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The Mediating Effects of Positive Thinking and Social Support on Suicide Resilience Among Undergraduate Students

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THE MEDIATING EFFECTS OF POSITIVE THINKING AND SOCIAL SUPPORT
ON SUICIDE RESILIENCE AMONG UNDERGRADUATE STUDENTS

by

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ABSTRACT

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Suicide has been the 2nd leading cause of death for 18-24-year-olds in the US since 2011. The stress experienced by undergraduate college students has the potential to increase ones' risk for suicide. Resilience theory was used as a theoretical framework to examine the interplay between risk and protective factors. A cross-sectional and correlational design was used to assess the mediating effects of positive thinking and/or social support on suicide resilience in 131 college students 18-24 years old who completed an online survey. An indirect effect of self-esteem on suicide resilience was found through positive thinking and social support indicating that as self-esteem increases, positive thinking and social support also increase, which leads to an increase in resilience. The study also found a direct effect of self-esteem, positive thinking, and social support on suicide resilience. The findings inform the development of tailored interventions to build suicide resilience in college students.

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I believe in you.

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CHAPTER I. INTRODUCTION

Background and significance

More than 800,000 deaths by suicide occur world-wide every year (World Health Organization, 2014). Approximately every 40 seconds a person's life ends because of a suicide completion (World Health Organization, 2014). Suicide is a death that occurs as a result of harming oneself with the intention of dying (World Health Organization, 2014). Currently, suicide ranks as the second leading cause of death for 15-29-year-olds globally as well as in the US (World Health Organization, 2014; Centers for Disease Control and Prevention [CDC], 2015a).

In the US, deaths by all other causes such as heart disease, cancer, chronic lower respiratory disease have decreased or remained stable, while death by suicide has increased becoming a national tragedy in recent years (Johnson, Hayes, Brown, Hoo, & Ethier, 2014). National statistics indicate a 31% increase in deaths by suicide from 2000-2011 with a suicide completion occurring every 12.8 minutes in the US (American Foundation for Suicide Prevention, 2015). Suicide is the 10th leading cause of death in the US and has continued to be the 2nd leading cause of death for 18-24-year-olds since 2011 (CDC, 2015a). Overall, the suicide rate in Wisconsin is in conjunction with the national level, in 2014 it was 13.4 per 100,000 (American Association of Suicidality, 2015).

When comparing 18-25-year-olds with other adult age groups, young adults were found to have an increase in suicidal ideation (SI) (CDC, 2015b). When comparing suicide mortality rates from 1999 to 2014, there has been a steady increase in deaths by suicide for young adults (CDC, 2016). From 2007 to 2011, females had 7,743 emergency

department visits for self-injury and males had 5,212 (Wisconsin Department of Health Services, 2014). Overall, females are at a higher risk for SI, however, male are four times as likely to die from suicide due to the lethality of the attempt (CDC, 2014b). In Wisconsin, white males were more likely to commit suicide. The use of a handgun is the most commonly used method for white males when committing suicide (Wisconsin Department of Health Services, 2014).

In 2013, it was reported that 2.7 million individuals 18 years of age or older made a suicide plan in 2012. Of this group, consisting of older adolescents and young adults, 18-25-year-olds were more likely than the other groups to make a plan to commit suicide (U.S. Department of Health and Human Services, 2014). From 2012 to 2013 there was an increase from 6.6% to 8% of full-time college students having serious thoughts of suicide (U.S. Department of Health and Human Services, 2014). Due to the increasing number of deaths by suicide, the need for suicide prevention programs has become an important initiative. Recommendations for suicide prevention from the Department of Human Services (WDHS) indicate the need to examine the "multi-level risk and protective factors in Wisconsin in order to inform our approaches to suicide prevention" (WDHS, 2014, p. 26).

