error by surveying the largest possible number of members of the population.

By using 12 professional associations as the sample frame for this study, the survey was made available to a large, diverse population of registered nurses from the United States. By extending the research beyond one hospital or health system, the sample was more broadly representative of the entire population of registered nurses than may be found in one health system or institution. Given the study was made available to approximately 225,000 registered nurses via email or website, the researcher was able to reach a large population of registered nurses across the United States working in a wide variety of practice locations. No sampling procedures were utilized, thus in theory, every member of each professional association had equal access to the online survey.

Measurement error. Measurement error occurs when the questions asked in the survey do not measure the variable or concept of interest (Dillman et al., 2014). When a question does not measure its intended variable, the question or item is said to exhibit low construct validity. Measurement error can result from poorly written items, asking about subjects with perceived societal norms, poorly formatted questions, the order of the questions or visual layout.

To minimize measurement error, the researcher used only valid and reliable instruments. Further, demographic questions were limited to those that contributed to the further generation of knowledge of the constructs of interest. Lastly, the survey was administered online with resulting data entries housed in Qualtrics to ensure consistency in the formatting of the survey and quantitative data. While the survey did ask about sensitive information, the survey was completely anonymous and confidential, and there has been an increased recognition of the importance to discuss SVS and support nurses experiencing it, rather than the traditional blame and shame mentality, which may have reduced reluctance to answer questions or provide inaccurate or untruthful responses.

Nonresponse error. Nonresponse error occurs when those that respond to the survey and those that choose not to respond have significantly different experiences or attitudes (Dillman et al., 2014). Higher response rates can mitigate nonresponse errors. There was evidence of nonresponse error in this study. Some study participants opened the online survey but did not complete it. This may suggest that some study participants did not feel that they had experienced second victim syndrome and decided not to complete the survey. Thus, the resulting sample may include fewer responses from registered nurses that experienced second victim syndrome on the lower end of the

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continuum. Table 6 presents the four sampling errors and summarizes the methods used

to minimize their occurrence in this study.

Table 6

Survey Sampling Errors and Corresponding Reduction Strategies

Sampling Error	Description[1]	Strategies to Minimize[2]
Coverage Error	occurs when the list or sample of respondents used does not accurately reflect the population	Identified a good sample representative of the population
Sampling Error	occurs when only some members of the population are surveyed in such a way as to influence the results	Selected as large a sample as is possible and practical
Measurement Error	occurs when survey respondents do not accurately answer the survey questions because of issues such as question design, respondent behavior	Ensured the use of valid and reliable instruments Pilot tested the survey for length of completion
Nonresponse Error	occurs when members of the sample that do not respond are significantly different from those that do respond in a way that impacts the generalizability of the results	Used recruitment strategies to achieve the largest possible response rate

Note. [1] Dillman et al. (2014); [2] Creswell (2015)

Survey Instruments

This section outlines the survey instruments used in this study. The psychological

and social factors impacting second victim syndrome can be measured via the constructs

of psychological capital and social capital. These constructs are measurable via valid and

reliable instruments, the Psychological Capital Questionnaire (PCQ) (Luthans, Avolio, et

al., 2007) and the Social Capital Outcomes for Nurses (SCON) (Sheingold & Sheingold,

2013). Both instruments have been studied in the nursing population (Gilbert, 2017;

Laschinger & Grau, 2012; Rahimnia et al., 2013; Sheingold & Sheingold, 2013; Shin &

Lee, 2016; Sweet & Swayze, 2017). Second victim syndrome can be measured via the Second Victim Experience and Support Tool (SVEST), which is a valid and reliable instrument (Burlison et al., 2017).

Further psychometric evaluations of the SVEST instrument for use in other languages has demonstrated the instrument is also valid and reliable in Korean and Argentinian (Brunelli, Estrada, & Celano, 2018; Kim, Kim, Lee, Burlison, & Oh, 2018). Studies of translation into other languages such as Mandarin Chinese and Danish are ongoing (J. Hoffman, personal communication, July 3, 2018). Permission was sought and obtained to use all three instruments, and the evidence of permission is provided in Appendix A.

Psychological Capital Questionnaire (PCQ). The PCQ is a 24-item instrument comprised of four constructs: hope, optimism, self-efficacy, and resilience. Each of these scales individually had significant psychometric support across numerous studies (Luthans, Avolio, et al., 2007; Luthans, Youssef, et al., 2007). Each construct consists of six questions answered on a 6-point Likert-like scale of 1) strongly disagree, 2) disagree, 3) somewhat disagree, 4) somewhat agree, 5) agree, and 6) strongly agree. These six questions are averaged to provide a subscore value. Each construct, or subscore value, is combined and the mean is the overall psychological capital score. The survey instructions are clearly worded to instruct the respondent to answer based on how they feel 'right now' to facilitate the tool's state-like framing. The possible range of values for the PCQ is 1 to 6. A score of 1 indicates very little psychological capital while a score of 6 indicates very high psychological capital. With permission as noted in Appendix A, sample statements for three subconstructs are provided in Table 7.

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Table 7

Sample Questions per PCQ Subconstruct

PCQ Subconstruct	Statement
Hope	Right now I see myself as being pretty successful at work.
Self-Efficacy	I feel confident analyzing a long-term problem to find a solution.
Optimism	I always look on the bright side of things regarding my job.

In developing the PCQ, Luthans, Youssef, et al. (2007) strove to develop a parsimonious questionnaire "with the least number of items necessary for reliability and validity – but no less" (p. 209). In selecting these items, care was taken to ensure that the best six items were taken from each existing scale, to ensure that each construct had equal weight. Further, each item needed to have both face and content validity as state-like and be relevant to the workplace (Luthans, Avolio, et al., 2007).

Social Capital Outcomes for Nurses (SCON). The SCON is a 44-item

instrument focused on five domains (Sheingold & Sheingold, 2013). The instrument was

derived from the World Bank's Social Capital-Integrated Questionnaire (SC-IQ) through

a qualitative and quantitative process. The qualitative portion of the process included

facilitated focus groups of nurses from nine hospitals in the United States. The focus

group was led through open-ended questions from an interview guide provided by the

World Bank. Following the collection of data, the collected items were provided to a

team of three PhD nursing faculty to independently code the data to the six SC-IQ

domain areas according to high, neutral and low correlation.

Following this exercise, 1103 items were coded to one of the six domains, while

133 were rated neutral (Sheingold & Sheingold, 2013). Based on the data collected in the

focus groups, the SC-IQ questions were then adapted to reflect the nursing perspective of

community and culture. Content validity was assured by applying the qualitative results

of the study and having one of the SC-IQ authors review and edit survey results. A draft

survey was administerd to 37 nurses who rated the survey for content, wording,

relevance, logic and consistency. The final survey consisted of 44 questions across six

dimensions aligned with the SC-IQ, which was further reduced to five domains following

pilot testing as shown in Table 8.

Table 8

Sample Questions per SCON Domain

SCON Domain	Statement
External Trust, Solidarity and Empowerment	Hospital Executives act in my best interest.
Participation and Affiliation	Over the past ten years, my participation in professional nursing organizations has decreased (i.e. ANA, ENA, AORN).

Internal Trust, Solidarity and Harmony	Most of the nurses on my unit can be trusted.
Social Cohesion with Co-workers	In the past month, I have met with co-workers in a private home to talk, or to have food or drinks.
Conflict	There is not a lot of conflict between nurses at my hospital.

The survey responses are measured on a Likert scale with responses ranging from 1 (strongly disagree) to 5 (strongly agree) (Sheingold & Sheingold, 2013). Each scale is scored by averaging the score by dividing the subscale score by the number of questions, and the total social capital score is calculated by taking the mean of all individual questions (Sheingold & Sheingold, 2013). Sample questions for each domain are provided in Table 8. The possible range of scores for the SCON is 1 to 5, with 1 representing very low social capital and 5 representing high social capital.

Second Victim Experience and Support Tool (SVEST). The SVEST was

developed in 2013 to measure the experiences of second victims and determine the

efficacy of the resources deployed to support them following a precipitating event

(Burlison et al., 2017). The survey was based on the literature of second victim syndrome

and followed Hinkin's guide for developing questionnaires. The survey measures seven

dimensions of SVS and two areas of work-related outcomes that were unanimously

agreed to by the authors. The seven dimensions of SVS in the survey are: "…

psychological distress, physical distress, colleague support, supervisor support,

institutional support, non-work-related support and professional self-efficacy" (Burlison

et al., 2017, p. 94). The two work-related-outcomes were defined as turnover intention

and absenteeism. Lastly, seven items related to preferred support mechanisms were

included to measure the perceived value of support resources were also drafted.

The final survey consists of 25 items for the seven dimensions and four additional

items (two items per outcome scale) for a total of 29 items rated on a Likert scale from 1

(strongly disagree) to 5 (strongly agree). The desirability of the support resources is rated

on a Likert scale from 1 (strongly do not desire) to 5 (strongly desire) (Burlison et al.,

2017). The first step of analysis is to convert the reverse-worded items, after which the

range of possible scores for the SVS experience is 1 to 5 "... where higher scores

represent greater amounts of second victim responses, the degree to which support

resources are perceived as inadequate, and the extent of the 2 second victim-related

negative work outcomes (i.e., turnover intentions and absenteeism)" (p. 101). The

SVEST instrument is provided, with permission, in its entirety in Appendix B.

Instrument Reliability and Validity Measures

Reliability measures are primarily concerned with two factors: item consistency within a measure and the stability of the measure over time (Hinkin, 1995). There are a number of reliability measures, but the most common measure of reliability is the Cronbach's alpha coefficient (Osburn, 2000; Tavakol & Dennick, 2011; van der Ark, van der Palm, & Sijtsma, 2011). The Cronbach's alpha is reported as a number between 0 and 1, with reliability increasing the higher the value (Cohen et al., 2007; Tavakol & Dennick, 2011). According to Hinkin (1995) and Tavakol and Dennick (2011), the minimum acceptable Cronbach's alpha is .70 but Cohen et al. (2007) note that measures of .67 or above are acceptable. Factors that influence the Cronbach's alpha include the number of items per construct, low interrelatedness between constructs or heterogeneous constructs. Further, very high Cronbach's alpha correlation scores may indicate significant overlap and redundancy in items and some have suggested instruments should have a maximum Cronbach's alpha of .90. A second reliability measure is the Lambda2 (Osburn, 2000). The Lambda2 isn't used as frequently as the Cronbach's alpha coefficient but data has demonstrated that the Lambda2 coefficient may improve upon Cronbach's alpha (Osburn, 2000; van der Ark et al., 2011).

Where reliability is concerned with an instrument's ability to measure consistently, instrument validity "… is concerned with the extent to which an instrument measures what it is intended to measure" (Tavakol & Dennick, 2011, p. 53). Validity and reliability are often discussed together because an instrument cannot be valid if it is not reliable, although instrument reliability does not depend on instrument validity. Instrument validity is often measured by construct validity – "… the degree to which an

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assessment instrument measures the targeted construct (i.e., the degree to which variance in obtained measures from an assessment instrument is consistent with predictions from the construct targeted by the instrument)" (Haynes, Richard, & Kubany, 1995, p. 239). Construct validity is an umbrella category that also includes content validity, predictive, concurrent and postdictive validity, criterion-related validity, discriminant and convergent validity. Content validity is a critical component of construct validity conducted at the item generation phase of instrument development because it demonstrates that the instrument items represent the target construct (Hinkin, 1995).

Construct analysis is conducted most often via factor analysis, which can be either exploratory or confirmatory (Hinkin, 1995; Yong & Pearce, 2013). Exploratory factor analysis (EFA) is an appropriate validity measure for a new scale or instrument. Factor analysis is a measure of discriminant validity, where the analysis clusters similar items together and separates them from other items that are not similarly correlated (Cohen et al., 2007; Sun, 2017; Yong & Pearce, 2013). Confirmatory factor analysis (CFA) is conducted via fit indices, of which there are over 30 different types (Hinkin, 1995; Sun, 2017). No one fit index measures every aspect of goodness of fit, and often studies will use multiple indices to conduct their construct analysis.

Psychological Capital Questionnaire. Reliability is well-established for the PCQ (Luthans, Youssef, et al., 2007). Two studies were conducted in university students, insurance firm employees and engineer/technical professionals. The first demonstrated the psychometric support for the questionnaire, while the second provided support for the aggregate scale as a better predictor of performance and satisfaction than the four individual subscales. The Cronbach's alpha coefficients for each of the construct

subscales and overall psychological capital measure were measured across four samples in the two studies above. The overall psychological capital scale had the highest Cronbach's alpha of all the scales tested.

Following the construction of the PCQ, CFA testing was conducted in the first study referenced above, to confirm the factor structure for the overall measure of psychological capital (Luthans, Avolio, et al., 2007). The fit indices used to conduct CFA included the standardized root mean residual (SRMR), the root mean squared error of approximation (RMSEA), and comparative fit index (CFI). Based on the results from both studies, the authors determined that the overall fit was adequate. "Therefore, using the combinatorial rule that two of three indices should be within acceptable ranges for model fit (Hu & Bentler, 1999), overall fit was deemed adequate" (Luthans, Avolio, et al., 2007, p. 558).

Social Capital Outcomes for Nurses. Sheingold and Sheingold (2013) reported Cronbach's alpha results of .92. In a study conducted by Shin and Lee (2016), the Cronbach's alpha was .90 and the reliabilty coefficient of the subscales ranged from .72 to .85. In a third study conducted by Gilbert (2017) using the 44 SCON items, the SCON subscales demonstrated adequate reliability with Lambda2 values between .701 to .900 (p. 56). The Lambda2 coefficient was used in this study "… because the data violated assumptions of normality" (Gilbert, 2017, p. 57).

The survey was tested for validity and reliability in 325 nurses in six hospitals in Washington, D.C. (Sheingold & Sheingold, 2013). An exploratory factor analysis was conducted and as a result, the survey was reduced to the five dimensions, or subscales described above, and 28 of the 44 questions demonstrated factor loadings of at least .40.

Given the exploratory nature of the factor analysis in this study, eigenvalues were reported, which are a means by which the factors to be retained are determined (Yong & Pearce, 2013). In a second study conducted in registered nurses in Korea, the study demonstrated factor loading of 36 of the 44 items with nine survey items in the External Trust and Solidarity domain, 12 in the Internal Trust and Solidarity domain, seven in the Participation and Affiliation domain, five in the conflict domain and three in the Social Cohesion with Co-workers domain (Shin & Lee, 2016). In a third study using the SCON, the validity measures were not reported (Gilbert, 2017). The SCON instrument was administered with all 44 items in this study.

Second Victim Experience and Support Tool. The SVEST survey was tested in 983 healthcare professionals, with 305 responding, for a response rate of 31% (Burlison et al., 2017). Once respondents with more than three missing responses were removed, a final sample size of 281 was achieved. The Cronbach's alpha coefficients were calculated for each measure and ranged from .61 for colleague support to .87 for supervisor support. The scores for all dimensions were greater than .70 except for colleague support and institutional support. Items were tested in each of these two dimensions, but the reliability measure was unaffected, so the items were retained in the survey.

Confirmatory factor analysis was conducted on the 26-item SVEST survey. CFA was tested by chi-square (χ^2) test, comparative fit index (CFI) and root mean square error of approximation (RMSEA) (Burlison et al., 2017). Following this analysis, the final survey consisted of 25 items measuring the seven dimensions and two items for each outcome variable for a total of 29 items related to SVS. Each individual item loaded

above the .40 conventional loading level, thus justifying their inclusion. Table 9 provides

the reliability and validity data for the three instruments.

Table 9

Validity and Reliability Measures of the Survey Instruments

Instrument	Cronbach's Alpha Coefficient	Factor Analysis
Psychological Capital Questionnaire (PCQ)	.88, .89, .89, .89	Study one: SRMR* = .051
Hope	.72, .75, .80, .76	RMSEA** = .046
Self-Efficacy	.75, .84, .85, .75	CFI*** = .934
Resilience	.71, .71, .66, .72	Study two:
Optimism	.74, .69, .76, .79	SRMR = .056
		RMSEA = .048
		CFI = .924
Social Capital Outcomes of Nurses (SCON)	.923	Eigenvalue: 11.73
External Trust, Solidarity and Empowerment	.902	2.35
Active Participation and Affiliation	.829	2.14
Internal Trust, Solidarity and Harmony	.778	1.77
		1.67
Social Cohesion with Co-workers	.766	
Conflict	.611	
Second Victim Experience and Support Survey (SVEST)		
Psychological Distress	.83	
Physical Distress	.87	
Colleague Support	.61	χ^2 = 566.06; df =
Supervisor Support	.87	254; $p < 0.01$
Institutional Support	.64	CFI = .910
Non-work Support	.84	RMSEA = .066
Professional Self-efficacy	.79	
Turnover Intentions	.81	
Absenteeism	.88	

Note. *SRMR = Standardized Root Mean Residual; **RMSEA = Root Mean Squared Error of Approximation; ***CFI = Comparative Fit Index

While each instrument has demonstrated validity and reliability in previous studies, each

instrument's reliability and validity was tested via Cronbach's alpha coefficient and

confirmatory factor analysis using the data collected from the sample of registered nurses – "It is also important to note that alpha is a property of the scores on a test from a specific sample of testees. Therefore investigators should not rely on published alpha estimates and should measure alpha each time the test is administered" (Tavakol & Dennick, 2011).

Demographic Questions

Demographic and work characteristic questions for the survey were minimal but intended to evaluate the population of this research and compare it to the overall nursing profession. The six demographic characteristic questions are provided in Table 10. Age and nursing tenure were collected as continuous values entered as whole numbers, rounded up or down as appropriate. The practice unit question consisted of a drop-down menu of practice settings aligned with the employment specialty settings collected in the 2017 National Nursing Workforce Survey (Smiley et al., 2018).

Table 10

Demographic Variables

Variable	Variable type	Question
Age	Continuous	Please enter your age as a whole number. Round up or down as appropriate.
Sex	Nominal	How would you define your sex?
Nursing Tenure	Continuous	Please enter your number of years of nursing experience as a whole number. Round up or down as appropriate.
Practice Unit	Nominal	What type of practice unit do you work on?
Practice Setting	Nominal	What type of setting most closely corresponds to your primary nursing practice position?
Type of nursing license	Ordinal	What type of nursing license do you have?

Data Collection

This survey was administered electronically given the proliferation of personal computers and cell phones. According to Dillman et al. (2014), "… 85% of adults in the United States use the Internet and 70% have broadband Internet access in their homes" (p. 301). Further, "Nearly all adults (91%) have cell phones, up from 75% in 2007" (p. 301). The survey was developed and administered via Qualtrics. The survey was a combination of three valid and reliable instruments (Burlison et al., 2017; Luthans, Youssef, et al., 2007; Sheingold & Sheingold, 2013), and some select demographic questions. Approval to use all three instruments was obtained and is provided in Appendix A. The length of the survey was a potential concern, so the final survey was pilot tested by a small group of registered nurses known to the researcher to test for length and ease of completion. Eleven registered nurses completed the final survey and reported a completion time between 10 to 20 minutes, with a mean completion time of 13.7 minutes. None of the pilot respondents reported survey fatigue.

Following approval by the George Washington University Institutional Review Board (IRB), the survey was distributed to participating nursing associations, with each association receiving a unique online link with the IRB approved recruitment message. The opening page of the survey included the IRB approved invitation to participate and a question to collect informed consent. Upon consenting to participate, the respondent was taken to the survey instrument. In the event an individual refused to consent, they were taken to a thank you message and the survey was not available to be viewed. Each professional association had its own means of distributing nursing research, but all had an approval process and required a project overview and IRB approval prior to

dissemination of the survey link. Association-specific methods of dissemination included email invitations, notification of the survey via their website or social media, or in a member communication, such as a newsletter. Appendix C provides an overview of the methods of dissemination used by each participating nursing association. Two weeks following the dissemination of the survey, the researcher made a request for a reminder notification from the association (Dillman et al., 2014). The survey remained open for approximately seven weeks to maximize participation by different nursing associations.

The Sample

Structural equation modeling (SEM) is an advanced statistical technique that requires a large sample size, typically between 300-400 depending on the number of latent variables being tested (Buhi, Goodson, & Neilands, 2007; Gaskin, 2016d; Hair, Black, Babin, & Anderson, 2014; Lei & Wu, 2007; Mueller & Hancock, 2010). Given this requirement, a minimum sample size of 300 was required for this study. The study invitation and survey link were disseminated through 12 participating professional nursing societies in the United States. Each participating association received a standardized invitation message and a unique survey link to share with their members via email, newsletter, or other communication channels.