The negative psychological effects of SI and suicide attempts (SA) not only have impacts on the individual experiencing the symptoms, but also have their impacts on the society (Osman et al., 2004). Suicide is a public health concern because it does not only affect those whose lives were lost due to suicide completion but also the lives of those who are friends or family members. For every death by suicide, the affected family and friends are considered to be the loss survivors of suicide. These are the individuals that

are left behind to cope with the grief after a person committed suicide. It was estimated in 2014 that there were18 suicide loss survivors per death by suicide. Indicating each year around 750,000 loss survivors are living beyond a death caused by suicide (American Association of Suicidality, 2015). The number of loss survivors is greatly increasing, especially in the younger populations, due to the increase in number of daily contacts between people (Berman, 2011). The survivors of suicide have an increased risk for attempting suicide themselves, blaming themselves for not preventing the suicide and grieving their personal loss (CDC, 2015c). Therefore, having an experience with someone losing his/her life to a suicide increases an individuals' personal risk of attempting suicide. In order to disrupt this cycle, primary prevention is needed not only to protect the health of the individuals, but also the public itself. In order to effectively aid in the primary prevention efforts, factors for suicide prevention should be targeted towards specific populations and vulnerable periods in one's life. This study will identify specific protective modifiable variables against suicide, such as positive thinking and social support in college students. The results from this study will inform the development of tailored intervention programs on college campuses for the goal of building suicide resiliency.

Statement of the Problem/Significance

College is a time of change and transition when individuals experience stress due to environmental and developmental changes. It is often considered a "developmentally challenging transition to adulthood" (Hunt & Eisenberg, 2010, p. 3). College students experience many stressors that have the potential to affect ones' self-esteem and social support. The college experience presents a unique and challenging spectrum of stress.

According to the National College Health Assessment, universities have a high prevalence of mental health problems among students (Hunt & Eisenberg, 2010). One study found that suicidal ideation was predicted by negative stress and self-esteem (Wilburn & Smith, 2005).

Most of the research that has have been done among undergraduate students focused on suicide behavior, risk for suicide, or SI (Wang, Lightsey, Tran, & Bonaparte 2013; Peter & Taylor, 2014). Some of the research studies also investigated suicide risk and protective factors in high school adolescents and in inpatient settings (Chandy, Blum, & Resnick, 1997; Consoli et al., 2015; Resnick, Ireland, & Borowski, 2004). To date, none of the reviewed studies have focused on positive concepts, such as positive thinking and its relationship to suicide resilience and self-esteem in undergraduate students as proposed in this study. This study is an important contribution to the scientific body of knowledge. As the current trend now is to move toward primary prevention, it is important to study the relationships between positive thinking, self-esteem, social support, and suicide resilience to develop tailored interventions to build suicide resiliency and to prevent suicide in undergraduate students.

The stress experienced by undergraduate college students has the potential to increase ones' risk of suicide (Wilburn & Smith, 2005). Currently there is a need to expand on protective factors to increase efforts in suicide prevention. This study will fill a gap in the literature by investigating the mediating effects of social support and positive thinking on suicide resiliency. Researching these factors will inform the development of effective interventions to build suicide resilience in undergraduate students.

Purpose and Specific Aims of the Study

Purpose of the study

Using the theoretical framework of resilience theory, this quantitative study will investigate the potential mediating (indirect effects) of social support and positive thinking, as protective factors, on suicide resilience among undergraduate students 18-25 years of age.

Aims of the study

The specific aims of the study are:

Aim 1: To examine the direct effect of self-esteem, positive thinking, and social support on suicide resilience.

Aim 2: To examine the direct effect of self-esteem on positive thinking and on social support.

Aim 3: To examine the mediating (indirect) effect of positive thinking and social support on suicide resilience.

The hypotheses of the study are:

H1: Self-esteem, positive thinking, and social support will have a direct positive effect on suicide resilience.

H2: Self-esteem will have a direct positive effect on positive thinking and on social support.

H3: Positive thinking and/or social support will have a mediating (indirect effect) on suicide resilience.

Research questions

The purpose of this study is to determine whether positive thinking and/or social support have a mediating effect on suicide resilience.

RQ1: Do self-esteem, positive thinking, and social support have direct effects on suicide resilience?

RQ2: Does self-esteem have a direct effect on positive thinking and/or social support?

RQ3: Does positive thinking and/or social support have a mediating effect on suicide resilience?