Each participating association has its own human subject research policies and procedures governing how they share research studies with their members and followed those policies in distributing the survey link and recruitment materials. Appendix C lists the participating nursing associations, their membership size, dates the survey was open and the method of survey distribution used by the association. By using professional nursing societies, the study invitation and survey link was made available to

approximately 225,000 registered nurses through the United States. Given it was not possible to survey every registered nurse in the US, nursing societies/professional nursing associations were a good way to reach a large population of nurses in a variety of specialty practices. Another benefit of using the member databases of professional nursing societies was that the nurses work in a variety of healthcare facilities and geographical locations, and the demographics are non-homogenous, thus providing a large heterogeneous sample of registered nurses, which increased the generalizability of the research results and reduced the risk of errors discussed above. Lastly, as per (Dillman et al., 2014), another benefit of using professional nursing associations to distribute the research was the legitimacy it brought to the research survey. Rather than receiving an invitation from an unknown entity, the nurse received notification of the research study from their professional association and the research was seen as legitimate and trustworthy.

The challenge with using nursing associations to disseminate the research was the inability to control the distribution and notification of the survey. Many of the associations did not send an email invitation or notification to their membership, but instead posted the research study on their website or via an electronic newsletter. Unfortunately, not communicating directly with members about the survey meant that awareness of the research survey was limited to members that routinely check the research section of the association's website or engage with the electronic newsletters distributed by the association. For example, one organization with over 120,000 members shared the research study invitation via their website section on research projects and via an electronic newsletter. During the period that the survey was open, there were 530

unique visitors to the website and an unknown number of members that read the electronic newsletter. Despite a possible population of over 120,000 respondents, only 25 respondents completed the survey from this association. Conversely, a different organization with approximately 12,000 members shared the research study invitation utilizing the same methods and also sent an email to its membership. These approaches resulted in 760 surveys from this association. The survey link was available for seven weeks – from October 22, 2018 to December 7, 2018. During that time, 1167 surveys with sufficient data for analysis was submitted via Qualtrics.

Respondent Demographics

There were six demographic questions included in the survey. Questions focused on age, years of experience, sex, practice setting, practice location, and type of nursing license. The demographic results from the study sample are presented below.

Age and years of experience. As can be seen in Table 11, the respondents' mean age was 47.42 years. There was a large range in ages, evidenced by a SD of 11.9 years. Comparatively, in the biannual National Nursing Workforce Survey (NNWS), conducted last in 2017 by the National Council of State Boards of Nursing (NCSBN), the mean age of registered nurses participating in that study was 51 (Smiley et al., 2018). The mean number of years of experience was 20.31. As with age, there was a wide range in the years of experience. The 2017 NNWS did not report years of experience, but did report on years licensed, which is a similar measure. The median years licensed in the 2017 NNWS was 21 years. Both the age and years of experience, or years licensed, was similar between this sample and the national nursing workforce.

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Table 11

Respondents' Age and Years of Experience

Variable	Mean (SD)	Range	n
Age (years)	47.42 (11.900)	23-90	1148
Years of Experience	20.31 (12.661)	1-51	1158

Sex and type of nursing license. Respondents were asked to define their sex.

Table 12 shows that over 90% of the respondents were women. The latest data from the

2017 National Nursing Workforce Survey showed similar results, with 90.1% females

and 9.1% males responding (Smiley et al., 2018). Most respondents were registered

nurses, with a small number of licensed practical nurses or vocational nurses (0.3%), or

advance practice RNs, either nurse practitioners (3.5%), clinical nurse specialists (4.1%)

or certified nurse midwives (0.1%) participating. Comparatively, the 2017 National

Nursing Workforce Study found that approximately 12.6% of respondents were advance

practice RNs, mainly nurse practitioners (8.5%), demonstrating this sample is relatively

comparable with the broader nursing population but slightly underrepresented by APRNs

(Smiley et al., 2018).

Table 12

Sex and Type of Nursing License

Demographic variable	Respondents (n = 1167)	Percent (%)
Sex		
Female	1083	93.7
Male	73	6.3
Total	1156	100
Type of Nursing License*		
Licensed Practical Nurse (LPN)/Vocational Nurse (VN)	4	0.3
Registered Nurse (RN)	1117	95.7
Advance Practice Registered Nurse (APRN): Nurse Practitioner (NP)	41	3.5
Advance Practice Registered Nurse (APRN): Clinical Nurse Specialist (CNS)	48	4.1
Advance Practice Registered Nurse (APRN): Certified Nurse Midwife (CNM)	1	0.1

Note. *Nurses could select more than one license type. For example, an APRN: NP could select a license as a RN and an APRN: NP

Practice setting and practice unit. As Table 13 shows, approximately 71% of the survey respondents work in inpatient hospitals, both community hospitals (43%) and academic medical centers (28%). For comparison purposes, in the National Nursing Workforce Survey, over 55% of respondents worked in a hospital setting, with an ambulatory care setting the next highest work setting, which was also the case in this study (Smiley et al., 2018). This sample has a higher percentage of hospital nurses (70.5%) than the national workforce study of 2017. Nursing home and school nursing are underrepresented in this population, while the other practice settings seem relatively comparable.

Almost 32% of respondents work in medical-surgical units, whereas the National Nursing Workforce Study had 8.5% of nurses identify their practice unit as medical-surgical (Smiley et al., 2018). The two larger populations in the nursing workforce study

Table 13

Practice Demographics

Demographic variable	Respondents (n = 1167)	Percent (%)
Practice Setting		
Academic Medical Center	321	27.6
Academic Setting	30	2.6
Ambulatory Care Setting	166	14.3
Assisted Living Facility	2	0.2
Community Health	20	1.7
Community Hospital	499	42.9
Home Health	37	3.2
Insurance Claims/Benefits	2	0.2
Nursing Home/Extended Care	7	0.6
Occupational Health	2	0.2
Policy/Planning/Regulatory/Licensing Agency	3	0.3
Public Health	2	0.2
School Health Service	2	0.2
Other	69	5.9
Total	1162	100
Practice Unit		
Acute Care/Critical Care	177	15.2
Adult Health/Family Health	27	2.3
Anesthesia	4	0.3
Community	13	1.1
Emergency/Trauma	29	2.5
Genetics	1	0.1
Geriatric/Gerontology	10	0.9
Home Health	26	2.2
Informatics	2	0.2
Maternal-Child Health	21	1.8
Medical-Surgical	369	31.7
Neonatal	7	0.6
Nephrology	6	0.5
Neurology/Neurosurgical	25	2.1
Occupational Health	2	0.2
Oncology	58	5.0
Orthopedic	30	2.6
Palliative Care/Hospice	16	1.4
Pediatrics	16	1.4
Perioperative	28	2.4
Primary Care	38	3.3
Psychiatric/Mental Health/Substance Abuse	15	1.3
Radiology	6	0.5
Rehabilitation	8	0.7
School Health	2	0.2
Women's Health	2	0.2
Other	225	19.3
Total	1163	100

were acute/critical care (14.0%) and the "other clinical specialties" category (12.0%)

which is not representative of one practice unit, but rather a collection of other specialty

units not listed (p. S30).

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Summary

The demographics collected in this study were limited to those deemed important to understand the sample's comparability with the broader nursing population to allow for an assessment of the generalizability of the results while not significantly increasing the length of the survey. Except for hospital nurses and medical-surgical nurses being overrepresented in this study, the study population is representative of the nursing profession and this study is generalizable to the overall nursing profession. The overrepresentation of hospital nurses should not significantly impact the generalizability of the results of this study given that hospitals remain the largest employer of registered nurses and where the majority of precipitating events (78%) occurred in a study conducted in clinicians that dropped out following a precipitating event (Rodriquez & Scott, 2018). Given the higher number of medical-surgical nurses in this study, further analysis for group effect was conducted and will be discussed below.

Data Screening and Cleaning

Data analysis occurred in SPSS v25 and AMOS v25. Upon closing the survey, data was imported from Qualtrics into SPSS v25 for analysis. After data cleaning, there were 1167 surveys that had sufficient data for SPSS analysis and 999 cases for SEM analysis. Surveys with a missing informed consent (n = 47) and those that were completely blank or partially completed (n = 764) were not used in data analyses.

Reverse worded items from each instrument were transformed in the dataset. Data screening as outlined in Hair et al. (2014), Kline (2011) and Gaskin (2016b) was conducted in SPSS v25 and included assessments of normality, bivariate relationships through scatterplots and Pearson product-moment correlations, homoscedasticity,

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multicollinearity, linearity and missing data. There were no issues identified during the data screening. Multivariate normality and outliers were assessed via Cook's distance and Mahalanobis D^2 in SPSS v25. Four cases were identified that had values that were above most cases for the Cook's Distance, but all four were well below the suggested cutoff of 1.0, ranging from .03493 to .08702. There were five potential outliers identified via the Mahalanobis D^2, however given the data is Likert-like and there were so few cases, the decision was made not to remove these cases from the analysis (Gaskin, 2016b).

Given the large sample size, surveys with missing data in any of the three instruments had the scores for that subconstruct removed from analysis but the remainder of their complete data was retained and used for descriptive statistics and inclusion in the other construct calculations. Overall construct scores were not calculated for any cases that contain missing subconstruct scores. Thus, only cases with full responses for the scale were included in the overall construct score. Missing data was deleted listwise in SPSS v25 for the descriptive statistics and correlation calculations. The dataset was further refined for the SEM analysis to remove any case with missing data values given that SEM requires full datasets without any missing values to conduct its analysis (Gaskin, 2016d; Hair et al., 2014; Kline, 2011). According to Hair et al. (2014) deleting missing cases is appropriate when there is a large sample size, strong relationships between variables, and low levels of missing data.

Data Analysis

Descriptive statistics were computed to explore how the obtained sample performs compared to national nursing workforce data. Once data linearity was confirmed, correlation analyses of constructs across the three instruments were conducted

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in SPSS v25 to determine the strength and direction of each bivariate relationship. The relationships that were determined to be statistically significant at the *p* < .01 level with the SVS construct/subconstructs were tested further utilizing structural equation modeling in AMOS v25.

Lastly, given that a significant proportion of the respondents (n = 760) were from one organization, a t-test was conducted to compare this group against the respondents from the other nursing associations. There were no significant differences between the two groups with the following exceptions: significant differences were found in the efficacy and hope subscales, and the overall psychological capital score as well as the participation and affiliation and conflict subscores in the social capital construct. These were explored further through multigroup analysis in the SEM analysis.

Validity and Reliability Assessment of Survey Instruments

Cronbach's alpha coefficients were calculated for each instrument's subscales and overall construct score. Given the relative newness of the SCON instrument, exploratory factor analysis (EFA) was conducted to determine which of the instrument's 44 questions would load to the five factors identified in previous studies, after which confirmatory factor analysis (CFA) was conducted to finalize the model. Confirmatory factor analysis was conducted for both the PCQ and SVEST to evaluate their reliability in this study and to provide a comparison to previously reported results. Given the multivariate normality and multicollinearity, all analyses were conducted via maximum likelihood (ML) estimation given that ML estimation is the method used by AMOS v25 (Gaskin, 2016c).

Convergent and discriminant validity as well as reliability of each of the factor analyses were tested through composite reliability (CR), average variance extracted

(AVE), and maximum shared variance (MSV) to ensure the latent factor variables were measuring the construct of interest and were not highly related to other factors in the construct (Gaskin, 2016a; Hair et al., 2014). Each individual construct demonstrated issues with convergent and/or discriminant validity which were noted for further investigation during the exploration of the measurement model.

Structural Equation Modeling

Structural equation modeling is a statistical technique grounded in general linear modeling such as analysis of variance and multiple regression (Buhi et al., 2007; Hair et al., 2014; Kline, 2011; Lei & Wu, 2007; Weston & Gore, 2016). Structural equation modeling has increased in popularity as a versatile statistical method that explores casual relationships among measured or latent variables (Hox & Bechger, 1998; Kline, 2011; Mueller & Hancock, 2010; Sharif, Mostafiz, & Guptan, 2018). As noted by Hair et al. (2014) "By 1994, however, more than 150 SEM articles were published in the academic social sciences literature. That number increased by more than 300 by 2000, and today SEM is the 'dominant multivariate technique'…" (p. 544). Further, there has been an increased interest in SEM in nursing research. In a systematic review to evaluate the use of SEM in nursing research, Sharif et al. (2018) identified 205 SEM studies in nursing between 1997 and 2016. As would be expected, there are an increasing number of SEM studies in nursing over time. Between 1997 and 2000, there were eight SEM studies in nursing. Between 2011 and 2016 that number had jumped to 92. The use of SEM in nursing is on the rise, and therefore this study will be relevant and applicable to the nursing research community.

Structural equation modeling is not exploratory, the relationships between the variables must be grounded in the literature and prior empirical evidence (Hair et al., 2014; Hox & Bechger, 1998; Kline, 2011; Lei & Wu, 2007; Mueller & Hancock, 2010; Weston & Gore, 2016). Further, SEM controls for Type 1 errors. "Employing multivariate methods such as SEM, however can correct "up front" for this analytic limitation by avoiding the use of multiple univariate/bivariate tests and, instead, testing hypotheses/research questions across several variables *at once*" (Buhi et al., 2007, p. 77). Unlike other quantitative methods, SEM is heavily grounded in theory given it is a confirmatory method used to confirm the relationships between variables and/or constructs hypothesized by the researcher (Hair et al., 2014).

Structural equation modeling combines factor analysis and path analysis (Lei & Wu, 2007; Mueller & Hancock, 2010; Weston & Gore, 2016). According to Weston and Gore (2016):

> We can think of SEM as a hybrid of factor analysis and path analysis. SEM's goal is similar to that of factor analysis: to provide a parsimonious summary of the interrelationships among variables (Kahn, 2006 [this issue]). SEM is also similar to path analysis in that researchers can test hypothesized relationships between constructs. (p. 720)

This combination of factor analysis and path analysis allows the researcher to evaluate complicated models of relationships between a number of variables, including latent variables, which are variables that are not able to measured directly (Gaskin, 2016d; Hair et al., 2014; Hox & Bechger, 1998; Kline, 2011; Lei & Wu, 2007; Mueller & Hancock, 2010; Sharif et al., 2018; Weston & Gore, 2016).

Structural equation modeling is theory and evidence driven (Hox & Bechger, 1998; Lei & Wu, 2007; Mueller & Hancock, 2010; Weston & Gore, 2016). The variables and constructs to be tested are defined in a measurement model, which demonstrates how the latent variables combine to form the factors of interest in the study (Weston & Gore, 2016). These hypothesized relationships are tested via CFA to determine the correlations between the variables and the factors they combine as indicators, or measured variables. Once confirmed, the measurement model is translated into a structural or causal model by removing factor covariances and exploring causal paths (Gaskin, 2016d; Hair et al., 2014).

Measurement model. Congruent with theory and the two research questions: RQ1: "To what extent does the relationship between psychological capital and social capital combine to predict the severity of SVS experienced by registered nurses following a precipitating event?" and RQ2: "What are the relationships between the subconstructs of psychological capital, social capital and second victim syndrome?", the initial measurement model is presented in Figure 4.

Supported by the Pearson product-moment correlation results, some subconstructs, specifically social cohesion and conflict from social capital, were removed from the measurement model. Non-work support was also removed from SVS given the Pearson product-moment correlation results. Through a process of convergent and discriminant validity assessments the data were manipulated, and multiple iterations of the measurement model were tested. The measurement model was finalized with good model fit, which led to the development and testing of a latent measurement model, and

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once that latent measurement model was tested and demonstrated good model fit, the

structural model was explored.
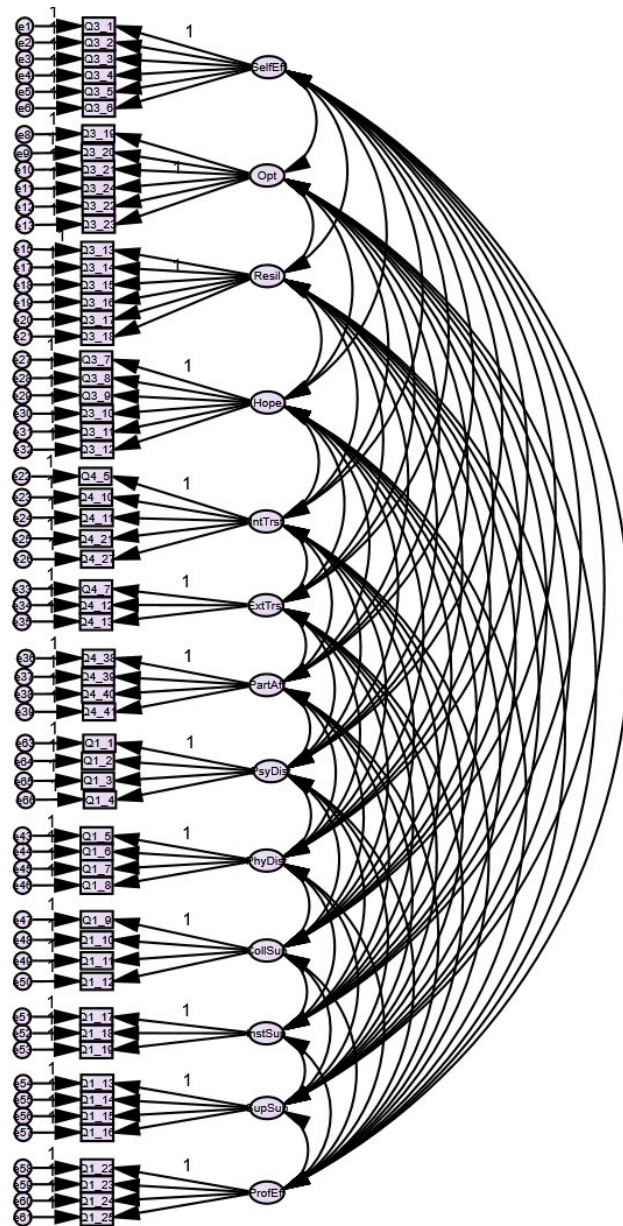
Figure 4. Initial measurement model

Structural model. Once the latent measurement model was finalized, the

structural model was examined to explore Research Question 1 and the hypothesis for

this study. The model was tested for global and local fit as per Gaskin (2016d) who notes

that in SEM, for the R^2 and p value to be significant, global fit of the model must also be evaluated and all three must be evaluated before significance can be determined, as illustrated in Figure 5. In the next section, the human subject protection and ethical considerations adhered to in this study are described.
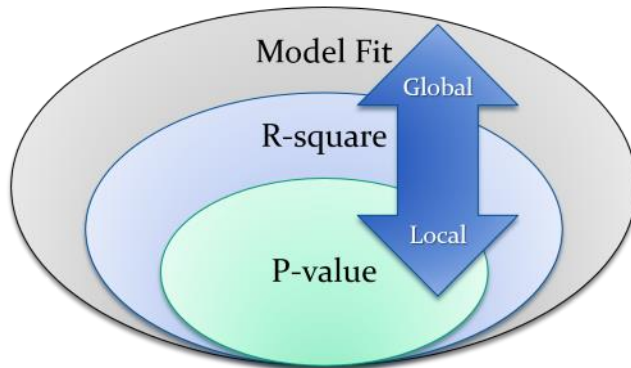
Figure 5. Testing for global and local model fit (Gaskin, 2016d)

Human Participants and Ethics Precautions

Ethical considerations in research involving human participants requires that they give their free and informed consent to participate, their participation in research is voluntary, that risks because of study participation are minimized and that their confidentiality will be maintained (Creswell, 2014). In this study, these considerations were adhered to and outlined in the informed consent. The recruitment materials and the informed consent contained the elements of informed consent outlined in Creswell (2014). Specifically, the invitation to participate and the informed consent contained the elements outlined in Table 14.

Table 14

Informed Consent Elements

Element of Informed	How the Element Was Presented

Consent	
Researcher identity	The researcher's name and credentials were provided
Sponsor identity	George Washington University was noted as the sponsor
Purpose of the study	
Benefits of participation	Contributing to the further understanding of the concepts of interest was presented as the benefit of participation
Risks of participation	Risk of recalling an unpleasant experience was described
Level of required participation	Completing the survey was the only required study activity
Guarantee of confidentiality	Participants did not provide any identifying information and the researcher only reported aggregate results
Assurance of freedom to withdraw at any time	The participant could choose to exit the survey at any time before completion
Person(s) to contact with any questions	The researcher's and PI's contact information was provided

This study was reviewed and approved by the George Washington University IRB prior to any research activities occurring. As noted earlier, each participating nursing association had their own process for approving research to be shared with their memberships. Demonstration of IRB approval was provided to participating nursing associations as part of their review and approval process. In addition to IRB approval, a summary of the research and the survey instrument were provided for review. The survey link was not shared with the nursing associations until approval to disseminate the study had been received by the association.

The researcher did not reach out to association members directly, rather the survey invitation and unique survey link were provided to the association staff who shared the survey via electronic mail, newsletter, listserv posting and/or posting to a dedicated section of the association's website as per their internal policies. The researcher's contact information was provided, as was the contact information for the researcher's committee chair and the George Washington University IRB. The researcher

was contacted by four individuals to ask further questions about the study, to validate

their suitability for completing the survey, or to thank the researcher for her interest in the

topic. The survey was completely anonymous and there was no personal identifying

information collected during the survey. Data is only being reported in aggregate to

further protect the identity of participants. Lastly, the researcher completed the requisite

social and behavioral research training required by George Washington University's IRB.

In Chapter 4, the results of the study are presented.

Chapter 4: Results

The purpose of this research study was to explore the relationship between psychological capital and social capital and their combined impact on a registered nurse's second victim syndrome experience. The research question of interest was "To what extent does the relationship between psychological capital and social capital combine to predict the severity of SVS experienced by registered nurses following a precipitating event?" A secondary research question, aimed at explicating the relationships between the subconstructs of the three constructs of interest was "What are the relationships between the subconstructs of psychological capital, social capital and second victim syndrome?"

To answer these research questions, a survey consisting of three valid and reliable instruments that measure each of the constructs of interest was distributed via 12 professional nursing associations in the United States. Each participating nursing association was provided a unique survey link to share with its members according to its internal policies. Associations shared the research invitation, with an IRB approved introduction and informed consent via its website, electronic communications, i.e. newsletters or email.

Validity and Reliability

Validity and reliability of the instruments was calculated using standard methods of testing. Validity was measured via Cronbach's alpha coefficients and reliability via both absolute and incremental fit indices (Cohen et al., 2007; Hair et al., 2014; Haynes et al., 1995; Hinkin, 1995; Tavakol & Dennick, 2011; van der Ark et al., 2011; Yong & Pearce, 2013). Table 15 presents the Cronbach's alpha coefficients, the absolute fit

Table 15

Validity and Reliability Measures of the Survey Instruments

	Cronbach's Alpha	χ²(df)	χ²/df	CFI	TLI	RMSEA	SRMR
Psychological Capital Questionnaire (PCQ)	.921	887.032(237), p = .000	3.743	.945	.936	.052	.0531
Hope	.867						
Efficacy	.874						
Resilience	.746						
Optimism	.784						
Social Capital Outcomes of Nurses (SCON)	.851	452.78(122), p = .000	3.711	.957	.946	.052	.0425
External Trust, Solidarity and Empowerment	.871						
Active Participation and Affiliation	.822						
Internal Trust, Solidarity and Harmony	.808						
Social Cohesion with Co-workers	.812						
Conflict	.716						
Second Victim Experience and Support Survey (SVEST)	.890	914.197(246), p = .000	3.716	.947	.935	.052	.0597
Psychological Distress	.791						
Physical Distress	.879						
Colleague Support	.585						
Supervisor Support	.881						
Institutional Support	.817						
Non-work Support	.860						
Professional Self-efficacy	.847						

indices: χ^2, root mean squared error of approximation (RMSEA), standardized root mean residuals (SRMR) and the incremental fit indices: comparative fit index (CFI) and Tucker Lewis Index (TLI) of each instrument. Hair et al. (2014) provide the following interpretation guidelines for confirmatory factor analysis: CFI values of > .90 are acceptable for models with a sample size of > 250 and more than 30 observed variables,

RMSEA values of < .07 are acceptable in conjunction with a CFI/TLI of .90 or above, for

models with a sample size of >250 with more than 30 variables, SRMR values of ≤ .08

are acceptable with a CFI of at least .92 in models of the same size/complexity (p. 589).

Reliability

The Cronbach's alpha coefficients for each subscale and then the overall

instrument are above the accepted thresholds, with one exception. As seen in Table 15,

the Cronbach's alpha for colleague support (.585) did not meet the minimally accepted

thresholds for Cronbach's alpha of .67 (Cohen et al., 2007) or .70 (Hinkin, 1995; Tavakol

& Dennick, 2011). This is unchanged from previous publications on the SVEST, where

the reported Cronbach's alpha coefficients of colleague support in these studies were .61

(Burlison et al., 2017), .63 (Kim et al., 2018) and .56 (Brunelli et al., 2018). Given the

consistency with performance of this subconstruct in other studies, it was left in the

model to be tested further during the measurement model evaluation in SEM.

Validity

Each instrument used in this study demonstrated good model fit but the testing used to

confirm model fit varied for the SCON instrument given some of the variability

regarding the number of items used in analysis in other studies (Gilbert, 2017; Sheingold

& Sheingold, 2013; Shin & Lee, 2016). Confirmatory factor analysis was conducted for

both the PCQ and the SVEST and as can be seen in Table 15, both instruments

demonstrated good model fit.

Exploratory factor analysis was conducted initially for the SCON instrument,

given it is a relatively new scale that has demonstrated some variations in the final

number of items used in analysis in other studies (Sheingold & Sheingold, 2013; Shin &

Lee, 2016), while a third dissertation study utilizing the SCON did not report the final

number of items used in analysis but noted that all 44 items were used in the survey

(Gilbert, 2017). The EFA was conducted in SPSS v25 using the Maximum Likelihood

method of factor extraction set to five factors, given the stability of the five factors in the

SCON instrument, Promax rotation and factor extraction set to a minimum level of .40.

The full 44 items from the SCON instrument were loaded into the factor analysis. The

EFA resulted in 18 items across the five domains of social capital, accounting for 57.09%

of the total variance explained, with a Kaiser-Meyer-Olkin (KMO) measure of sampling

adequacy of .834 and a Bartlett's test of sphericity demonstrating a statistically

significant χ^2 (9039.451(153), p = .000), which demonstrated the matrix was a good

identity matrix (Gaskin, 2016c). Following identity matrix confirmation via EFA, a CFA

of the SCON was conducted, which demonstrated good model fit, as can be seen in Table

15.

Summary

The validity and reliability assessment of the three instruments demonstrated that,

overall, there was acceptable validity and reliability of the three instruments in this

population in this study; thus, the three instruments performed as expected in this sample.

The Cronbach's alpha for the colleague support subdomain of the SVEST was less than

the acceptable level, which was also found in previous studies. During SEM analysis, the

measurement model further explored the validity and reliability of the three instruments

and issues surfaced during the SEM were addressed at that time.

Descriptive data on each construct of interest was evaluated. Table 16 presents these data for psychological capital, social capital and second victim syndrome and their subconstructs. As discussed earlier, any missing items in a subscale resulted in the deletion of that subscale from analysis through listwise deletion in SPSS v25. Any missing subscales resulted in the deletion of that case's data from the overall construct score for that construct, but the remainder of their data was used, if complete, for the other constructs in the study. The descriptive statistics for each construct are discussed in the sections below.

Table 16

Descriptive Statistics for PsyCap, SocCap and SVS

Constructs/subconstructs	Mean (SD)	n
Overall PsyCap	4.67 (0.642)	1106
Hope	4.78 (0.781)	1148
Self-Efficacy	4.79 (0.882)	1155
Resilience	4.74 (0.677)	1139
Optimism	4.38 (0.800)	1136
Overall SocCap	3.40 (0.558)	1122
Ext. Trust, Solidarity and Empowerment	2.93 (0.962)	1155
Active Participation and Affiliation	3.87 (0.806)	1146
Int. Trust, Solidarity and Harmony	3.80 (0.660)	1153
Social Cohesion with Colleagues	2.82 (1.142)	1145
Conflict	3.13 (0.803)	1149
Overall SVS	2.74 (0.602)	1125
Psychological Distress	3.41 (0.941)	1163
Physical Distress	2.62 (1.045)	1159
Colleague Support	2.42 (0.684)	1162
Supervisor Support	2.30 (0.916)	1159
Institutional Support	2.88 (1.026)	1161
Non-Work-Related Support	2.36 (0.996)	1162
Professional Self-Efficacy	3.03 (1.022)	1158

Psychological Capital

Psychological capital was measured via the Psychological Capital Questionnaire (PCQ) on a six-point Likert-like scale: strongly disagree (1), disagree (2), somewhat

disagree (3), somewhat agree (4), agree (5) and strongly agree (6). The PCQ contained 24 questions, 6 per subconstruct of hope, self-efficacy, resilience, and optimism. Higher scores demonstrate higher levels of psychological capital. The results demonstrate that the registered nurses in this survey had a mean overall psychological capital score of 4.67, ranging between 4.028 and 5.312, demonstrating that the overall psychological capital of respondents was in the somewhat agree to agree range, interpreted as moderately high overall psychological capital. The subconstructs of psychological capital demonstrated the same range of scores between somewhat agree and agree, except for optimism, where the lower range of scores demonstrated lower levels of psychological capital, with the scores for this subconstruct ranging between 3.58 and 5.18 or somewhat disagree to agree.

Social Capital

Social capital was measured via the Social Capital Outcomes for Nurses (SCON) on a five-point Likert scale: strongly agree (1), agree (2), neutral (3), disagree (4) and strongly disagree (5). The SCON instrument was made up of 44 questions across five subconstructs: external trust, solidarity and empowerment, active participation and affiliation, internal trust, solidarity and harmony, social cohesion with colleagues and conflict. Higher scores demonstrated higher levels of social capital. The mean score for overall social capital in this study was 3.40, with scores ranging from 2.842 to 3.958, demonstrating the overall social capital of this sample was in the agree to neutral range, interpreted as moderate overall social capital.

The mean scores for active participation and affiliation and internal trust, solidarity and harmony demonstrated the highest scores of the social capital subscales,

with means falling in the neutral to disagree range, indicating higher agreement with these subconstructs. External trust, solidarity and empowerment had slightly lower mean scores, ranging from 1.968 to 3.892 illustrating respondents were neutral or disagreed, and like internal trust and participation and affiliation, these results demonstrated higher agreement with this subconstruct. The lowest mean score was for social cohesion with colleagues, range: 1.678 to 3.962, or strongly agree to neutral, and this subconstruct had the largest standard deviation, indicating large variations in the responses of this sample. The mean for the conflict subscale ranged from 2.327 to 3.933, falling in the agree to neutral range, also indicative of moderate social capital in this subconstruct.

Second Victim Syndrome

Second victim syndrome is measured by the Second Victim Experience and Support Tool (SVEST), and like the SCON instrument was a five-point Likert scale: strongly disagree (1), disagree (2), neutral (3), agree (4) and strongly agree (5). Higher scores were indicative of higher SVS. The SVEST consisted of 25 questions across seven domains. The instrument also contains two outcome variables, each made up of two questions, and seven items intended to measure the preferred methods of support, but these three domains were not evaluated in this study. The means score for overall SVS was 2.74, with scores ranging between 2.138 and 3.342, within the disagree to neutral range, demonstrating that this sample had overall low to moderate SVS scores.

The subscale scores for psychological distress were the highest, ranging from 2.469 to 4.351, falling in the neutral to agree range, which indicated higher SVS in this domain. Further, this subscale had the highest score of any of the subscales Professional self-efficacy had scores ranging between 2.008 and 4.052, also falling in the disagree to

agree range. The standard deviation for professional self-efficacy was 1.022,

demonstrating increased variability in this subscale. Physical distress, like overall SVS,

fell in the disagree to neutral range, where scores ranged from 1.575 to 3.665, illustrating

a low to moderate amount of physical distress in this sample. Colleague support,

supervisor support institutional support and non-work support demonstrated relatively

similar results, with means of 2.42, 2.30, 2.88 and 2.36, respectively. These subscales all

fell within the strongly disagree to neutral range, indicating lower levels of agreement in

these subscales.

Summary

The descriptive statistics demonstrate the range of scores for this sample for each

instrument. Table 16 summarized the means, standard deviations and sample size for

each of the constructs of interest: psychological capital, social capital and second victim

syndrome, along with their subconstructs. The descriptive statistics indicate that this

sample had moderately high levels of overall psychological capital. The subconstructs of

psychological capital were also in the somewhat agree to agree range, except for

optimism. In this sample, optimism had lower scores in the somewhat disagree to agree

range, demonstrating that this sample had lower levels of optimism.

Overall social capital mean scores fell in the neutral range, indicating moderate

overall social capital. Internal trust and participation and affiliation had the highest mean

scores, indicating higher levels of internal trust with teammates and higher levels of

engagement with the overall nursing profession. Social cohesion had the lowest mean and

the greatest standard deviation, indicating nurses spend time in social settings with

colleagues, although the large standard deviation demonstrates some variability in the amount of social cohesion found in this sample.

Overall SVS was low to moderate in this sample, with higher levels of psychological distress and professional self-efficacy versus the other subscales, indicating that the respondents in this study had higher psychological distress and feelings of inadequacy related to their professional abilities. Physical distress, in this sample, was low to moderate. Support options, via colleagues, supervisors, institutions and outside of the work setting demonstrated low levels of agreement, thus, in this sample, support from a variety of sources is viewed positively and contributes to lower SVS. In the next section, the construct correlations are presented.

Construct Correlations

Prior to exploring the measurement model, Pearson product-moment correlations were calculated in SPSS v25 to determine the variables to be evaluated in SEM. Due to the large number of variables in this study, it was determined a priori that only subconstructs statistically significant correlated with overall SVS at $p < .01$ would be measured. The correlations between the subconstructs/constructs and SVS are presented in Tables 17-19. The correlations for the other two constructs, psychological capital and social capital are presented in Appendix E.

As seen in Table 17, the correlations between the subconstructs and constructs of SVS and psychological capital demonstrate a small to moderate inverse relationship between both constructs and subconstructs. The correlations between these two constructs were statistically significant at the $p < .01$ level, except for non-work support's correlation with psychological capital subconstructs of self-efficacy, resilience and

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optimism where the correlations were -.083, -.054 and -.073, respectively and only self-efficacy and optimism were statistically significant at $p < .05$. Given that all psychological capital subconstructs are statistically significantly related to overall SVS at $p < .01$, all subconstructs of psychological capital were tested in the structural equation model.

Table 17

Pearson's Product-Moment Correlation Table: SVS and Psychological Capital

	Overall SVS	Psych. Distress	Physical Distress	Colleague Support	Super. Support	Inst. Support	Non-work Support	Prof. Self-Efficacy
Overall PsyCap	-.430**	-.198**	-.268**	-.297**	-.299**	-.292**	-.111**	-.389**
Hope	-.334**	-.120**	-.181**	-.227**	-.248**	-.239**	-.150**	-.309**
Self-Efficacy	-.267**	-.099**	-.149**	-.177**	-.193**	-.203**	-.083*	-.256**
Resilience	-.389**	-.200**	-.279**	-.293**	-.248**	-.221**	-.054	-.356**
Optimism	-.432**	-.242**	-.284**	-.288**	-.297**	-.292**	-.073*	-.364**

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

Table 18 illustrates the correlations between SVS and its subconstructs and social capital and its subconstructs. Overall there is a small to moderate inverse correlations between overall SVS and social capital and its subconstructs. The correlations between overall SVS and social capital subconstructs is statistically significant at $p < .01$, except for social cohesion and conflict, which were statistically significantly correlated with overall SVS at the $p < .05$. Social cohesion and conflict from the social capital construct were excluded from the measurement model based on their lack of statistically significant correlation at $p < .01$ with overall SVS. Further, the statistically significant correlations for these two constructs were weak correlations, ranging between -.084 and -.110, which is traditionally viewed as a small effect size and further supports their removal from the model (Cohen, 1988).

Table 18

Pearson's Product-Moment Correlation Table: SVS and Social Capital

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	Overall SVS	Psych. Distress	Physical Distress	Colleague Support	Super. Support	Inst. Support	Non-work Support	Prof. Self-Efficacy
Overall SocCap	-.372**	-.117**	-.100**	-.313**	-.331**	-.405**	-.088**	-.246**
External Trust	-.304**	-.89**	-.118**	-.167**	-.332**	-.455**	-.002	-.170**
Part. & Affiliation	-.372**	-.177**	-.199**	-.245**	-.287**	-.352**	-.080*	-.280**
Internal Trust	-.330**	-.070*	-.172**	-.369**	-.339**	-.292**	-.076*	-.177**
Social Cohesion	-.077*	-.010	.023	-.105**	-.019	-.070*	-.109**	-.104**
Conflict	-.080*	-.002	-.038	-.103**	-.084**	-.110**	-.012	-.029

*Note. * p < .05; ** p < .01*

The subconstructs and construct correlations between SVS were also tested, as seen in Table 19. All the subconstructs and overall SVS were statistically significantly correlated at *p* < .01, except for non-work support, which was statistically significantly correlated with overall SVS and psychological distress at *p* < .01 but was uncorrelated or only correlated at *p* < .05 with the other SVS subconstructs. The correlations within SVS were positive, except for inverse correlations between non-work support and psychological distress, physical distress and professional self-efficacy. Non-work support was omitted from the measurement model based on its poor performance within the SVS construct, as demonstrated by its lack of statistically significant correlation with four of the other six subconstructs of SVS.

Table 19

Pearson's Product-Moment Correlation Table: SVS

	Overall SVS	Psych. Distress	Physical Distress	Colleague Support	Super. Support	Inst. Support	Non-work Support	Prof. Self-Efficacy
Overall SVS	1	.741**	.769**	.645**	.597**	.595**	.112**	.746* *
Psych. Distress	.741**	1	.649**	.314**	.199**	.277**	-.107**	.587**
Physical Distress	.769**	.649**	1	.407**	.263**	.244**	-.045	.534**
Colleague	.645**	.314**	.407**	1	.440**	.301**	.080*	.352**

Support								
Super. Support	.597**	.199**	.263**	.440**	1	.477**	.025	.213**
Inst. Support	.595**	.277**	.244**	.301**	.477**	1	.006	.303**
Non-work support	.112**	-.107**	-.045	-.080*	.025	.006	1	-.014
Prof. self-efficacy	.746**	.587**	.534**	.352**	.213**	.303**	-.014	1

Note. * *p* < .05; ** *p* < .01

Structural Equation Modeling

Structural equation modeling is conducted in two stages. The first involves the development of a measurement model, after which a structural or causal model is developed and tested (Gaskin, 2016d; Hair et al., 2014; Hox & Bechger, 1998; Kline, 2011; Lei & Wu, 2007; Mueller & Hancock, 2010; Sharif et al., 2018; Weston & Gore, 2016). In this study, structural equation modeling began with a measurement model that was based on the correlation analysis of the three constructs and subconstructs. Following testing of the measurement model and all subconstructs, the latent variables of SVS, psychological capital and social capital were added in to the measurement model to test the subconstructs and constructs.

After model fit was demonstrated with the latent measurement model, the structural model was built to explore the two research questions and the research hypothesis.

RQ1: "To what extent does the relationship between psychological capital and social capital combine to predict the severity of SVS experienced by registered nurses following a precipitating event?"

RQ2: "What are the relationships between the subconstructs of psychological capital, social capital and second victim syndrome?"

The null and alternate hypotheses for this study were as follows:

H_0: The combined contributions of psychological capital and social capital do not predict the severity of second victim syndrome experienced by registered nurses following a precipitating event.

H_a: The combined contributions of psychological capital and social capital predict the severity of second victim syndrome experienced by registered nurses following a precipitating event.

RQ2 was interested in the relationships of all the subconstructs, while RQ1and the study hypothesis sought to understand the relationship between the three overall constructs. Lastly, a group analysis was done to test for the differences between organization one and the other nursing organizations in the study given the large number of respondents from organization one. This section will present the measurement models and structural model developed and tested in this study.

Measurement Model

SEM requires that there are no missing values in the dataset to be analyzed. Imputation is acceptable to replace missing values, but given the large sample size and in the interest of conservatism, the decision was made to delete incomplete cases which resulted in a total sample size of 999 for SEM analysis (Gaskin, 2016b; Hair et al., 2014). Structural equation model is conducted in two steps, the first being the development of a measurement model, to identify factors of importance to the model and the second the development of a structural model to measure the relationships between these factors (Gaskin, 2016d; Hair et al., 2014; Lei & Wu, 2007; Mueller & Hancock, 2010; Weston & Gore, 2016).

In support of the research questions, the first measurement model was built containing all the subconstructs of psychological capital, social capital, and SVS, except for social cohesion, conflict and non-work support. These subconstructs were removed due to insignificant correlations with SVS at the $p < .01$ level, as presented earlier in Figure 4. Once the measurement model was fully built and tested, model fit was assessed. The overall model fit for the initial measurement model was not acceptable ($\chi^2 =$ 5153.324(1574) $p = .000$, χ^2/df = 3.274, CFI = .885, TLI = .876, SRMR = .0625, RMSEA = .048 with its associated $CI_{90\%} = .046, .049$). Therefore, secondary analyses were conducted to evaluate the reasons for poor model fit.

Secondary Analysis

Given the high correlation between psychological capital and social capital, an exploratory factor analysis of the two constructs was conducted in SPSS v25 to further explicate the relationship between the two constructs. Through the course of conducting the EFA, high covariances between items in the psychological capital and social capital constructs were identified in the measurement model, demonstrating some of the factors in each construct were loading more strongly with factors in the other construct (Gaskin, 2016a; Hair et al., 2014) some items from subconstructs within psychological capital and social capital were removed to reduce the covariances or improve the factor loadings for those constructs. Once the EFA was completed for psychological capital and social capital, they were loaded back in the measurement model for further testing. As a result of the poor model fit, convergent and discriminant validity testing was conducted.