Key variables

The key variables include self-esteem, positive thinking, social support, and suicide resilience as shown in Figure 1. These variables will next be defined and further described.
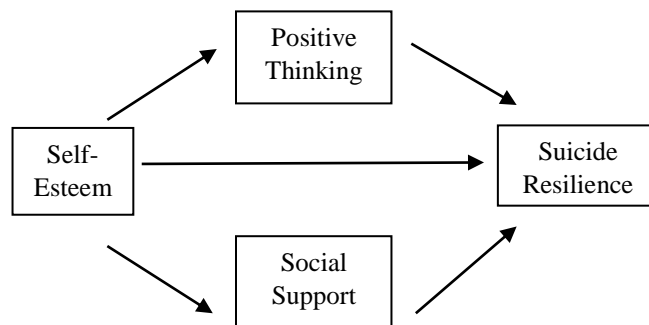
Figure 1. Conceptual framework for the mediating effects of positive thinking and social support on suicide resilience.

Self-esteem

Self-esteem is defined as the feeling of being worthy of respect (Modrcin-Talbott, Pullen, Ehrenberger, Zandstra, & Muenchen, 1998), and "favorable or unfavorable attitude towards self" (Srivastava & Agarwal, 2013, p.59). Self-esteem is an important concept as it is directly related to happiness (Furnham & Cheng, 2000), quality of life (Evans, 1997), coping behavior and in influencing ones' perceptions (Mann et al., 2004). It is formed by an individual comparing themselves to others in regard to their "social identity, opinions and abilities" (Srivastava & Agarwal, 2013, pg. 59). Feelings of inferiority when comparting oneself to others would lead to a decrease in self-esteem. Self-esteem is also developed when individuals assess their interactions with other people and how others perceive them (Srivastava & Agarwal, 2013).

Throughout ones' life-time, an individuals' self-esteem changes according to their social environment, normal maturation, and cognitive changes (Robins & Trzesniewski, 2005). Both genders experience their initial lowest level of self-esteem when they are in their late adolescence and early 20s. This is thought to occur due to unmet expectations, increase in school intensity, and social as well as changes that occur to their bodies during this time (Robins & Trzesniewski, 2005). During adulthood, a higher level of emotional, personal and environmental stability leads to an increase in self-esteem. Women have a decrease in self-esteem when compared to males until their early 80s (Robins & Trzeniewski, 2005).

Regardless of age, self-esteem can vary at any time in one's life due to life changes and circumstances. The level of ones' self-esteem can range from having a high self-esteem to low self-esteem. High self-esteem has been associated with having a sense

of worth and feeling good about one's abilities to engage with others (Srivastava & Agarwal, 2013). This can lead to a positive interpretation of experiences that are favorable toward the individual (Taylor & Brown, 1988). This is supported with the findings that adolescents with an increase in self-esteem were found to have less emotional and psychological distress (Dang, 2014; Resnick, 1997). Whereas, an individual with low self-esteem would be characterized as having "shame, overwhelming guilt, [and] self-hatred" (American Psychological Association, 2015b). College students who have low self-esteem were also found to have an increased risk of suicidal behavior, whereas students with higher self-esteem have a lower risk of suicide (Lakey, Hirsch, Nelson, & Nsmengang, 2014). When someone experiences low self-esteem, he/she can feel incompetent or unworthy. Another hindrance of having low self-esteem is that it can prevent a person from recognizing their full potential (Srivastava & Agarwal, 2013). This can become a self-perpetuating cycle where having low self-esteem further leaves one feeling less confident regarding oneself, therefore preventing a person from improving their self-esteem (Srivastava & Agarwal, 2013). During times of development that are less stable and ones' self-concept is disrupted, self-esteem is likely to be vulnerable to change (Robins & Trzesniewski, 2005). In this study, self-esteem will be conceptualized as an independent variable.