Convergent and discriminant validity. According to Gaskin (2016a); Hair et al. (2014) convergent and discriminant validity are tested by three measures. Construct

reliability (CR) measures the overall reliability and internal consistency of the latent

construct and should be at least .70. Average variance extracted (AVE) is a measure of

explained variance within a latent construct to measure convergence amongst the items,

and results should be at least .50. Lastly, maximum shared variance (MSV) is a measure

of discriminant validity and assesses how well the items within a latent factor load only

to its construct and no other constructs. Results for MSV should be less than the AVE for

the same factor. Table 20 presents these validity measures.

Table 20

Convergent and Discriminant Validity of the Measurement Model

Subconstruct	CR	AVE	MSV
Institutional Support	0.828	0.618	0.278
Self-Efficacy	0.891	0.583	0.437
Optimism	0.829	0.552	0.489
Resilience	0.781	**0.475**	0.423
Internal Trust	0.826	0.546	0.325
Hope	0.888	0.665	0.489
External Trust	0.878	0.706	0.325
Participation/Affiliation	0.836	0.636	0.291
Physical Distress	0.854	**0.663**	**0.729**
Colleague Support	**0.512**	**0.263**	**0.500**
Prof. Self-Efficacy	0.855	0.601	0.473
Supervisor Support	0.877	0.645	0.299
Psychological Distress	0.772	**0.531**	**0.729**

As shown by the bolded items in Table 20, colleague support demonstrated poor

construct reliability (CR = 0.512), convergent reliability (AVE = 0.263) and discriminant

validity (MSV > AVE). Resilience demonstrated poor convergent reliability (AVE =

0.475) and psychological and physical distress demonstrated poor discriminant validity

between them (MSV > AVE).

The convergent and discriminant validity raised issues with three of the

subconstructs, and in conjunction with poor model fit demonstrated some issues with the

subconstructs and the items used to measure them, so further analysis was conducted. Colleague support was removed from the model based on the poor construct validity, discriminant and convergent validity. The items for the resilience subconstruct were reviewed and refined to improve AVE, and an EFA was conducted on physical distress/psychological distress to further understand the poor discriminant validity. Based on the EFA, a review of the items for physical and psychological distress was conducted. There was some clear overlap in the questions, thus physical distress and psychological distress were combined into one "distress' factor with one of the eight items being removed due to high covariance. The EFA resulted in seven items across one domain, accounting for 54.17% of the total variance explained, with a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy of .885 and a Bartlett's test of sphericity demonstrating a statistically significant χ^2 (4284.812(21), p = .000), which demonstrated the matrix was a good identity matrix (Gaskin, 2016c). Following these changes, the convergent and discriminant validity was tested a second time with no validity issues identified, as can be seen in Table 21.

Table 21

Convergent and Discriminant Validity of the Revised Measurement Model

Subconstruct	CR	AVE	MSV
Institutional Support	0.828	0.618	0.278
Self-Efficacy	0.891	0.583	0.437
Optimism	0.829	0.552	0.489
Resilience	0.771	0.531	0.408
Internal Trust	0.826	0.546	0.323
Hope	0.888	0.665	0.489
External Trust	0.878	0.706	0.323
Participation/Affiliation	0.836	0.636	0.291
Prof. Self-Efficacy	0.855	0.601	0.434
Supervisor Support	0.876	0.645	0.256
Distress	0.891	0.541	0.434

The correlation table for the measurement model subconstructs is provided in Table 22. There were no correlations between constructs that were greater than .70, which would indicate overlap between constructs (Gaskin, 2016c). Model fit was then tested and confirmed (χ^2 = 2612.339(890) p = .000, χ^2/df = 2.935, CFI = .933, TLI = .926, SRMR = .0531, RMSEA = .044, and its associated $CI_{90\%}$ = .042, .046) (Hair et al., 2014).

Table 22

Correlation Matrix: Measurement Model Subconstructs

	Inst Sup	SelfEff	Opt	Resil	Int Trst	Hope	Ext Trst	Par tAff	Prof Eff	Sup Sup	Dist
InstSup	**0.786**										
SelfEff	-0.243	**0.763**									
Opt	-0.342	0.480	**0.743**								
Resil	-0.206	0.534	0.639	**0.728**							
IntTrst	-0.334	0.346	0.433	0.346	**0.739**						
Hope	-0.302	0.661	0.699	0.630	0.426	**0.816**					
ExtTrst	-0.527	0.359	0.466	0.239	0.568	0.371	**0.840**				
PartAff	-0.429	0.461	0.524	0.363	0.433	0.539	0.522	**0.797**			
ProfEff	0.341	-0.269	-0.372	-0.278	-0.182	-0.367	-0.183	-0.293	**0.775**		
SupSup	0.506	-0.213	-0.260	-0.250	-0.340	-0.300	-0.345	-0.298	0.205	**0.803**	
Dist	0.297	-0.176	-0.242	-0.205	-0.187	-0.231	-0.154	-0.206	0.659	0.255	**0.736**

The final measurement model is presented in Figure 6. The measurement model was then transformed to a latent measurement model to explore the relationships and covariances between the subconstructs and overall constructs.
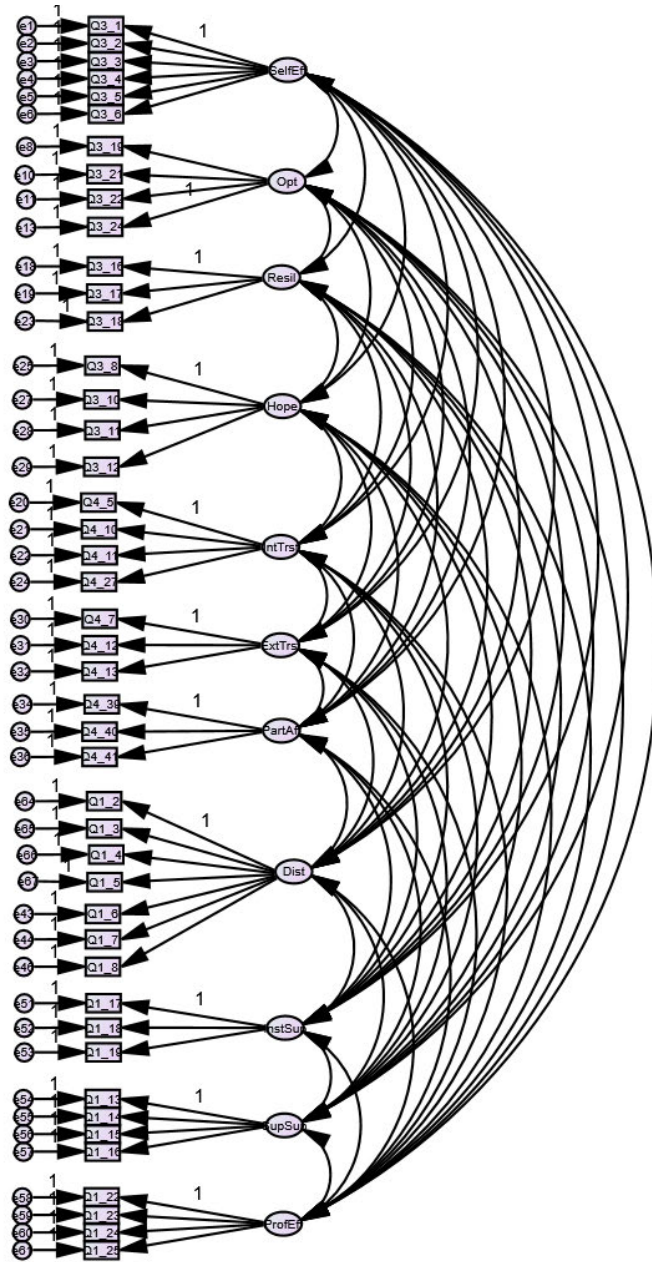

Figure 6. Final Measurement Model

Latent Measurement Model

The revised measurement model was transformed into a latent measurement model by adding the constructs of psychological capital, social capital and SVS, with the remaining subconstructs to test their relationships. The latent measurement model is shown in Figure 7. The latent model demonstrated borderline model fit (χ^2 = 3166.893(931) p = .000, χ^2/df = 3.402, CFI = .914, TLI = .908, SRMR = .0671, RMSEA = .049, and its associated $CI_{90\%}$ = .047, .051) however large covariances were identified between the distress and professional efficacy subconstructs within the SVS construct (Hair et al., 2014). Burlison et al. (2016); Quillivan et al. (2016) provide theoretical support for this relationship when they noted that the two distress subconstruct and the professional efficacy construct were the three 'distress' factors of the SVEST instrument, which intimates the relatedness of the items in measuring individual distress as a factor of SVS. Further, there was discriminant and construct validity of these two constructs, yet the correlation between these two subconstructs was moderately high at 0.659 (see Table 19), further supporting they are separate but highly related subconstructs.

Given this theoretical support and the empirical support of the acceptability of this action, (Brown, 2006; Gaskin, 2016a; Kenny, 2011; Kline, 2011; Marsh, Morin, Parker, & Kaur, 2014) the two subconstructs were combined into a second order factor within SVS and model fit was assessed. The final latent measurement model demonstrated good model fit (χ^2 = 2899.812(930) p = .000, χ^2/df = 3.118, CFI = .924, TLI = .919, SRMR = .0585, RMSEA = .046, with a $CI_{90\%}$ = .044, .048) and was transformed to a structural model (Hair et al., 2014).

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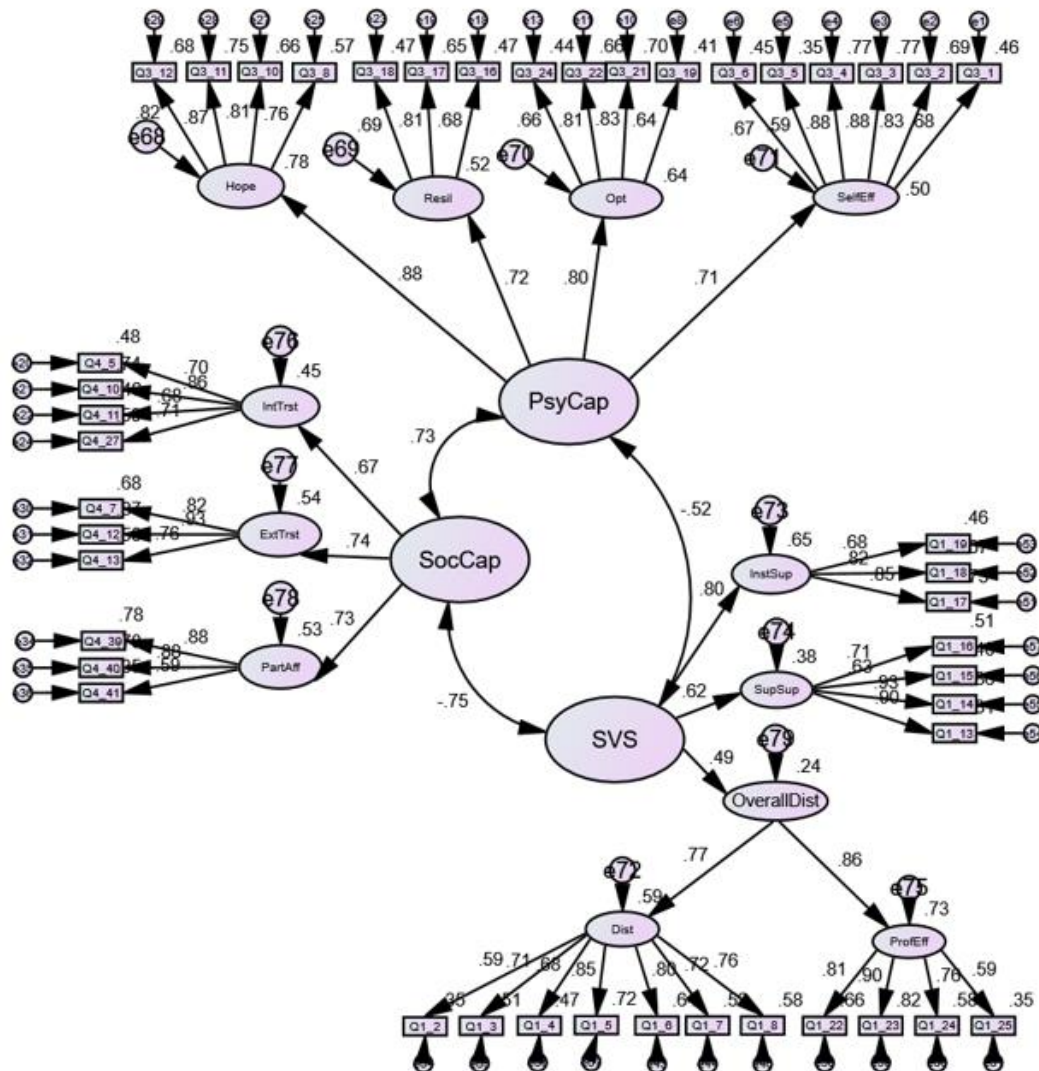
Figure 7. Latent measurement model

Table 23 presents the standardized and unstandardized factor loadings, variances explained (R^2) values, the standard error and the *z* test for each subconstruct. As the table shows, the factor loading for each subconstruct was large and statistically significant at *p* < .001, thus indicating the relationship between the factor and its latent variable is significant, and thereby supporting their inclusion in the latent measurement model. Furthermore, the factor variances explained, measured by R^2, were moderate to large

(range .24 to .78). The factor variance is an estimate of the lower-bound on the reliability

of the factor; that is, the amount of variance explained by the factor. Lastly, the SE/R^2 is

the test statistic, or z value, of the subconstructs, and z values below 1.96 are non-

significant and should be removed (Brown, 2006). The z values for each subconstruct are

above 1.96, further supporting their inclusion in the measurement model.

Table 23

Final Subconstruct Factor Loadings in Latent Measurement Model

Construct	# Items	B*	β	R^2	SE	R^2/SE
PsyCap						
Hope	4	1.00	.88	.78	-	-
Self-Efficacy	6	.51	.71	.50	.03	16.67
Resilience	3	.70	.72	.53	.05	10.60
Optimism	4	.76	.80	.64	.05	12.80
SocCap						
External Trust, Solidarity and Empowerment	3	.89	.74	.54	.06	9.00
Participation & Affiliation	3	1.00	.73	.53	-	-
Internal Trust, Solidarity and Harmony	4	.56	.67	.45	.04	11.25
SVS						
Overall Distress	11	.72	.49	.24	.08	3.00
Supervisor Support	4	1.00	.62	.38	-	-
Institutional Support	3	1.46	.80	.65	.11	5.91

Note. *Unstandardized factor loadings. All factor loadings are statistically significant at *p* < .001

Structural Model: Direct Effects of Psychological Capital and Social Capital on SVS

The latent measurement model was transformed into an initial structural model to

explore the direct relationships between psychological capital, social capital and SVS, to

test the individual contributions of each independent variable, psychological capital and

social capital on the dependent variable, SVS, before moving to the test of the combined

relationship of the two constructs on SVS. The model fit for this structural model was

good (χ^2 = 2899.812(930) *p* = .000, χ^2/df = 3.118, CFI = .924, TLI = .919, SRMR =

.0585, RMSEA = .046, with a CI$_{90\%}$ = .044, .048) (Hair et al., 2014). The full structural

model is presented in Figure 8.

Table 24 summarizes the unstandardized and standardized regression weights,

standard errors, and *p* values for each of the constructs, as well as the squared multiple

correlations (R^2) for relevant constructs. Psychological capital and social capital

separately accounted for 57% of the variance of SVS. All unstandardized and

standardized regression weights for subconstructs and overall constructs were statistically

significant at *p* < .001 except for the path from psychological capital to SVS (*p* = .361).

The unstandardized regression weights (B) indicate that a one-unit increase in

psychological capital results in a .049 unit increase in overall SVS and a one-unit

increase in social capital corresponds to a .616 unit drop in overall SVS. The standardized

regression weights indicate that social capital has the largest effect of the two

relationships (β = -.801, *p* < .001).

Table 24

Direct Effects Structural Model Regression Weights, Standard Errors and Statistical
Significance

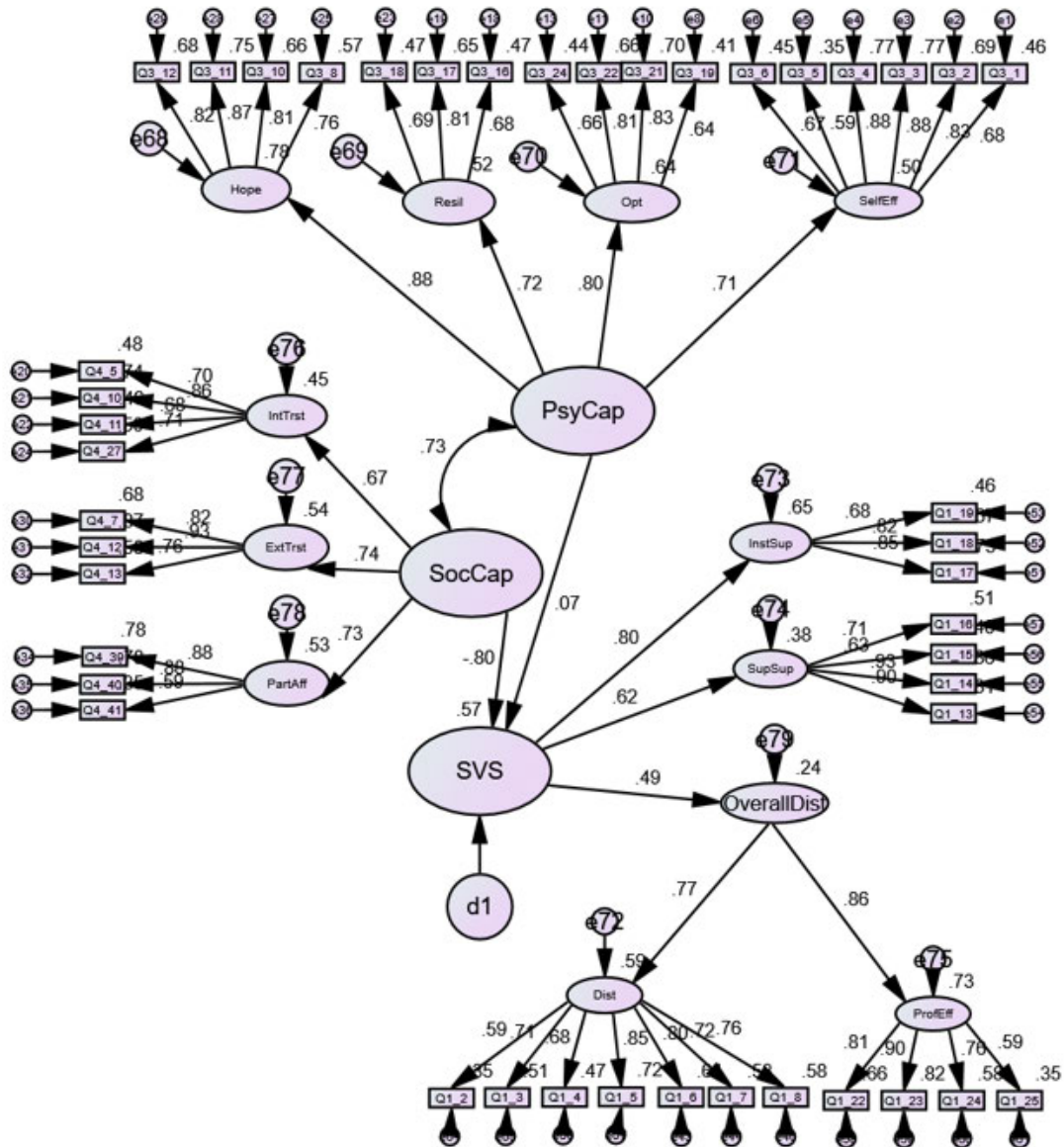| Construct	B	β	S.E.	*p* value	R^2
PsyCap → SVS	.049	.067	.054	.361	-
SocCap → SVS	-.616	-.801	.073	< .001	-
SVS	-	-	-	-	.57

Figure 8. Direct effects structural model

Structural Model: Combined Effect of Psychological Capital and Social Capital on SVS

The final structural model was developed and tested to measure the indirect

relationships between psychological capital, social capital and SVS, to answer the

research questions and to test the research hypothesis.

RQ1: "To what extent does the relationship between psychological capital and social capital combine to predict the severity of SVS experienced by registered nurses following a precipitating event?"

RQ2: "What are the relationships between the subconstructs of psychological capital, social capital and second victim syndrome?"

The null and alternate hypotheses for this study were as follows:

H_0: The combined contributions of psychological capital and social capital do not predict the severity of second victim syndrome experienced by registered nurses following a precipitating event.

H_a: The combined contributions of psychological capital and social capital predict the severity of second victim syndrome experienced by registered nurses following a precipitating event.