Positive thinking

Positive thinking has been described as "a cognitive process that creates hopeful images" (Bekhet & Zauszniewski, 2013, p. 1076), helps in problem solving, and assists individuals to have a future positive outlook (Bekhet & Zauszniewski, 2013). The effects of positive thinking include, "positive feeling, positive emotions and positive behavioral

qualities" (Nassem & Khalid, 2010, p. 43). Positive thinking acknowledges an individual's positive and negative experiences although focuses on the positive interpretation of events or the outcome. Positive thinking supports ones' resilience by allowing the individual to look past the negative events and be optimistic towards the future (Tugade & Fredrickson, 2004). Having positive thoughts allowed individuals to "psychologically recover from negative emotional" experiences (Tugade & Fredrickson, 2004, p. 20). These positive thoughts influence behaviors of an individual and motivate them towards an expected outcome (Scheier & Carver, 1993). Positive thinking, can be beneficial when experiencing an inconvenient situation by finding a positive reason behind the difficult time, instead of focusing on the situation itself (Fredrickson & Joiner, 2002). This form of thinking also can affect the individuals when they encounter stress. Lazarus and Folkman (1984) stated that rather than stress being a specific event, stress is the experience of the meaning one gives to the situation itself. The thoughts a person has about an event can affect the intensity of the stress experienced by the person. For example, positive thinkers are more likely to be able to handle stressful situations. Consequently, they perceive their experiences as less threatening, which, in turn, can enhance their abilities to cope (Lazarus & Folkman, 1984). In addition, positive thinking has been associated with success in social relationships, increased creativity, and overall health (Lyubomisky & King, 2005).

Having positive thoughts can be helpful in motivating and moving individuals forward in life. On the other hand, negative thinking has been associated with poor outcomes such as devaluing oneself (Nassem & Khalid, 2010). If negative thoughts occur frequently, coping with daily stress can become dysfunctional (Nassem & Khalid, 2010).

The way a situation is approached, with either positive or negative thinking, can affect a person's experience and their anticipation of an outcome. This can have profound effects in enhancing or hindering the way someone lives their life.

Research has found that positive thinking has been linked to decreasing suicide whereas negative thinking increases one's risk for suicide. In college students, a lower risk for SI and SA were found in students with positive attitudes about the future (Hirsch et al., 2007). Consistent with these findings, another study found that college students who have low positive expectancy towards the future or future events had an increase in suicide attempts (Chou, Ko, Wu, & Cheng, 2013). With the influential effects of positive thinking it becomes important to study its effects on suicide resilience in college students, a relationship that has not been studied in college students before. Positive thinking will be conceptualized as a protective factor in this study.

Perceived social support

Perceived social support is the perception of being understood by individuals in one's life and feeling supported (Liu, Mei, Tian, & Huebner, 2016). Having social support is important to a person's mental health (Adamczyk & Segrin, 2015). The perception of the presence of social support, or perceived social support, is the "subjective judgement of the assistance quality" by those who are considered to be someone's social support (Awang, Kutty, & Ahmad, 2014, p. 263). Perceived social support also includes availability of the support provided by others and the history of the relationship (Awang, Kutty, & Ahmad, 2014). The perception of social support for adolescents often comes from their family, especially their parents, and from their community.

Family was found to be the primary social support for adolescents (Olsson, Bond, Burns, Vella-Brodrick, & Sawyer, 2002), in fact poor parenting was preferred over having no parenting or a disengaged institutional caregiver (Ungar, 2004). In agreement with this finding, high school students who felt connected with their family had a decreased risk for SI (Resnick et al., 1997). Family also was linked to increasing young adults' ability to cope with stress which would also decrease the risk for SI (Lian & Geok, 2009). Community members, or adults other than one's parents, were also found to be important for providing social support. When a positive relationship was formed with these adults, these individuals were recognized as providing emotional support (Resnick et al., 1997). These findings help support the study by offering compensation to the emotional distress of low self-esteem but building emotional support through positive relationships in one's life. Perceived social support will be conceptualized as a protective factor in this study.

Suicide resilience

In general, resilience has been used as a process and an outcome (Olssen et al., 2002). As a process, resilience is described as hardiness, good mental health, adapting to a changing environment (Olsson et al., 2002) and healthy development (Larson & Dearmont, 2002). As an outcome, resilience is described as a "product of complex interactions of personal attributes and environmental circumstances mediated by internal mechanisms (Luthar, Cicchetti & Becker, 2000). Resilience has implications in the ability of individuals adapting to stress or an adverse situation (Yates, Tyrell, & Matson, 2015). In a sample of homeless youth, the adolescents who perceived themselves as having

resilience had lower SI (Cleverly, 2011). For the purposes of this study suicide resilience will be utilized as an outcome.

Individuals who are resilient will be able to bounce back or adapt to the situations better than those who are less resilient (Tugade & Fredrickson, 2004). Tugade and Fredrickson (2004) found in college students, regardless of level of resilience, they expressed the same level of frustration in regards to the stress they experience. The difference between those with high and low resilience was their positive mood regarding stress (Tugade & Fredrickson, 2004). College students with an elevated level of resilience experienced positive emotions when confronted with stress (Tugade & Fredrickson, 2004). Building resilience is important in confronting stress and the experience of stress itself which can greatly impact the lives of college students.

Due to the risk for suicide in undergraduate students, increasing college students' suicide resilience becomes even more important. Suicide resilience is "the perceived ability, resources, or competence to regulate suicide-related thoughts, feelings and attitudes" (Osman et al., 2004, p. 1351). As used in this study, suicide resilience refers to the evaluation of the risk and protective factors related to suicidal behaviors. Risk factors for suicide would include variables that would place an individual at risk for intentionally harming oneself whereas protective factors reduce the chances of individuals engaging in these behaviors (Osman et al., 2004). The level of one's resilience has been linked to their risk for suicide. In undergraduate college students, low levels of hardiness, or resilience, and stress were predictors for SI (Abdollahi et al., 2015). Findings from another study indicate individuals who attempted suicide were found to have lower suicide resilience (Roy, Sarchiapone & Carli, 2007). These studies show a connection

between risk for suicide and resilience in undergraduate students. Therefore, in analyzing the interplay of self-esteem with positive thinking or perceived social support on suicide resilience, this study has the potential to aid in the key components for interventions aimed to decrease suicide attempts in college students.

Significance to nursing and contribution to knowledge development

To date, this is the first study that looked at the effect of positive thinking and social support on the relationship between self-esteem and suicide resilience in undergraduate students. The results of this study will inform the development of tailored interventions to build suicide resilience and prevent suicide attempts.

In fact, the increasing number of deaths by suicide and vulnerability of attempting suicide in college students indicates a need for an increased effort for suicide prevention. During late adolescence, it is important to protect individuals from the negative effects of stress. With the increased risk of suicide during this time, building suicide resilience becomes essential to the mental health of adolescents. Social support and positive thinking are two potential protective factors that could decrease the negative effects of low self-esteem.

The findings of this study will investigate how the factors interplay in the role of suicide prevention that could be used for interventions in suicide prevention. This study will add to the current body of knowledge by providing specific variables to utilize in suicide prevention programs that build suicide resilience in college students. These factors build on the findings of nursing studies and can be implemented into nursing practice and education. This study will lead to future research in this area in studying interventions using these variables and their effectiveness on college campuses. The

information obtained from the proposed study could help in the creation of a suicide prevention program in undergraduate students in attempt to decrease the suicide rate in this population.

Organization of the dissertation

Chapter one has focused on an introduction to the problem and population to be studied. Chapter one reviewed background data and introduced the purpose of this study along with the hypothesis and aims of the study. Chapter two will offer a detailed description of the theoretical framework along with the conceptual underpinnings for this study. Chapter three will contain a detailed description of the research design and methodology that will be used to accomplish this study. Chapters four and five will offer two unique manuscripts associated with this dissertation. Chapter four will present a qualitative study that utilized a resilience theory and its components namely, risk and protective factors, in adolescents who survived a suicide attempt from the perspectives of registered nurses (Matel-Anderson & Bekhet, 2016). The resilience theoretical framework used in the 2016 study is the same framework that is used to guide the current study. Chapter five will be a manuscript that presents the results from this study related to the specific aims and hypotheses.