This model tested the combined relationship of the independent variables social capital and psychological capital on the dependent variable, SVS. The indirect effects were measured through bootstrapping, with bootstrapping resamples set to 5000. The model fit for this structural model was good ($\chi^2 = 3013.166(931)$ $p = .000$, $\chi^2/df = 3.236$, CFI = .920, TLI = .914, SRMR = .0613, RMSEA = .047, with a $CI_{90\%} = .045, .049$) (Hair et al., 2014). The combined relationship structural model is presented in Figure 9 and demonstrates that social capital positively affects psychological capital and the combined effect of psychological capital and social capital inversely impacts the severity of overall SVS.
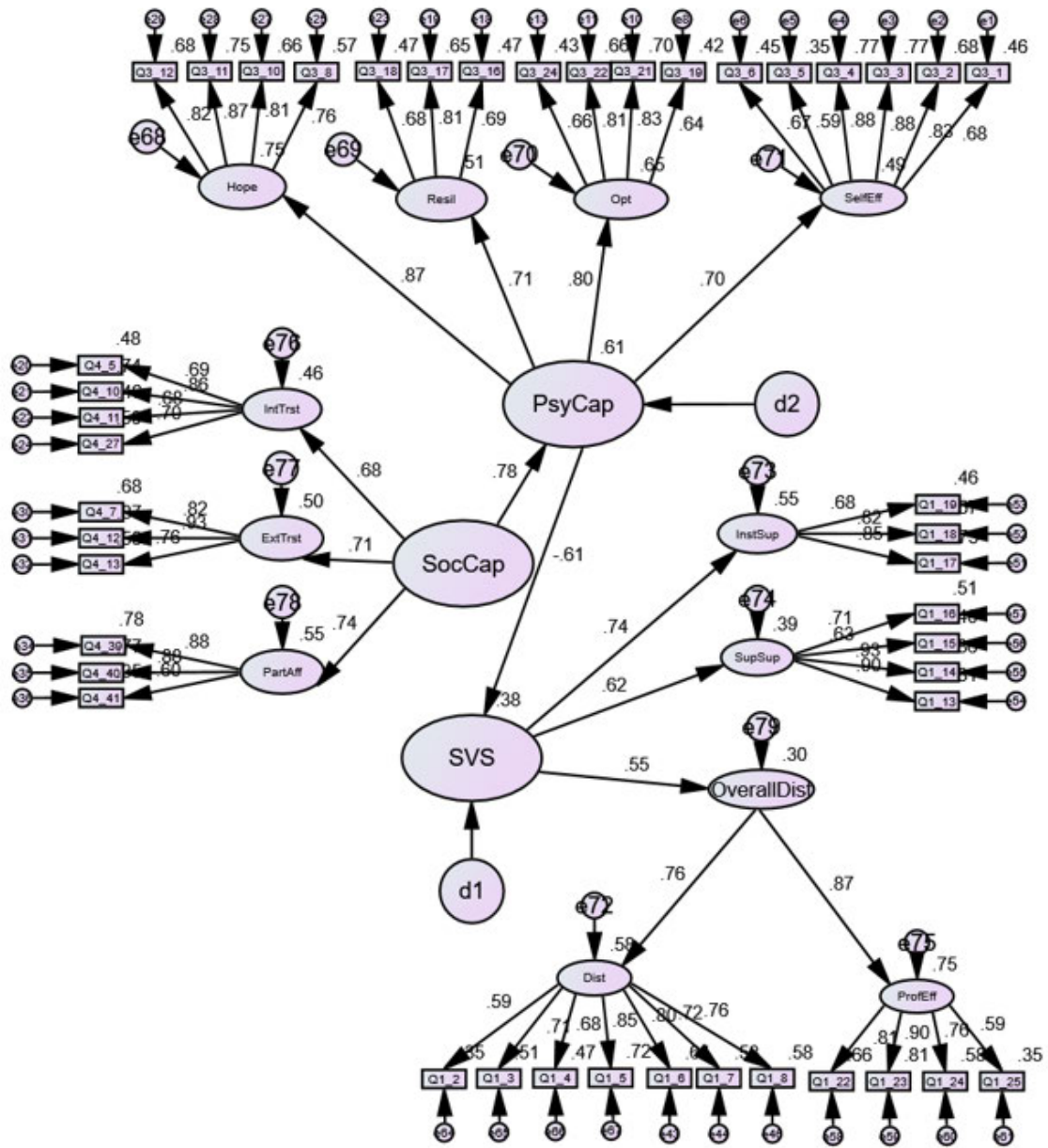
Figure 9. Structural model: Combined effect of PsyCap and SocCap on SVS

As shown in Table 25, the effect of psychological capital on SVS is significant (β = -.365, CI_{95} = -.431, -.3009, p = .001). In this model, social capital accounted for 60.6% of the variance in PsyCap, while psychological capital and social capital combined accounted for 37.6% of the variance in SVS. All standardized regression weights in the model were statistically significant at $p < .001$. Thus, the null hypothesis is rejected. In

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this model, a one-unit increase in psychological capital results in a .460 unit decrease in overall SVS severity, while a one unit increase in social capital results in a .794 unit increase in overall psychological capital scores.

Table 25

Combined Structural Model Regression Weights, Standard Errors and Statistical Significance

Construct	B	β	S.E.	*p* value	R^2
SocCap → PsyCap (A)	.794	.778	.055	< .001	.606
PsyCap → SVS (B)	-.460	-.613	.041	< .001	.376
Indirect Effect A x B	-	-.365	-	.001	-

Group Effect

Finally, given the large number of nurses in the sample from one organization, the models were run to test for group effects. A Student's t-test was conducted on the data in SPSS v25 prior to the SEM analysis, which showed no significant differences between the two groups except for in the subconstructs of self-efficacy and hope, the overall psychological capital score, and the participation and affiliation and conflict subconstructs in the social capital construct as shown in Table 26. Multigroup analysis was conducted in AMOS v25 for both models and demonstrated a statistically significant χ^2 difference between the groups (Model 1: Cmin = 54.534(38) *p* = .04; Model 2: Cmin = 55.251(36), *p* = .021).

Table 26

Student's t-test results from SPSS

Construct	t-test(df)	p
Self-efficacy	-5.610(1153)	.000
Hope	-2.109(1146)	.035
PsyCap	-3.211(1104)	.001
Participation and affiliation	-7.083(1144)	.000
Conflict	2.341(1147)	.019

The group differences were explored further in AMOS v25. The χ^2 difference was tested for all subconstructs and overall constructs in both models. There was no statistically significant χ^2 difference in the direct effect structural model (Cmin = 12.781(9), *p* = .173) or in the combined structural model (Cmin = 12.234(7), *p* = .093). Given the significant model differences do not occur at the subconstruct or construct level, no further analysis of group differences was conducted because any differences were insignificant at those levels. In Chapter 5, the interpretations, conclusions and recommendations are presented.

Chapter 5: Interpretations, Conclusions and Implications

This chapter interprets the results obtained and reported in Chapter 4 and goes on to provide conclusion and implications. In the next section, a brief overview of the study, the research questions and study hypothesis are provided. Subsequently, the findings are interpreted in the context of the theories on psychological capital, social capital and second victim syndrome. In the third section, overall conclusions are drawn and shared and lastly, implications for instrumentation, theory, research and practice are presented.

Study Purpose and Research Questions

This ex post facto, non-experimental, cross-sectional research study was undertaken to explore the relationship between psychological capital and social capital and their combined impact on the severity of second victim syndrome in registered nurses following a precipitating event. This study consisted of three valid and reliable instruments tested via survey methodology in registered nurses across the United States. The conceptual framework is provided in Figure 10.

Research question one aimed to test the relationship between psychological capital and social capital and their combined impact on the severity of SVS experienced, while research question two sought to explicate and understand the relationships between the constructs and subconstructs of psychological capital, social capital and second victim syndrome. The null hypothesis for the study was: The combined contributions of psychological capital and social capital do not predict the severity of second victim syndrome experienced by registered nurses following a precipitating event. The alternate hypothesis was: The combined contributions of psychological capital and social capital

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predict the severity of second victim syndrome experienced by registered nurses

following a precipitating event.
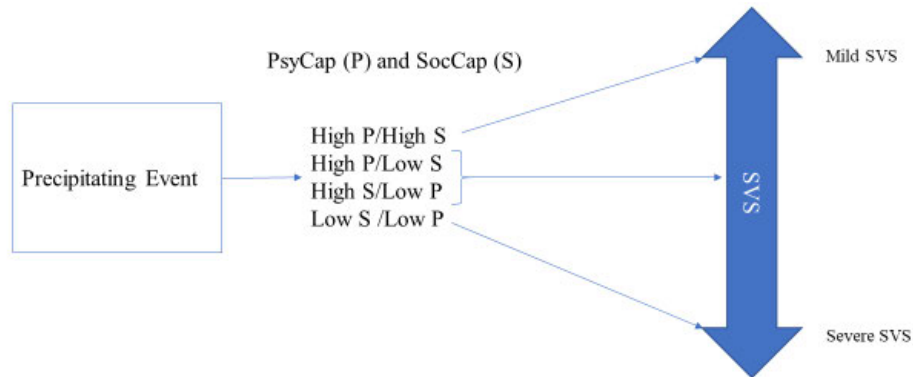
Figure 10. Conceptual framework

      The survey was distributed through 12 participating nursing associations in the

United States. The potential sample size is unknown because each association had its own

method of survey dissemination, as seen in Appendix C, but it is estimated that the

survey invitation was available to approximately 225,000 registered nurses. Most of the

associations disseminated the research study by posting the study on their website and/or

including the research link via an electronic newsletter. As a result, not all members of

the association were notified of the research study; the notification would have depended

on their engagement with the association and its website, newsletters and social media.

There were 1167 nurses that completed the survey with sufficient data for SPSS analysis.

Data was screened and cleaned in SPSS v25 and descriptive statistics and Pearson

product-moment correlations of the three constructs were conducted. Following removal

of incomplete cases, the data from 999 cases was transferred to AMOS v25 for SEM analysis.

In this study, it was hypothesized that social capital and psychological capital combine to influence the severity second victim syndrome has on a registered nurse following a precipitating event. This hypothesis was theoretically grounded in the literature on psychological capital and second victim syndrome. For example, Luthans, Youssef, et al. (2007) note that self-efficacy can be altered based on another's assessment. While a nurse may have a strong level of baseline self-efficacy, following a precipitating event, someone else's feedback or assessment of him/her can diminish their self-efficacy. Furthermore, there is evidence that resilience is also influenced by an individual's support network and social capital (F. Luthans et al., 2006). In examining the antecedents of psychological capital, Newman et al. (2014) conducted a meta-analysis of 66 psychological capital studies, of which 60 were empirical, and found that workplace support, supervisor support, buddying and a supportive workplace culture were associated with higher levels of psychological capital.

The literature on SVS also demonstrated significant evidence and support for the role social support plays in an individual's emotional status following a precipitating event. There is clear evidence that social support influences the emotional reaction a clinician has to a precipitating event (Burlison et al., 2016; Cabilan & Kynoch, 2017; Chan, Khong, & Wang, 2017; Mira et al., 2015; Pinto et al., 2013; Quillivan et al., 2016; Rassin et al., 2005; Rodriquez & Scott, 2018; Schiess et al., 2018; Scott et al., 2010; Seys et al., 2012; Ullström et al., 2014; Winning et al., 2018). While significant theoretical support exists on the relationship between psychological status and social support, there

have be no quantitative studies identified that explore the relationship between psychological status and social support, measured by psychological capital and social capital, following a precipitating adverse event. This research study was undertaken to conduct this quantitative analysis of the relationships between psychological capital, social capital and second victim syndrome in registered nurses following a precipitating event.

Summary of Key Findings

Given the importance of theory to structural equation modeling, this section begins with a summary of the theoretical foundation and support for the structural equation modeling and decisions made during the analysis.

Subconstructs Included in Measurement Model

Research Question 2 sought to understand the relationships between the subconstructs of psychological capital, social capital, and SVS to further the body of knowledge on the relationship between these three constructs. Research Question 2 was best answered through an analysis of the initial measurement model, where the subconstructs and their relationships were tested and the second measurement model, where the subconstructs and their relationship to the overall constructs were tested. Given the large number of subconstructs in this study, an a priori decision was made to only include subconstructs that were statistically significantly correlated with SVS at the $p <$ .01 level. This decision was made to reduce the evaluation of spurious constructs. As a result of this decision, the social cohesion and conflict subconstructs of the social capital construct and the non-work support subconstruct from the SVS construct were excluded from the measurement model.

The literature supports the removal of non-work support from the model, noting that clinicians have indicated that support outside of the workplace is less helpful to their ability navigate their distress following a precipitating event because non-clinicians do not understand the practice environment and there are limitations on what the nurse is able to share, for privacy and confidentiality reasons (Cabilan & Kynoch, 2017; Scott et al., 2009; Scott et al., 2010; Seys et al., 2013; Ullström et al., 2014).

More surprising is the lack of statistically significant correlation with social cohesion and overall SVS. The literature demonstrates a clear need for impacted clinicians to have supportive colleagues, supervisors and institutions. In this sample, the mean score for social cohesion was 2.82 with a wide standard deviation (1.142), demonstrating that some respondents had low social cohesion with colleagues while others had higher levels of social interaction. This variability and spread could account for the results in this study. It bears consideration and future exploration if a nurse's professional relationships are more important than strong personal ones, such as would be found with social cohesion. It could be that nurses are apt to consider close personal friends/colleagues in the same way they consider friends and family. The bond between them is much stronger and they would expect emotional support from them in the face of an error. The response of other colleagues, their supervisor and the institutional management becomes more important for their recovery and their interpretation of how they are viewed as professionals, and therefore their ability to continue as a fully functioning member of the team (Cabilan & Kynoch, 2017; Scott et al., 2009; Scott et al., 2010; Seys et al., 2013; Ullström et al., 2014).

Conflict was measured with three questions in the SCON instrument that gauged conflict at the unit, institutional and national level. In this study, these questions had little correlation with overall SVS. This result was also somewhat surprising, given that a blaming culture is a significant factor in the development of SVS. The conflict subconstruct was statistically significantly related with colleague support, supervisor support and institutional support at the $p < .01$ level, however the correlations were quite small at -.103, -.084 and -.110, respectively. These correlations demonstrate small effect sizes, and thus while they were statistically significant, they were practically insignificant due to their effect sizes (Cohen, 1988).

Convergent and Discriminant Validity

According to Gaskin (2016a); Hair et al. (2014) convergent and discriminant validity are tested by three measures. Construct reliability (CR) is a measure of overall reliability and internal consistency of the latent construct and should be at least .70. Average variance extracted (AVE) measures the explained variance within a latent construct to measure convergence amongst the items, and results should be at least .50. Lastly, maximum shared variance (MSV) is evaluates discriminant validity and assesses how well the items within a latent factor load only to its parent construct. Results for MSV should be less than the AVE for the same factor.

Psychological and social capital. Social capital and psychological capital are related constructs within the theory on capital as an organizational competitive advantage (Luthans et al., 2004; Luthans & Youssef, 2004). While they are related, there are distinct differences between them, primarily that psychological capital is an internally focused capital that explains psychological well-being, while social capital is external and outside

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of the control of an individual (Coleman, 1988; Grootaert et al., 2004; Kreuter & Lezin, 2002). While some conceptual overlap is understandable, they are separate and distinct constructs. This is supported by the Pearson product-moment correlations between the two overall subconstructs, $r = .543$, $p < .01$. The correlation was moderately positive and statistically significant yet not large enough to indicate conceptual overlap, which occurs when correlations exceed .70 (Gaskin, 2016a).

During analysis of the measurement model, convergent and discriminant validity issues demonstrated some overlap between subconstructs in psychological capital and social capital, which required secondary analysis through an exploratory factor analysis, and resulted in the removal of some of the questions, or items, from some of the constructs. The final constructs for the measurement model and the number of items retained in each subconstruct was presented earlier in Table 23. Convergent and discriminant validity are critical analyses conducted during the measurement model evaluation in SEM to ensure each construct is measuring what it intends to measure, that there is not cross-loadings between items in two or more different constructs and that the items within a construct are convergent, or related (Gaskin, 2016a; Hair et al., 2014).

Colleague support. The convergent and discriminant validity testing during the measurement model evaluation demonstrated ongoing issues with the subconstruct of colleague support within the SVEST. Colleague support demonstrated poor composite reliability (CR = .512), convergent reliability (AVE = .263) and discriminant validity (MSV > AVE) (Gaskin, 2016a; Hair et al., 2014). These results demonstrated that, despite the importance of colleague support to an individual nurse's SVS severity, the items in the SVEST intended to measure colleague support only accounted for

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approximately 26% of the variance in that construct, meaning that approximately 74% of the variance was a result of error. Further, items within colleague support loaded strongly to other subconstructs in the model. Upon evaluating the modification indices for colleague support, significant covariances were seen between this construct and the subconstructs of psychological distress, physical distress and professional self-efficacy. Thus, colleague support, as currently structured in the SVEST and tested in this sample, does not sufficiently measure colleague support with enough discrimination and convergence and, therefore, it was removed from analysis.

      Psychological and physical distress. The last convergent and discriminant validity issue uncovered in the analysis of the measurement model was the lack of discriminant validity between psychological and physical distress. The constructs are related, as demonstrated in the empirical literature where physical and psychological distress, in combination with professional self-efficacy were identified as the distress outcomes of the SVEST (Burlison et al., 2016; Quillivan et al., 2016). Further, during the development of the SVEST, the authors noted that some items had interrater reliability less than 70%, and one of the items was 'My experience with these occurrences can make it hard to sleep regularly', which as noted by the authors "… was attributed to either physical distress or psychological distress, which is expected given the potential effect of psychosomatic responses" (Burlison et al., 2017, p. 95). Ultimately the authors decided to leave it unchanged as a question within physical distress, but this is clear evidence of the high covariance between psychological and physical distress.

      An exploratory factor analysis was conducted to explore the relationships between psychological and physical distress. Following testing of various models, the best results

were obtained by combining physical distress and psychological distress into one overall distress variable. Combining these items into one construct is supported by the literature and the definition of psychosomatic illness (Burlison et al., 2016; Quillivan et al., 2016). Psychosomatic illness is defined as "… of, relating to, involving, or concerned with bodily symptoms caused by mental or emotional disturbance" (Merriam-Webster, 2018). In psychosomatic illness, physical symptoms result from psychological distress, and it is a well-known medical phenomenon. Given the sample of this study is registered nurses, they would have significant knowledge of this phenomenon and it might have contributed to the high covariance due to the way they interpreted the questions. The theoretical support, coupled with the analytical results of the exploratory factor analysis, both provided compelling evidence for the combination of these two subconstructs.

Latent Measurement Model

The latent measurement model added the constructs of overall psychological capital, social capital and SVS into the model. The latent measurement model added the ability to look at covariances between and amongst the constructs and subconstructs. In doing so, large covariances were identified between the overall distress construct and professional self-efficacy within the SVS construct. As noted above, empirical support for this covariance is evident in other studies using the SVEST (Burlison et al., 2016; Quillivan et al., 2016).

While there is some literature support for covarying error terms on highly covaried constructs within the same factor, the overwhelming position in the literature is that doing so is not acceptable (Gaskin, 2016a; Hermida, 2015). Conversely, there is empirical support for including a second order factor to manage high covariances

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between subconstructs (Brown, 2006; Gaskin, 2016a; Kenny, 2011; Kline, 2011; Marsh et al., 2014). The decision was made, supported theoretically and methodologically, to include a second order factor in SVS called overall distress, made up of the distress and the professional self-efficacy subconstructs.

The final latent model is provided in Figure 11 and demonstrates the relationships between the subconstructs of psychological capital, social capital and second victim syndrome, as well as the model fit statistics.
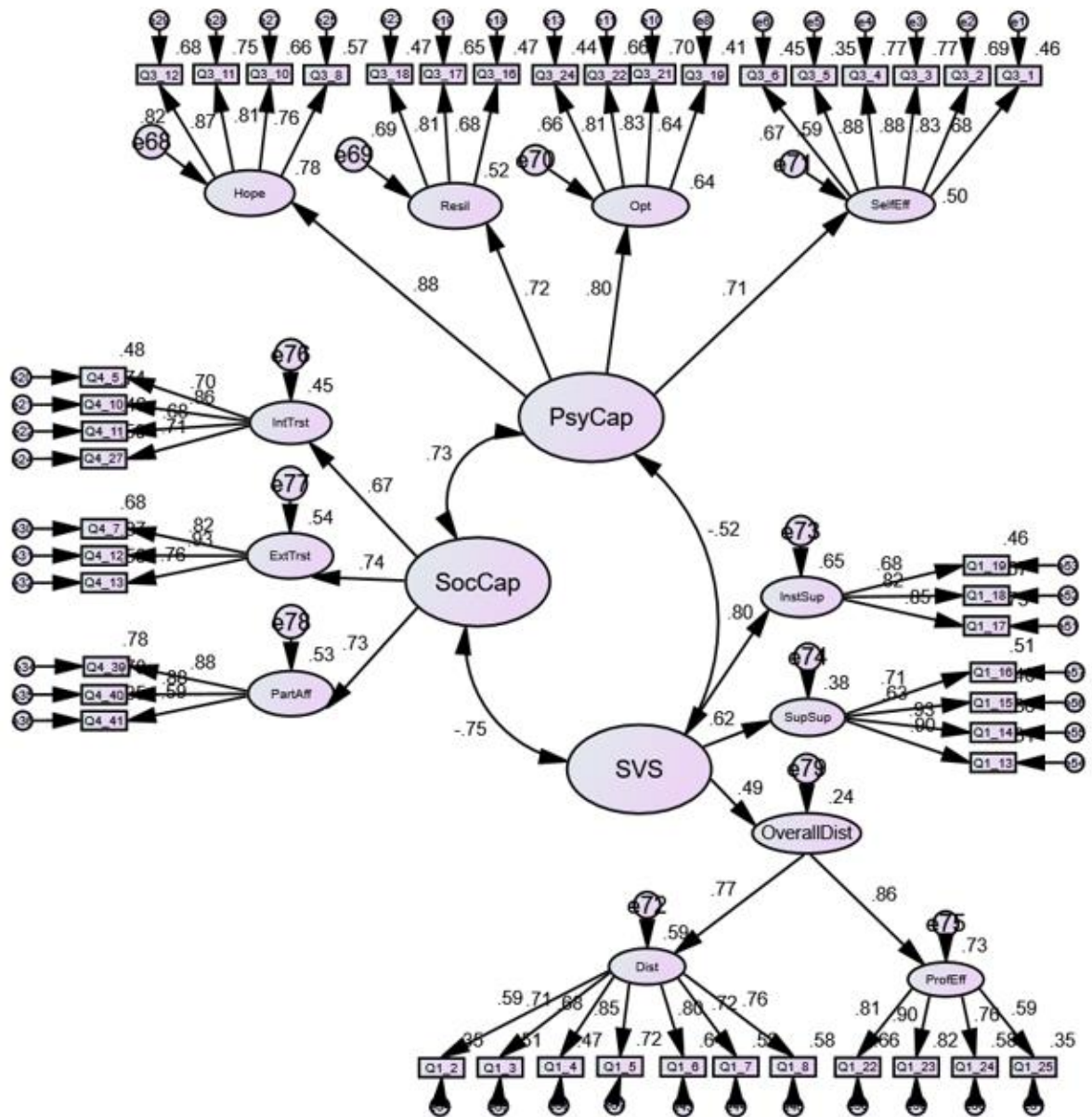
Figure 11. Latent measurement model. The final latent measurement model demonstrated good model fit ($\chi 2 = 2899.812(930)$ p = .000, $\chi 2/df = 3.118$, CFI = .924, TLI = .919, SRMR = .0585, RMSEA = .046, with a CI90% = .044, .048).

Structural Models

Prior to testing RQ1 and the study hypothesis, a structural model was developed

to test the direct effects of both psychological capital and social capital on SVS, as shown

in Figure 12.
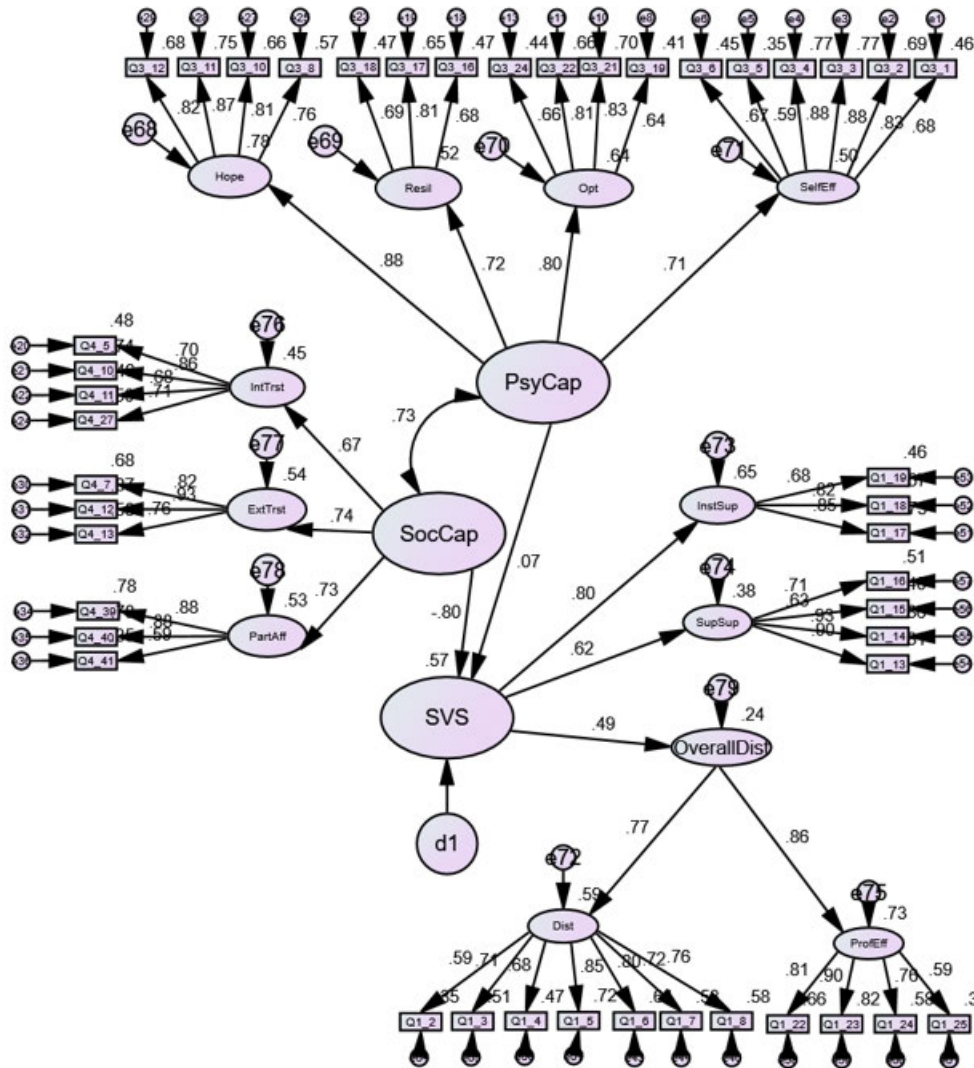
Figure 12. Structural model of direct effects of both PsyCap and SocCap on SVS. The paths were all statistically significant except for PsyCap → SVS (p = .361). Model fit was good ($\chi2$ = 2899.812(930) p = .000, $\chi2/df$ = 3.118, CFI = .924, TLI = .919, SRMR = .0585, RMSEA = .046, with a CI90% = .044, .048).

This structural model was tested prior to the model of interest to the study hypothesis to provide the necessary context and understanding of the relationship each independent variable had with the dependent variable, SVS. This model demonstrated that psychological capital did not have a direct effect on SVS (β = .067, *p* = .361) but social

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capital did have a direct effect on SVS (β = -.801, p < .001). Social capital predicted 56.8% of the variance in overall second victim syndrome.

To answer RQ1 and test the research hypothesis, a structural equation model was tested for the combined effect of the independent variables, psychological capital and social capital on the dependent variable, SVS. Compelling theoretical and empirical evidence exists in the second victim syndrome literature that supports the hypothesis that social capital and psychological capital combine to predict SVS severity following a precipitating event. Specifically, the literature on SVS indicates that social support will influence an individual's psychological state and will then influence their ability to recover following a precipitating event (Burlison et al., 2016; Cabilan & Kynoch, 2017; Chan et al., 2017; Mira et al., 2015; Pinto et al., 2013; Quillivan et al., 2016; Rassin et al., 2005; Rodriquez & Scott, 2018; Schiess et al., 2018; Scott et al., 2010; Seys et al., 2012; Ullström et al., 2014; Winning et al., 2018).

There are six stages of SVS as initially identified by Scott et al. (2009), which have since been reinforced in numerous other studies (Clancy, 2012; Kable et al., 2018; Pratt & Jachna, 2015; Rassin et al., 2005; Schiess et al., 2018; Sirriyeh et al., 2010). Following a precipitating event, the nurse moves from appraising the situation, where awareness of the incident or error occurs, immediate action is needed to provide the necessary patient care/treatment, followed by intrusive reflections where the nurse re-evaluate and relive the event and often engages in self-blame (Davidson et al., 2015; Schiess et al., 2018). The clinician often experiences immediate psychological and physical symptoms at this stage.

The next three stages focus on dealing with the outcome of the precipitating event and include restoring personal integrity, enduring the inquisition and obtaining emotional first aid. In these three stages, the author theorizes that the support available to them and how they are treated by their colleagues, management, and the larger nursing profession will influence how they feel about themselves and will directly influence the severity of second victim syndrome experienced. This theorizing has been supported by recent empirical work by Rodriquez and Scott (2018) who conducted the first known study in practitioners that left the profession following a precipitating event. Their findings, in part, demonstrated "… consistent with prior research, clinicians reported a pattern of inadequate social support after an adverse clinical event" (p. 138).

Following these three stages, the clinician moves through the final stage of moving on and one of three possible trajectories is chosen by the practitioner: thriving, where the clinician is able to move on from the event with clarity and insight; surviving, where the healthcare worker continues working but with ongoing psychological and possible physical symptoms; and dropping out, where the provider leaves the profession or transfers to another unit or institution and continues to suffer with feelings of inadequacy and psychological distress (Clancy, 2012; Kable et al., 2018; Pratt & Jachna, 2015; Rassin et al., 2005; Schiess et al., 2018; Scott et al., 2009; Sirriyeh et al., 2010). As noted above, recent research from Rodriquez and Scott (2018) provides clear evidence supporting the literature which indicates that the social support available to an individual practitioner following a precipitating event impacts the moving on path that is chosen by a practitioner.
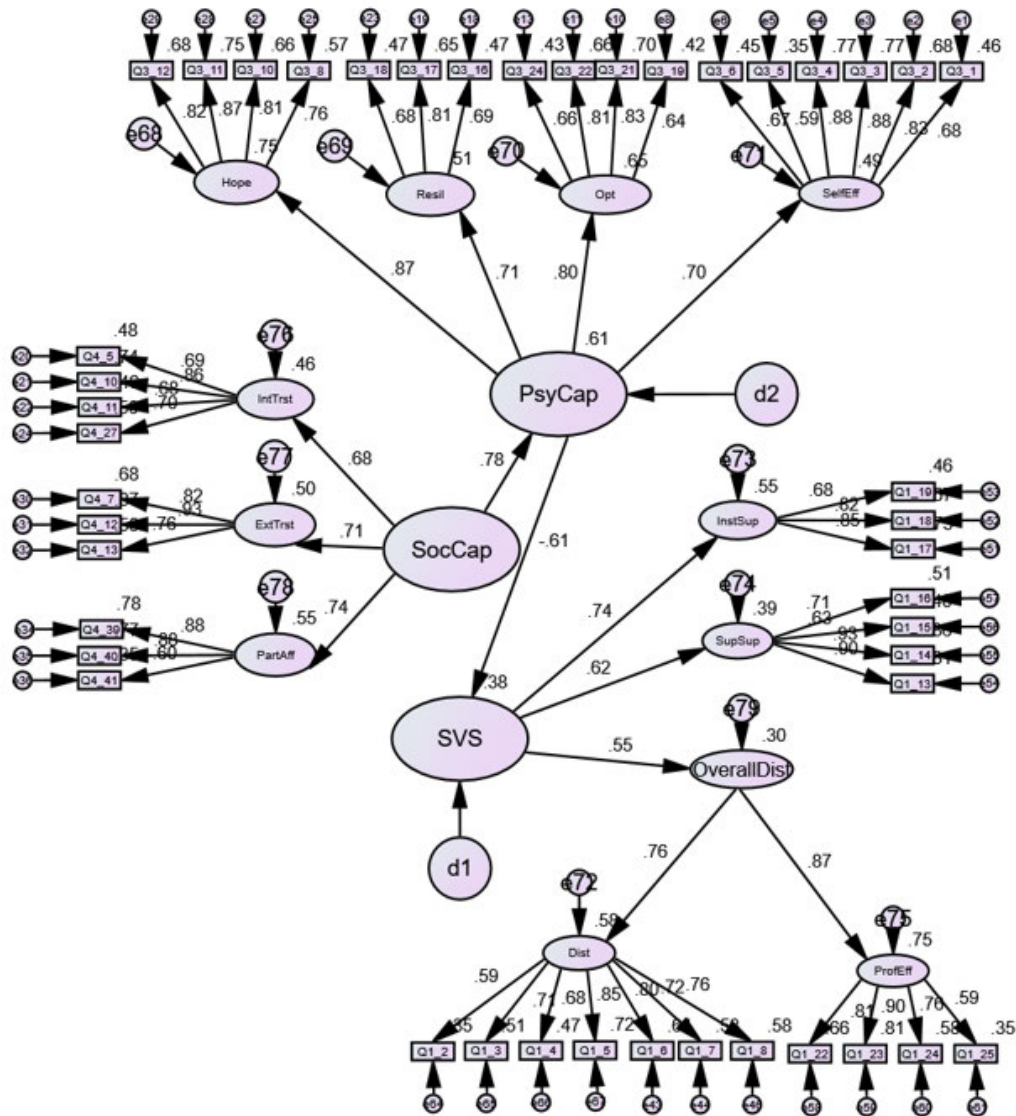
Figure 13. Structural model of the combined relationship between PsyCap, SocCap and SVS. The paths in this model were all statistically significant at p < .001. The combined effect of PsyCap and SocCap with SVS is β = -.365, CI95: -.431, -.300, p = .001. Model fit was good (χ2 = 3013.166(931) p = .000, χ2/df = 3.236, CFI = .920, TLI = .914, SRMR = .0613, RMSEA = .047, with a CI90% = .045, .049).

The structural model is provided in Figure 13. The model measures the combined effect of both psychological capital and social capital on second victim syndrome, tested via bootstrap indirect effects of social capital on psychological capital. As the results demonstrate, social capital and psychological capital combine to predict 38% of the

variance in second victim syndrome, which is statistically significant at $p = .001$. The indirect effect of social capital and psychological capital on second victim syndrome is statistically significant ($\beta = -.365$, $CI_{95} = -.431, -.300$, $p = .001$). There is a positive relationship between social capital and psychological capital such that with every unit increase in social capital, there is a .794 unit increase in psychological capital ($p = .001$). Said another way, for every one-unit increase in an individual's overall social capital score, with higher scores representing higher levels of social capital, their overall psychological capital score increases by .80 units, which is quite significant.

For every unit increase in psychological capital, given that higher levels of psychological capital are indicative of higher overall psychological capital, there is a corresponding decrease of .460 units in the overall second victim syndrome score. That is, for every increased score in psychological capital's six-point scale, the overall second victim syndrome score decreases almost half a point on its five-point scale ($p = .001$). Given that higher SVEST scores mean higher levels of overall second victim syndrome, this demonstrates that the combined impact of psychological capital and social capital reduce the severity of second victim syndrome experienced by almost 50% per unit for each increase of one unit in overall psychological capital.

Conclusions

This study was conducted to understand and quantify the relationships between psychological capital and social capital and their combined impact on the severity of second victim syndrome. There are several key conclusions that have been reached through this research study. Each will be presented and discussed in this section. The first conclusion is that the data in this study supports the research hypothesis and the literature

on the combined impact of psychological state and social support on second victim syndrome (Burlison et al., 2016; Burlison et al., 2017; Cabilan & Kynoch, 2017; Chan et al., 2016; Edrees et al., 2011; Hirschinger et al., 2015; Mira et al., 2015; Pinto et al., 2013; Quillivan et al., 2016; Schiess et al., 2018; Scott et al., 2009; Seys et al., 2012; Ullström et al., 2014; West et al., 2006; Winning et al., 2018). The conceptual framework hypothesized a relationship between psychological capital and social capital that saw these two constructs combine and influence the severity of the second victim syndrome experienced by a registered nurse following a precipitating event. This study measured overall psychological state as psychological capital and social support as social capital to sought to measure their combined impact on the severity of second victim syndrome.

Research Questions/Study Hypothesis

The research question for this study was: "To what extent does the relationship between psychological capital and social capital combine to predict the severity of SVS experienced by registered nurses following a precipitating event?", with a second research question, "What are the relationships between the subconstructs of psychological capital, social capital and second victim syndrome?", intended to explore the relationships between the constructs and subconstructs. The study hypotheses were:

H_0: The combined contributions of psychological capital and social capital do not predict the severity of second victim syndrome experienced by registered nurses following a precipitating event.

H_a: The combined contributions of psychological capital and social capital predict the severity of second victim syndrome experienced by registered nurses following a precipitating event.

The results of this study support the alternate hypothesis and therefore, the null hypothesis is rejected. When the effects of social capital and psychological capital are tested together for effects on second victim syndrome, the following results were seen. Social capital has a significant positive effect on overall psychological capital ($\beta = .778$, $p < .001$) and when combined with psychological capital impacts overall second victim syndrome ($\beta = -.365$, $p = .001$). This combined effect accounts for 38% of the variance in overall SVS scores ($p = .001$). Social capital significantly affects an individual's psychological capital. Specifically, for every unit increase in overall social capital, the overall psychological capital score increases by .794 units. This is a large effect and is a significant result of this study. Further, in terms of psychological capital and social capital's combined impact on SVS severity, for every unit increase in the overall psychological capital score, after combining with social capital, the severity of overall SVS demonstrates a corresponding fall in the total score by almost half a unit ($B = -.460$, $p = .001$).

When the direct effects of both psychological capital and social capital were tested, the results demonstrate that psychological capital, on its own, does not significantly impact overall SVS ($\beta = .067$, $p = .361$). Social capital, on its own, does impact overall SVS ($\beta = -.801$, $p < .001$). These results indicate that when the direct effects of psychological capital and social capital are tested for their impact on second victim syndrome, only social capital is a significant predictor of SVS, and it predicts 56.8% of the variance in overall second victim syndrome. For every unit increase in the overall social capital score, the corresponding second victim syndrome score falls by .616

units, demonstrating that higher social capital scores reduce overall second victim syndrome severity.

There is existing literature that correlates the importance of psychological capital subconstructs such as resilience and self-efficacy to the ability of nurses to recover from second victim syndrome (Austin et al., 2014; Kable et al., 2018; Pinto et al., 2013; Schiess et al., 2018; Winning et al., 2018). In this study, psychological capital had no direct effect on second victim syndrome. Therefore, the impact of psychological capital directly on second victim syndrome would not be supported by these results. This study demonstrates that social capital is the variable that is influential in determining how a nurse's psychological capital will contribute to their overall second victim syndrome. Based on the data obtained in this study, a much more nuanced explanation would be that a nurse's psychological capital is impacted by an individual nurse's available social capital following a precipitating event and that available social capital increases, if positive, or decreases, if negative, their overall psychological capital, which in turn impacts the severity of their overall second victim syndrome and therefore, their ability to recover. The relationship between the individual and the social support system will be explored further in the implications for theory section.

The instrument used to measure psychological capital may also have played a role in the results that were seen in the psychological capital results of this study. While the Psychological Capital Questionnaire is a valid and reliable instrument that has been in use for several years, it is not an instrument that is specifically intended for healthcare practitioners and as a result, might not have asked questions that nurses could relate to their practice as easily as with the other instruments, which were designed for nurses and

healthcare practitioners. Further exploration of the measurement of psychological capital in nurses and healthcare practitioners using the Psychological Capital Questionnaire is recommended and will be discussed further in subsequent sections of this manuscript.

A second conclusion reached by this research is that while there may be some conceptual relatedness in the three constructs in this study, they are separate and distinct constructs. This was verified through the evaluation of the measurement model, which is conducted using confirmatory factor analysis. The discriminant and convergent validity for all three constructs was tested and verified, thus demonstrating that each subconstruct and overall construct was measuring distinct concepts and the structural equation modeling was testing for the relationships between these distinct concepts. There was some overlap in the instrumentation, both within the instrument and across the instruments, especially the Social Capital Outcomes for Nurses instrument and the Second Victim Experience and Support Tool, but there were also items within the PCQ that were required to be removed from the measurement model. These instruments and future implications for each will be explored further in the next section.

A third conclusion identified is that nursing associations offer a significant channel for recruiting specific nursing populations for research. While research conducted at a single research site is valuable and will continue to be, the ability to reach a large, heterogeneous population of registered nurses is a distinct benefit of recruiting through nursing associations. Further, nursing associations offer the ability to target specific nursing specialties, such as oncology, while still providing the ability to reach a heterogeneous population of nurses that are representative of the overall nursing profession. One caveat to the tremendous opportunity nursing associations provide as a

recruitment channel is that some associations passively disseminate research opportunities. While this is understandable so not to overwhelm their membership with requests, it does limit the incredible potential these associations offer for recruitment.