CHAPTER II. REVIEW OF THE LITERATURE AND CONCEPTUAL-
THEORETICAL FRAMEWORK

Background

This chapter discusses the literature review specific to the conceptual framework for this study. The chapter proceeds from a description of the literature review process, followed by defining resilience, use of resilience as a concept, a description of resilience theory and finally the potential utility of suicide resilience for college students. The conceptualization of the resilience theory is discussed as well as the concepts used in this study. The relationship between the concepts will be discussed using the model for this study. Self-esteem, positive thinking, social support, and suicide resilience are the concepts highlighted in this chapter and used in the proposed study. The research articles will be critiqued and the gaps in the literature will be assessed. In conclusion, this chapter will identify some of the university suicide prevention programs available, the limitations of the study and conclusion of the literature review completed for this study.

Literature search description

An extensive review of the literature from 2002-2017 utilizing Cumulative Index of Nursing and Allied Health Literature (CINAHL), PsychINFO, Education Resource Information Center (ERIC) and Web of Science was conducted. The key words used included; college or university student AND suicide* or "suicide prevention" or "suicide programming" AND resilience or "social support" or "protective factors" or "self-esteem" or "positive thinking." The search yielded over 600 articles, book chapters and dissertations.

The search was further limited to the English language or participants with no known existing psychiatric disorders. Known existing psychiatric disorders were not included due to the varying degree of treatment, medications which limited its generalizability to college students. The articles were only included if they addressed the concept of resilience and/or suicidality in college students.

While searching for resilience many terms were found in the literature relating to hardiness, protective factors, adaptation and a developmental process. Although often associated with resilience they are not used in place of or synonymously for resilience. Hardiness is a protective factor for ones' psychological health when experiencing stressful situations and has been described as ability to endure stress (Low, 1999). Three characteristics of hardiness are being strong when confronting a *challenge*, having *commitment* to an experience rather than becoming detached from the events and having the belief you can *control* in turning stressful situations into growth opportunities (Maddi, 2013). The characteristics of hardiness can lead to having resilience or are a result of building resilience (Maddi, 2013), therefore it is a part of resilience meaning the terms have similarities but are not interchangeable. In the review of the literature when concepts arose that were similar or related to resilience they were assessed for their use in the study.

The protective factors search in the literature were also assessed for their use in the review of the literature. An individual's competence or protective factors play a role in the outcome of resilience (Yates, Tyrell, & Maston, 2015), protective factors are a component of resilience not resilience itself. Although, hardiness and protective factors are a part of resilience they do not incorporate the interplay of the risk factors as in

resilience theory. Resilience theory proposes that resilience is the interplay between risk and protective factors in the face of adversity. In other words, in order to have resilience, risk and protective factors must be present (Fergus & Zimmerman, 2005). One study found, students were more likely to report suicidal ideation (SI) when they reported low levels of hardiness (Abdollahi, Talib, Yaacob, & Ismail, 2015). This study demonstrates the relationship between hardiness and SI and suggests that hardiness likely plays a role in resilience.

Resilience has also been referred to as an adaptation or a developmental process (Yates, Tyrell, & Matson, 2015). Resilience is different from an adaptation and a developmental process as it recognizes the existence of varying responses to experiencing adversity (Yates, Tyrell, & Maston, 2015). Positive adjustment and coping are also sometimes used in place of resilience although these are the outcome of resilience not the concept itself (Furgus & Zimmerman, 2005). Resilience is a unique process that incorporates many processes often used to describe when defining resilience. More specifically, it signifies the interplay between risk and protective factors in the face of adversity.

Resilience Theory

Resilience theory serves as the framework for this study. Resilience is the interplay between risk and protective factors that maintains ones' stability when encountering adversity; thus enhancing the ability to adapt to the situation (American Psychological Association, 2015a). More specifically, it is a dynamic process rather than linear or stagnant which explains why individuals respond differently to the same adverse event (Yates, Tyrell, & Masten, 2015). Resilience has also been described as a

phenomenon where an individual would not only maintain their performance and health but also thrive during stressful situations (Maddi, 2013). Resilience is associated with healthy development, positive health outcomes, and ability to withstand stressors in one's life (Yates, Tyrell, & Matsen, 2015). Having resilience allows for a decrease risk for suicide especially when an adverse event arises.