A final conclusion reached is that this study significantly contributes to the knowledge surrounding second victim syndrome and factors that influence its severity in nurses following a precipitating event. This sample was the largest known sample of registered nurses and their experience with second victim syndrome in the literature. The sample was comparable with the larger nursing profession and due to the size of the sample, it allowed for structural equation modeling to be undertaken to explore the relationships between the three constructs to test the hypothesis that social capital and psychological capital combine to influence the severity of severity. This research positively contributes to the literature on second victim syndrome, psychological capital and social capital. In the next section, the implications for the instrumentation used in this study will be explored.

<div align="center">**Implications for Instrumentation**</div>

Psychological Capital Questionnaire

One of the instruments used in this study, the Psychological Capital Questionnaire, is an established questionnaire that is valid and reliable and has been used for over 12 years (Luthans, Avolio, et al., 2007; Luthans, Youssef, et al., 2007). There are six questions in four subconstructs of hope, self-efficacy, resilience and optimism. The six questions are averaged to provide a subconstruct score, and the four subconstruct scores are averaged for an overall psychological capital score.

The Psychological Capital Questionnaire has significant evidence of psychometric validity and reliability (Luthans, Avolio, et al., 2007; Luthans, Youssef, et al., 2007). In this sample, and in combination with the other instruments used in this study, the Psychological Capital Questionnaire demonstrated convergence issues with some of the items within its subconstructs and some discriminant validity with social capital. These validity issues were addressed through an exploratory factor analysis and the final subconstructs demonstrated sufficient convergent and discriminant validity.

Despite the resolution of these validity issues, there was no direct effect of psychological capital on overall second victim syndrome. The other two instruments used in this study were specific instruments for use in a nursing or healthcare provider population, so it could be that the questions and items in the PCQ were not written in a manner that resonated with practicing registered nurses. There is an opportunity to study what psychological capital in the nursing population might look like versus other practitioner populations to determine whether there is an opportunity to refine the PCQ to validate its ability to measure psychological capital in different practitioner groups.

The Social Capital Outcomes for Nurses

The Social Capital Outcomes for Nurses instrument is a relatively new scale, developed by Sheingold and Sheingold (2013) and has been used in one other published study to date and one doctoral dissertation (Gilbert, 2017; Shin & Lee, 2016). The instrument consists of 44 items across five subconstructs, simplified as: internal trust, external trust, participation and affiliation, social cohesion and conflict. Each subconstruct has a variety of items that, once completed, are averaged to provide a subconstruct score. The overall social capital score is then calculated by measuring the

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overall mean of all the questions. Sheingold and Sheingold (2013) validated the instrument through an exploratory factor analysis given it was a newly developed instrument. The results of the exploratory factor analysis demonstrated validity and reliability of 28 items across the five subconstructs. A second study, conducted in Korea with a translated instrument used 36 items from the Social Capital Outcomes for Nurses instrument (Shin & Lee, 2016).

In this study, the Social Capital Outcomes for Nurses instrument was first validated via an exploratory factor analysis given the relative infancy of the instrument. Eighteen items loaded across the five subconstructs with sufficient statistical evidence to demonstrate the model was an identity matrix. Following the exploratory factor analysis, a confirmatory factor analysis was conducted in this study and demonstrated good model fit. Given that this instrument is a valuable tool for measuring social capital in nurses, which has significant future research utility in this population, further research to continue to refine the subconstructs and items for parsimonious fit and to test the instrument validity and reliability is recommended.

The Second Victim Experience and Support Tool

The Second Victim Experience and Support Tool is a relatively new instrument that was developed to test the second victim syndrome experience of clinicians (Burlison et al., 2017). It measures second victim syndrome via 25 items across seven subconstructs: psychological distress, physical distress, colleague support, supervisor support, institutional support and professional self-efficacy. The instrument also measures two outcome variables: turnover intention and absenteeism, and preferred support options for clinicians. The Second Victim Experience and Support Tool has been

used in approximately four other studies to date (Brunelli et al., 2018; Burlison et al., 2016; Kim et al., 2018; Quillivan et al., 2016), of which two involved translating the instrument into Korean and Argentinian. Other research studies involving translation of the instrument into Mandarin Chinese and Danish are ongoing (J. Hoffman, personal communication, July 3, 2018).

The Second Victim Experience and Support Tool underwent validity and reliability testing, with the validity testing being conducted via confirmatory factor analysis. The results of the confirmatory factor analysis confirmed the instrument was valid as developed. The initial reliability analysis, conducted via Cronbach's alpha coefficient, demonstrated low Cronbach's alpha coefficient scores for colleague support and institutional support. In this study, low Cronbach's alpha scores were obtained for only the colleague support subconstruct. The low Cronbach's alpha coefficients for colleague support were also found in other studies of the Second Victim Experience and Support Tool (Brunelli et al., 2018; Kim et al., 2018). It is recommended that further refinement of this subconstruct be conducted to identify the items that demonstrate convergent validity with the subconstruct of colleague support, given its critical role in the second victim syndrome experience.

Finally, the Second Victim Syndrome Experience and Support Tool measures several distinct concepts in one instrument. The instrument measures distress variables: psychological distress, physical distress and professional self-efficacy (Burlison et al., 2016), organizational support variables: colleague support, supervisor support, institutional support and outcome variables: turnover intentions and absenteeism, while also measuring preferred support options. The concepts and constructs tested in this

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instrument make it a very powerful instrument for testing and understanding the second victim syndrome experience. However, it would be beneficial for users of the instrument to clearly understand how best to analysis the data available from the Second Victim Experience and Support Tool to bring some consistency to the reporting and interpretation of this important and much-needed instrument. Further exploration of the constructs to be measured via this instrument and their interactions/interpretations is recommended.

Implications for Theory

Over the course of completing this research study on the combined effects of social capital and psychological capital on the severity of second victim syndrome experienced by registered nurses, numerous implications for theory were identified and will be presented in this section. Specifically, implications for theory related to social cognitive theory, social capital in nurses, second victim syndrome and other negative affective states will be presented in the sections below.

Social Cognitive Theory

To best interpret the results of this study, additional theoretical grounding is required. While psychological capital and social capital are cousins and somewhat related constructs, the results of this study demonstrated that when tested individually, psychological capital had a small and insignificant impact on overall second victim syndrome severity, while social capital had a large and significant impact. Combined these two constructs had a significant impact on overall second victim syndrome severity, supporting the hypothesis of the study that these constructs together were important in an individual's severity of second victim syndrome. These results may appear surprising

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without theoretical context, and social cognitive theory provides that context. There are three aspects of social cognitive theory that are relevant to this research study, reciprocality, self-efficacy and collective agency, and each will be summarized below.

Reciprocality. Social cognitive theory was developed by Bandura in 1986 and is a psychosocial functioning theory based on a model of triadic reciprocal causation (Bandura, 1989, 1999; Wood & Bandura, 1989). Triadic reciprocal causation explores how "…personal factors, in the form of cognitive, affective and biological events; behavioral patterns and environmental events all operate as interacting determinants that influence one another bidirectionally" (Bandura, 1999, p. 23). Social cognitive theory maintains that individuals are not autonomous agents influenced by their environments with resultant behaviors, but rather that individuals are interacting with their environment and their behaviors and are therefore emergent, socially constructed beings who are "…both products and producers of their environment" (Wood & Bandura, 1989, p. 362).

Individuals interact with their environment, and those within it, and their cognition and behavior can change based on that interaction (Bandura, 1999). Nurses interact with patients, other nurses, interdisciplinary team members, physicians, managers, administrators and many others in the execution of their duties. Each interaction is reciprocal and through the process of social construction, each individual's cognition and behavior is changed as a result of the interaction. Theoretical exploration of the role of reciprocality following a precipitating event would further contribute to the knowledge of social cognitive theory and second victim phenomenon. Self-efficacy is a critical component of social cognitive theory and is discussed in the next section.

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Self-efficacy. Triadic reciprocal causation sees self-efficacy as the primary driver of human agency and is core to the theoretical foundation of triadic reciprocal causation. According to Wood and Bandura (1989) self-efficacy can be strengthened through four primary ways: mastery experiences, modeling, social persuasion and monitoring their own physiologic state. Briefly, mastery experiences involve developing perseverance and overcoming challenges, but not easy successes because frequent easy successes can result in decreased self-efficacy when faced with difficult challenges that are not overcome quickly or easily. Modeling means modeling the activities and behaviors of successful individuals utilize where these social comparisons build an individual's confidence in their own abilities. Social persuasion consists of the feedback received from peers and trusted others that encourage belief in their capabilities. Lastly, individuals build self-efficacy by paying attention to their physiological state and reducing tension, stress, emotional reactions and by focused effort on improving their physical/emotional status.

To illustrate, consider the example case provided above where Erin, a recent graduate experienced a traumatic emotional event with a patient, who happened to be the child of a coworker (pp.44-45). Following the child's death, Erin voiced her distress to her preceptor, or mentor, about how devastated she was by the experience. Her preceptor told her to suck it up, she would need to be tough to survive as a nurse. When Erin went home that evening, she re-evaluated her ability to be a successful nurse and decided to drop out. This case illustrates how Erin was not able to increase her self-efficacy through the four ways noted above. She did not have a mastery experience because, in her mind, she doubted her ability to master the coping skills evidenced by her preceptor. Erin was not able to model the same behavior as her mentor, which she interpreted as an inability

to ever do so, an indication she was not cut out for nursing. She did not receive the encouragement she sought in speaking to her preceptor, thus Erin was unable to receive from her mentor the needed social persuasion to convince her she possessed the skills necessary to succeed as a nurse. Lastly, Erin was unable to identify and manager her physiological response to the event. She cried, she was physically and emotionally distressed and was unable to sleep that night. Erin felt her physiological state acutely and interpreted her feelings as indicative of an inability to perform in nursing rather than recognizing them as an emotional reaction to the situation. Erin's self-efficacy was not developed through this situation, and as a result, she was unable to envision herself as a successful and competent nurse and chose to leave the profession.

Social cognitive theory brings a lens through which to consider the results of this research. Given the interaction between self-efficacy and social structures, it is logical that social capital and psychological capital interacted and combined to influence second victim syndrome while psychological capital, on its own, did not. Given that nursing is a team-based practice and not an individual one, these social structures play a much more prominent role in a nurse's response to a precipitating event. In nursing, collective agency is critical to the ability of the team to successfully accomplish goals and build resilience in the face of adversity (Bandura, 2000).

Collective agency. Collective agency or efficacy is defined by Bandura (2000) as "… shared beliefs in the power to produce effects by collective action" (p. 75). Collective agency lives in the minds of team members and is an emergent team-level action that is more than the sum of the individual team members. When the team considers its ability to be successful as holistic or encompassing, it will consider the ability of each team

member to contribute to its success. Collective agency could be the reason that social capital was strongly impacting an individual nurse's second victim syndrome severity. With collective agency, the team is dependent on each other to be successful, thus any perceived or actual weakness in one team member impacts the performance of the whole team. The literature on SVS is clear that shame, either of self or by others, and blame is a significant cultural factor impacting second victim syndrome, and more specifically second victim severity (Davidson et al., 2015; Elmir et al., 2017; Pinto et al., 2013; Rassin et al., 2005; Schiess et al., 2018; Sirriyeh et al., 2010).

Further exploration of the role of social cognitive theory, triadic reciprocal causation, self-efficacy and collective efficacy or agency are warranted to determine whether they have predictive utility in registered nurses and their interdisciplinary teams. Additionally, the role psychological capital and social capital play in the measurement of triadic reciprocal causation, especially as it relates to collective agency, would be a worthwhile exploration to determine if these constructs are useful in determining and measuring the social construction of agency, behavior and environment in nursing.

Social Capital Theory in Nurses

Social capital theory in nursing has focused on the different types of capital available to nurses and the importance it plays in a nurse's professional life. Further scholars believe social capital has utility in exploring nursing workforce and policy issues (Hofmeyer, 2014; Hofmeyer, 2013; Kowalski et al., 2010; Stromgren et al., 2016; Van Bogaert et al., 2013). However, one area of theoretical importance missing from the discussion on social capital in nurses is the cost of capital.

There is a cost associated with social capital (Adler & Kwon, 1999; Nahapiet & Ghoshal, 1998). The costs of social capital typically refer to the time and energy costs associated with buidling the relationships necessary for social capital. However, in nursing, it could also be that the cost of social capital for the broader network are high in the event of SVS. The costs associated with supporting a peer experiencing second victim phenomenon may be perceived to negatively impact the group. Additionally, group norms resulting from strong and embedded social capital might be a reason individuals are shamed for experiencing SVS.

Lastly, while nurses are taught to be caring, they are expected/encouraged not to care too much. Nurses demonstrating significant emotional and physical distress run counter to the expectations and as a result, the cost of supporting that nurse may be too high for the aggregate. The theory of social capital in nurses would benefit from further exploration of the cost of social capital, both to the individual and to the team, to explore and seek to understand this concept. In the next section, theoretical opportunities for second victim syndrome are offered.

Second Victim Syndrome

Second victim syndrome is the traumatic response of a healthcare provider to patient injury or harm and is defined by Scott et al. (2009) as follows:

> Second victims are healthcare providers who are involved in an unanticipated adverse patient event, in a medical error and/or a patient related injury and become victimized in the sense that the provider is traumatized by the event. Frequently, these individuals feel personally responsible for the patient outcome.

Many feel as though they have failed the patient, second guessing their clinical

skills and knowledge base. (Scott et al., 2009, p. 326)

Theorizing on second victim syndrome is in its relative infancy, only having gained

traction in 2000 when the Institute of Medicine released its landmark publication "To Err

is Human" and uncovered the magnitude of preventable adverse patient events (*To err is

human: Building a safer health system*, 2000). In nineteen years, significant progress has

been made to understand and explore second victim syndrome, its causes, stages, impact

and strategies/programs intended to mitigate harm to clinicians.

Level of analysis. Second victim syndrome has been studied as an individual

level construct, but based on the results of this study, theorizing on second victim

syndrome as a team level phenomenon may be of interest. Given the relationship between

social capital and its impact on individual psychological capital and second victim

syndrome, further theoretical exploration is warranted. Additionally, given the role of

self-efficacy in triadic reciprocal causation, further theorizing and subsequent research

regarding moderators that may impact self-efficacy, such as age, years of experience,

gender and organizational culture would contribute to the body of knowledge regarding

second victim syndrome and its severity following a precipitating event.

Second victim syndrome as a continuum. Theoretical exploration of second

victim syndrome as a continuum or phenomenon is critical to the ongoing understanding

of second victim syndrome. The name second victim syndrome intimates a binary event

where one either has it or does not. Second victim syndrome is theorized to be more

variable than that, with severity falling on a continuum from mild to severe. Theoretical

exploration of this concept would further the knowledge of second victim syndrome and

would allow for research intended to uncover factors that influence severity. The results of this study indicate that social capital is one such factor, but others bear exploring.

Moral injury. Shame and blame, both of self and from others, are common occurrences following a precipitating event (Clancy, 2012; Davidson et al., 2015; Elmir et al., 2017; Pinto et al., 2013; Pratt et al., 2012; Quillivan et al., 2016; Rassin et al., 2005; Rodriquez & Scott, 2018; Schiess et al., 2018; Scott et al., 2008; Sirriyeh et al., 2010; Wu et al., 2013). In fact, many nurses will immediately assign self-blame, despite system failures that contributed to an error, or in the absence of any blame at all, as may occur with an unexpected medical event (Cabilan & Kynoch, 2017; Elmir et al., 2017; Harrison et al., 2015; Jones & Treiber, 2018; Van Gerven et al., 2016).

Many researchers have noted that second victim syndrome can progress to post-traumatic stress disorder in some cases (Manser, 2011; Paparella, 2011; Pratt et al., 2012; Scott et al., 2008; Wu et al., 2013). There is also a recognition that second victim syndrome can be enduring, lasting for many years following a precipitating event (Edrees et al., 2011; Pinto et al., 2013; Pratt & Jachna, 2015; West et al., 2006). However, PTSD is a fear-based disorder, where moral injury is a shame based disorder (*Diagnostic and Statistical Manual of Mental Disorders*, 2013; Shay, 2014). Table 27 differentiates between the two.

Table 27

Post-Traumatic Stress Disorder Vs. Moral Injury

Characteristic	PTSD	Moral Injury
Triggering Event	Actual or threatened death or injury	Acts that violate deeply held moral values
Individual's role at time of event	Victim or witness	Perpetrator, victim or witness
Predominant painful	Fear, horror, helplessness	Guilt, shame, anger

emotion		
Reexperiencing?	Yes	Yes
Avoidance or numbing?	Yes	Yes
Physiological arousal level	Yes	No
What necessity is lost?	Safety	Trust

Note. Reprinted from Shay (2014, p. 185)

Moral injury has mainly been studied in the context of war veterans, but the symptomatology, causes and outcomes are very similar to that experienced in the second victim experience. Further theorizing on the role moral injury plays in second victim syndrome could help with the identification of mediating factors and possible options to prevent severe second victim syndrome.

Other negative affective states. Finally, second victim syndrome is a negative affective state. The results of this research study may contribute to the theorizing of other negative affective states that affect nurses, such as burnout, moral distress, and depersonalization. The combined role of psychological capital and social capital may offer new avenues of theoretical and empirical exploration that attempt to explicate the role psychological capital and social capital, when combined, play in minimizing other negative affective states, which are equally as devastating to nurses and the overall nursing profession.

Implications for Research

This research study explored the combined relationship of social capital and psychological capital on second victim syndrome and has identified several areas for further research on the role of social capital and psychological capital in second victim syndrome. This study was an ex post facto non-experimental, cross-sectional survey conducted at a moment in time and while the contributions of this study to the scholarship on second victim syndrome are important, future research could build upon

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these results to deepen the knowledge on the interaction of these constructs. Hence, a year-long longitudinal study to follow the effects of second victim syndrome, psychological capital and social capital in individuals over time is recommended to seek to understand the interaction of psychological capital and social capital and its impact on second victim syndrome severity.

Research to stratify the overall scores of psychological capital, social capital and second victim syndrome is recommended to fully explicate how social capital and psychological capital combine to impact the severity of second victim syndrome. To that end, it is recommended that additional research be conducted to compare the effects of various low-high ranges of social capital and psychological capital. Of specific research interest is how low social capital combines with high psychological capital and conversely, low psychological capital combines with high social capital to identify the more impactful of the two constructs on the severity of second victim syndrome.

Additional research is also recommended that incorporates the outcome variables linked to the three trajectories in the final stage of Scott et al.'s (2009) stages of second victim syndrome. This research would link SVS severity scores with actual outcomes and further contributing to the collective knowledge on the importance of severity in determining turnover intentions. This research might explore, in part, SVS severity as a mediator to turnover intentions.

Further research is suggested to refine the instrumentation used in this study. This research would evaluate the parsimony and convergence of subconstruct items, applicability to nursing, specifically with the Psychological Capital Questionnaire, and the constructs of interest for the Second Victim Experience and Support Tool. This

research would further our collective knowledge of and ability to measure and evaluate second victim syndrome, social capital and psychological capital in healthcare practitioners.

It is also recommended that research is conducted to further explicate the demographics that are linked with increased risk for second victim syndrome. Empirical evidence on psychological capital, social capital and second victim syndrome have identified demographics such as age, tenure and gender as being significant moderators of each variable and bear further exploration to determine their role in the development of second victim syndrome (Chan et al., 2016; Coughlan et al., 2017; Luu et al., 2012; Mira et al., 2015; Pratt et al., 2012; Seys et al., 2013; Sheingold & Sheingold, 2013; Shin & Lee, 2016; Sweet & Swayze, 2017). It is also recommended that this research be extended to other healthcare practitioners, including physicians, who are also impacted by second victim syndrome to determine if the same conclusions are reached.

Lastly, research into the role of nurse identity in the context of second victim phenomenon is warranted. Nurse identity is strongly socially constructed over the course of their professional lives (Apesoa-Varano, 2007; Fagermoen, 1997; Sabanciogullari & Dogan, 2015) Social cognitive theory and the results of this structural equation model study support that nurses that experience severe second victim phenomenon experience identity dissonance, which further impacts their ability to fully recover from SVS. An exploration of the role nurse identity plays in second victim syndrome and the nurse's ability to successfully move on from second victim phenomenon may contribute further knowledge to this construct and to the development of strategies that can be embedded in practice to minimize the severity experienced.

<center>**Implications for Practice**</center>

This research study was an ex post facto study to explore the combined relationship between psychological capital, social capital and second victim syndrome. The results demonstrated that social capital and psychological capital combine to predict 38% of second victim syndrome. Further, in this sample, psychological capital had no direct effect on second victim syndrome, but when combined with social capital, a one unit increase in psychological capital was responsible for a reduction by almost half a unit in the overall SVS score. Based on these research results, a number of implications for practice are presented. Recommendations include further development of second victim support programs, increasing social capital in nurses, increasing self-efficacy in nurses and suggestions for healthy practice environment initiatives, both nationally and at the institutional level.

Further Development of Second Victim Support Programs

Hospitals, health systems and other facilities are encouraged to build and implement second victim support programs like the *forYOU Team* program at the University of Missouri Health Center (MUCH). The peer support rapid-response team was developed based on feedback and input of staff within the health center that had experienced unanticipated patient safety events (Scott et al., 2010). Following the identification of the six stages of second victim syndrome, a survey was constructed and disseminated across the healthcare system. Eight themes emerged that laid the foundation for the three-tier support program that provided 24 hours a day coverage, seven days a week. The tiers are shown in Figure 14.

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The *forYOU Team* program is an interprofessional team of medical, nursing and

allied health professionals that are responsible for supporting MUCH team members

experiencing second victim syndrome. According to (Scott et al., 2010):

> The guiding principle of the *forYOU Team* is the understanding that, although
>
> each event is a unique experience with each clinician requiring individualized
>
> types and intensity of confidential support, team members are expected to use the
>
> three-tiered model to facilitate the second victim's transition through the six
>
> stages of emotional recovery. (p. 238)
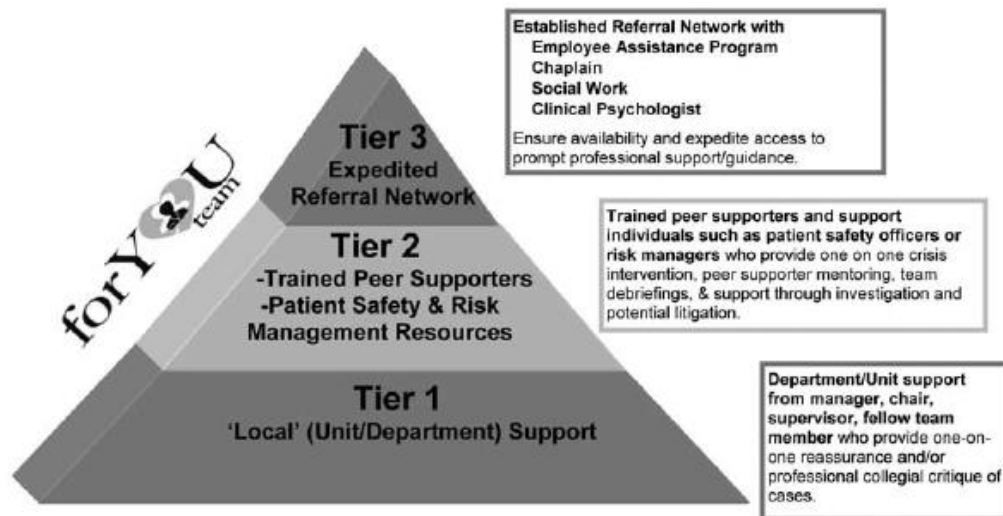
Figure 14. The Scott Three-Tiered Interventional Model of Second Victim Support
(reprinted from Scott et al. (2010, p. 238)

Programs such as the *forYOU Team* are critical to the recovery of nurses

experiencing second victim syndrome. Increasing the presence of such teams nationally is

recommended to further support nurses and other healthcare professionals experiencing

second victim syndrome. As noted by (Scott et al., 2010) "We now believe that it is our

moral imperative to design and deploy a readily accessible and effective support

infrastructure for all healthcare professionals …" (Scott et al., 2010, p. 239).

Building Social Capital in Nurses

As discussed above, many institutions have instituted peer support programs intended to minimize the second victim syndrome experienced by individuals through rapid response teams (Edrees et al., 2011; Scott et al., 2008; Scott et al., 2010; Seys et al., 2012; Wears & Wu, 2002). These programs have made a significant difference in the second victim experience in those institutions and are critical to support the recovery of second victims. Additionally, based on the results of this study and the theoretical lens of social cognitive theory, bonding social capital takes an increasingly important role. Recall that bonding social capital is the social capital that is available to a nurse from his or her unit colleagues and teammates (Hofmeyer, 2013; Sheingold & Sheingold, 2013). Given the collective agency of nursing, the social capital of the practice team is critical.

Therefore, in addition to these peer support programs, institutions are encouraged to focus on their unit culture and develop programs and activities intended to increase the social capital of the team. Given the importance of social capital to psychological capital and the ability to recover following a precipitating event, bonding social capital must be given an increasingly important focus. Considering the triadic reciprocal causation model of social cognitive theory and its role in collective agency, social capital becomes critical in the mitigation of severe second victim syndrome. This change in focus from an individual to a team focus requires a significant culture change and institutions are encouraged to focus on increasing trust, communication, teamwork, and professional relationships.

Building Self-Efficacy and Collective Agency in Nurses

The theoretical construct of social cognitive theory and triadic reciprocal causation identified the importance of both self-efficacy and collective agency to overcome adversity and build resilience (Bandura, 2000; Wood & Bandura, 1989). Institutions are encouraged to develop programs intended to build both self-efficacy and collective agency in its employees. Focus should be primarily at the unit or team level and should include team building, inclusiveness, trust, coaching, mentoring and conflict resolution skills. These soft skill trainings will contribute to the development of collective agency, where team cohesion is the focus, in an attempt to build tolerance while minimizing incivility and lateral violence in the form of bullying or shaming.

Erin's story demonstrated that nursing students/new graduates need more opportunities to build self-efficacy and collective agency. Specific implications for practice for nursing students and entry-level nurses include longer and better precepting experiences, coaching and mentoring so that they can build their self-efficacy and learn how to be a productive, integrated member of the nursing team. Supporting and welcoming both student nurses and new graduates will be crucial to their ability to be fully functioning members of the team that are able to practice to the highest level of competence. We owe our new nurses the opportunity to grow and develop, and we increase the chance of success through patience, coaching mentoring, encouragement and supporting them as they navigate the changing environment from school to practice.

Healthy Practice Environment Initiatives

The National Academy of Medicine, formerly known as the Institute of Medicine, is one of three academies within the National Academies of Sciences, Engineering and

Medicine, independent non-profit organizations formed under an 1863 Congressional charter, but operating independently, to advise on matters of technology, science and health ("About the National Academy of Medicine," 2018). The National Academy of Medicine recently formed an action collaborative on clinician well-being and resilience that is focused on the prevention of clinician burnout and the promotion of healthy practice environments ("Clinician well-being and resilience," 2018). Given that second victim syndrome is also a negative affective state, two recommendations are made for the action collaborative and national nursing leaders as they seek to improve the practice environment of healthcare providers.

The first recommendation for national level clinical programs is to incorporate social capital into these efforts. While resilience is an important component of well-being, the results of this study demonstrate that social capital is the more important construct and indicate that psychological capital may be a latent construct. An increased focus on social capital includes moving away from a culture of 'shame and blame' and towards a culture of understanding, empathy and support. By doing so, these programs reinforce the importance of culture and social capital to individual well-being.

Second, these national initiatives and programs are encouraged to increase the focus on self-efficacy. As demonstrated by social cognitive theory, self-efficacy is the critical component of psychological capital (Bandura, 1999, 2000; Wood & Bandura, 1989). Developing programs focused on increasing mastery experiences, modeling of behavior, social persuasion and managing physiological responses will assist in the development of self-efficacy, which occurs at both an individual level and collective

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level, especially in a team-based practice model such as seen in the nursing practice. By increasing self-efficacy, the severity second victim syndrome may be minimized.

Institutions are encouraged to critically evaluate their practice standards and work environments to be more supportive. For example, many institutions are adopting anti-bullying policies aimed at preventing nurse bullying by patients, family or visitors, yet the same policies do not exist for lateral violence or peer bullying. Institutions are encouraged to implement zero tolerance policies for nurse incivility.

Healthy practice environment practices such as quiet rooms for staff are warranted. While the profession encourages, or demands, its nurses be caring, they mandate they not care too much when caring for patients and families. Yet the evidence indicates that many precipitating events are due to the close relationship between a nurse and patient/family or a strong identification with a patient. Recognizing, acknowledging and supporting nurses through such experiences may minimize the severity of the second victim response in these practitioners. Allow nurses to step away, as needed. Provide a quiet, calming space for the to take time to regroup before moving on to the next patient or the next assignment. Institutions are encouraged to show their nurses the same empathy and humanity they expect their nurses to show their patients.

Closing

While error reduction remains a priority of the healthcare industry, there is no way to completely eliminate errors, especially in today's fragmented, complex and technologically driven healthcare environment (Edrees et al., 2011; Jones & Trieber, 2012; Schiess et al., 2018; Scott et al., 2009; Serembus et al., 2001; Treiber & Jones, 2010). Given that the 'errorless imperative' is practically impossible, it becomes critical

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to understand the impact errors and other precipitating events and to develop and

implement programs intended to reduce the impact of these events on both patients and

our largest group of care providers, registered nurses.

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Appendices

Appendix A: Survey Instrument Permissions

Psychological Capital Questionnaire:

Social Capital Outcomes for Nurses:

On Tue, May 1, 2018 at 4:10 PM, Brenda Sheingold <bsheingo@gwu.edu> wrote:
Hi Teresa,

I'm in Arizona this week and just briefly checked my email. You can certainly use the scale and I'll send the names of those I know have used it when I get home.

Sounds like a really good project.

Warm regards,
Brenda

↩ **Brenda Sheingold**   ✑ Mon, Jul 16, 11:14 PM (21 hours ago)   ☆   ↩
to me ▾

Hi Terri,

Attached is the full instrument for your project in pdf and Word format. I think it might be beneficial not to include the full instrument in the Appendix, just in case someone wants to replicate your study. Dissertations are published so researchers wouldn't necessarily need to ask your permission to use the instrument, and you would lose an opportunity to track/follow the progression of their results. Something to think about . . .

Second Victim Experience and Support Tool:

Hoffman, James   ✑ Jul 3 (9 days ago)   ☆   ↩   ▼
to me, Jonathan ▾

Hello Terri

Sorry I haven't gotten back to you. Thanks for being in touch again!

Yes it does sound like the SVEST may be a good fit with your work. We always welcome use of the SVEST, including for your dissertation. The only thing we ask is that our paper be cited in any presentations or publications that may come from its use. (Of course, we are also interested to hear how things turn out down the line as well and so feel free to send any updates or feedback in the future) If it helps with your committee to explain wider use we have had the instrument translated into several other languages – I think Korean is the only one published so far https://www.ncbi.nlm.nih.gov/pubmed/?term=burlison+ksvest I know mandarin Chinese, Danish, and perhaps a couple others are ongoing.

Burlison, Jonathan   Mon, Jul 16, 1:39 PM (1 day ago)   ☆   ↩   ⋮
to me, James ▾

Hello Terri,

Yes, fine to include full version in your dissertation.

Again, we're excited you're using it and hope we can help! Responses to your questions are below.

Keep in touch,
Jonathan

Appendix B: Second Victim Experience and Support Tool

APPENDIX

Second Victim Experience and Support Survey (SVEST)

Instructions for respondents

Survey Dimensions and Outcome Variables

The following survey will evaluate your experiences with adverse patient safety events. These incidents may or may not have been due to error. They also may or may not include circumstances that resulted in patient harm or even reached the patient (i.e., *near-miss* patient safety events). Please indicate how much you agree with the following statements as they pertain to yourself and your own experiences at this hospital.

Second Victim Support Option Desirability

Please indicate your level of desirability for the following types of support that could be offered by your organization for those who have been negatively affected by their involvement with an adverse patient safety event. These incidents may or may not have been due to error. They also may or may not include circumstances that resulted in patient harm or even reached the patient (i.e., *near-miss* patient safety events).

Scoring the survey responses

To use the scores of this instrument to highlight opportunities for improvement, the following instructions for scoring the responses are provided. The first set of instructions is for the 7 dimensions and 2 outcome variables. After converting the reverse-worded item responses (see survey below), compute mean scores for participants for each of the 7 dimensions as well as the 2 outcome variables. The responses are rated on a 1 to 5 Likert scale, where higher scores represent greater amounts of second victim responses, the degree to which support resources are perceived as inadequate, and the extent of the 2 second victim–related negative work outcomes (i.e., turnover intentions and absenteeism). After computing mean scores for each participant, calculate the percentage and the number of the response means that represent agreement (i.e., the respondents who have a mean dimension and outcome score of 4.0 or higher). This scoring technique will provide results that are limited to the extent of negative effects of second victim experiences and opportunities to improve support resources.

For the items created to measure the desirability of support options, the following scoring instructions yield results based on which organizations can create and revise second victim resources. The responses for these items are rated on a 1 to 5 Likert scale, where a response of 4 or 5 represents the support option being desired and 1 or 2 represents the support option being not desired. To capture the degree to which the support options are desired or not desired, calculate the percentage of desire responses (4 or 5) and not desired responses (1 or 2). Therefore, this scoring will yield the percentage desired and not desired for each support option, and these results can direct organizational support efforts.

Survey Items

Psychological Distress
- I have experienced embarrassment from these instances.
- My involvement in these types of instances has made me fearful of future occurrences.
- My experiences have made me feel miserable.

- I feel deep remorse for my past involvements in these types of events.

Physical Distress
- The mental weight of my experience is exhausting.
- My experience with these occurrences can make it hard to sleep regularly.
- The stress from these situations has made me feel queasy or nauseous.
- Thinking about these situations can make it difficult to have an appetite.

Colleague Support
- I appreciate my coworkers' attempts to console me, but their efforts can come at the wrong time.
- Discussing what happened with my colleagues provides me with a sense of relief.[a]
- My colleagues can be indifferent to the impact these situations have had on me.
- My colleagues help me feel that I am still a good healthcare provider despite any mistakes I have made.[a]

Supervisor Support
- I feel that my supervisor treats me appropriately after these occasions.[a]
- My supervisor's responses are fair.[a]
- My supervisor blames individuals.
- I feel that my supervisor evaluates these situations in a manner that considers the complexity of patient care practices.[a]

Institutional Support
- My organization understands that those involved may need help to process and resolve any effects they may have on care providers.[a]
- My organization offers a variety of resources to help me get over the effects of involvement with these instances.[a]
- The concept of concern for the well-being of those involved in these situations is not strong at my organization.

Non–Work-Related Support
- I look to close friends and family for emotional support after one of these situations happens.[a]
- The love from my closest friends and family helps me get over these occurrences.[a]

Professional Self-efficacy
- Following my involvement I experienced feelings of inadequacy regarding my patient care abilities.
- My experience makes me wonder if I am not really a good healthcare provider.
- After my experience, I became afraid to attempt difficult or high-risk procedures.
- These situations do not make me question my professional abilities.[a]

Turnover Intentions
- My experience with these events has led to a desire to take a position outside of patient care.

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– Sometimes the stress from being involved with these situations makes me want to quit my job.

Absenteeism
– My experience with an adverse patient event or medical error has resulted in me taking a mental health day.
– I have taken time off after one of these instances occurs.

Desired Forms of Support
– The ability to immediately take time away from my unit for a little while.

– A specified peaceful location that is available to recover and re-compose after one of these types of events.
– A respected peer to discuss the details of what happened.
– An employee assistance program that can provide free counsel-ing to employees outside of work.
– A discussion with my manager or supervisor about the incident.
– The opportunity to schedule a time with a counselor at my hos-pital to discuss the event.
– A confidential way to get in touch with someone 24 hours a day to discuss how my experience may be affecting me.

[a]Reverse-worded item.

Appendix C: Nursing Association Participation Summary

Table C1

Nursing Association Participation and Survey Distribution

Nursing Association	Number of Members	Method of Survey Dissemination	Survey Open Date	Survey Close Date
Organization 1	12,000	• Member listserv • E-newsletter • Email reminder	10/22/18	12/07/18
Organization 2	20,000	• E-newsletter	10/30/18	12/07/18
Organization 3	120,893	• Website • E-newsletter	10/25/18	12/07/18
Organization 4	3,000	• Email	10/30/18	12/07/18
Organization 5	10,205	• E-newsletter • Member listserv	10/25/18	12/07/18
Organization 6	6,731	• Email	10/25/18	12/07/18
Organization 7	1,000	• Social media • Website	10/31/18	12/07/18
Organization 8	5,314	• E-newsletter	10/26/18	12/07/18
Organization 9	25	• Email	11/05/18	12/07/18
Organization 10	43,000	• Website	11/08/18	12/07/18
Organization 11	457	• Member listserv	11/19/18	12/07/18
Organization 12	1590	• Email	11/28/18	12/07/18

Appendix D: Institutional Review Board Exemption Letter

Date: October 18, 2018
To: Swayze, Susan Sean, PhD
From: The George Washington University Committee on Human Research,
          Institutional Review Board (IRB), FWA00005945
Subject: IRB# 180280 , "Psychological Capital, Social Capital and Second Victim
          Syndrome in Registered Nurses"

Exempt Determination Date: October 18, 2018

The request for an exemption determination for the above-referenced study has been completed.
The study was determined to be research that is exempt from IRB review under DHHS
regulatory Category 2. The project as described in the application may proceed without further
oversight by the OHR.

The exemption determination applies only to the project described in your IRB Application.
Any changes that may alter in any way the risks to participants, type of information to be
accessed, addition of new populations, or change in PI may not be instituted without submission
of a Modification within the iRIS system and further review by the OHR prior to implementation
of the changes.

Questions or concerns regarding the exemption determination made for the study should be
directed to the OHR staff at ohrirb@gwu.edu.

Appendix E: Correlation Tables: Psychological Capital and Social Capital

Table E1

Pearson Product-Moment Correlations: Psychological Capital

Constructs	Overall PsyCap	Hope	Self-Efficacy	Resilience	Optimism
Overall PsyCap	1	.869**	.803**	.803**	.797**
Hope	.869**	1	.640**	.610**	.592**
Self-Efficacy	.803**	.640**	1	.494**	.431**
Resilience	.802**	.607**	.492**	1	.593**
Optimism	.797**	.592**	.431**	.595**	1
Overall SocCap	.549**	.478**	.423**	.350**	.511**
External Trust	.430**	.332**	.323**	.226**	.405**
Part. & Affiliation	.583**	.526**	.454**	.401**	.517**
Internal Trust	.468**	.394**	.322**	.335**	.446**
Social Cohesion	.161**	.178**	.157**	.054	.123**
Conflict	.149**	.100**	.104**	.116**	.169**
Overall SVS	-.430**	-.334**	-.267**	-.389**	-.432**
Psych. Distress	-.198**	-.120**	-.099**	-.200**	-.242**
Physical Distress	-.268**	-.181**	-.149**	-.279**	-.284**
Colleague Support	-.297**	-.227**	-.177**	-.293**	-.288**
Super. Support	-.299**	-.248**	-.193**	-.248**	-.297**
Inst. Support	-.292**	-.239**	-.203**	-.221**	-.292**
Non-work support	-.111**	-.150**	-.083**	-.054	-.073*
Prof. self-efficacy	-.389**	-.309**	-.256**	-.356**	-.364**

Note. *statistically significant at $p<.05$; **statistically significant at $p<.01$

Table E2

Pearson Product-Moment Correlations: Social Capital

Constructs	Overall SocCap	External Trust	Part. & Affiliation	Internal Trust	Social Cohesion	Conflict
Overall PsyCap	.543**	.398**	.583**	.458**	.161**	.149**
Hope	.478**	.332**	.526**	.394**	.178**	.100**
Self-Efficacy	.423**	.323**	.454**	.322**	.157**	.104**
Resilience	.350**	.226**	.401**	.335**	.054	.116**
Optimism	.511**	.405**	.517**	.446**	.123**	.169**
Overall SocCap	1	.708**	.704**	.774**	.569**	.506**
External Trust	.708**	1	.462**	.514**	.152**	.206**
Part. & Affiliation	.704**	.462**	1	.442**	.191**	.165**
Internal Trust	.820	.601**	.466**	1	.267**	.301**
Social Cohesion	.569**	.152**	.191**	.256**	1	.165**
Conflict	.506**	.206**	.165**	.292**	.165**	1
Overall SVS	-.361**	-.304**	-.372**	-.330**	-.077*	-.080*
Psych. Distress	-.108**	-.089**	-.177**	-.070**	-.010	.002
Physical Distress	-.155**	-.118**	-.199**	-.172**	.023	-.038
Colleague Support	-.308**	-.167**	-.245**	-.369**	-.105**	-.103**
Super. Support	-.326**	-.332**	-.287**	-.339**	-.019	-.084**
Inst. Support	-.391**	-.455**	-.352**	-.292**	-.070*	-.110**
Non-work support	-.091**	-.002	-.080*	-.076*	-.109**	-.012
Prof. self-efficacy	-.239**	-.170**	-.280**	-.177**	-.104**	-.029

Note. *statistically significant at $p<.05$; **statistically significant at $p<.01$