The resiliency theory focuses on "positive contextual, social, and individual variables" or protective factors (Zimmerman, 2013, p. 1). Resilience has been used to understand healthy development in adolescents with a focus on strengths (Fergus & Zimmerman, 2005). In relation to one's health, previous research findings indicate resilience promotes prevention of mental illness (Wallace, 2012). In agreement with that finding, another study found in homeless youth the perception of having resilience was related to decreased "psychological distress" and suicide ideation (Cleverly & Kidd, 2011, p. 272). These studies support the use of resilience to enhance one's mental health. One longitudinal study in Australia indicated resilience may not decrease SI over time (Liu, Fairweather-Schmidt, Burns, Roberts, & Anstey, 2016). Although these findings, using the Connor-Davidson Resilience Scale, did not demonstrate a decrease in SI with resilience, our study will be using a more specific instrument to measure suicide resilience, the Suicide Resilience Inventory.

Resilience consists of two components: risk factors and protective factors. Risk factors are stressors that lead to a decrease in "physical health, mental health, academic achievement or social adjustment" (Braverman, 2001, p.1) that increase the likelihood to have suicidal thoughts or behaviors (Suicide Prevention Resource Center & Rogers, 2011). Risk factors are often "associated with negative or undesirable outcomes in a

given population" (Yates, Tyrell, & Matsen, 2015, p. 775) and increase one's risk for attempting suicide (Suicide Prevention Resource Center, 2014). There are some risk factors that can be changed, such as hopelessness, but other risk factors that cannot such as experiencing family violence (Suicide Prevention Resource Center, 2014). Research findings have led to creating a list of common risk factors for college students attempting suicide as a resource for the general public (Suicide Prevention Resource Center, 2014). These risk factors have been divided into five categories including; behavioral health issues/disorders, individual characteristics, adverse/stressful life circumstances, family characteristics, and school and community factors (Suicide Prevention Resource Center, 2014). Some of the risk factors for suicide are previous suicide attempts, lack of belonging (to a social group), an end of a meaningful relationship, lack of parental support, and access to lethal means such as a gun (Suicide Prevention Resource Center, 2014). Identifying risk and protective factors is important in promoting healthy development and decreasing risk for suicide.

One of the risk factors for suicide is low self-esteem. Low self-esteem is one of the individual characteristics and behaviors that is a risk factor for suicide in college students (Suicide Prevention Resource Center, 2014) that has potential to be modified. Low self-esteem is a risk factor for suicide in youth (American Psychological Association, 2015b) and self-esteem in general is being utilized in this study as a modifiable risk factor for suicide resilience. The use of a modifiable risk factor allows for further research and intervention studies to be completed if the findings of the study are significant.

The second component of resilience is referred to as protective factors. Protective factors "are conditions that promote resilience and ensure that vulnerable individuals are supported and connected with others during challenging times, thereby making suicidal behaviors less likely" (U.S Surgeon General and the National Action Alliance for Suicide Prevention, 2012, p. 13). A protective factor decreases the effects of the negative outcomes from the risk factors (Braverman, 2001) or in other words, they mitigate the effects of risk factors (Yates, Tyrell, & Matsen, 2015) and decrease the threat of attempting suicide (Suicide Prevention Resource Center, 2014). Protective factors can be either assets that are within the individual or resources that are outside the individual (Fergus & Zimmermann, 2005).

To date, three categories have been suggested as protective factors for suicide in college students including; individual characteristics and behaviors, social support and school and community factors (Suicide Prevention Resource Center, 2014). Like the risk factors, there are modifiable and non-modifiable protective factors (Suicide Prevention Resource Center, 2014). Family support and connectedness, emotional well-being and accessibility to student support services are some of the protective factors (Suicide Prevention Resource Center, 2014).

For this study two modifiable protective factors were chosen, social support and positive thinking. Social support is considered a resource (Zimmerman, 2013) whereas positive thinking is an asset. The protective factors being studied in this proposal are the adolescents' perceived social support and positive thinking. In this study, the relationship between the risk factor, self-esteem as an outcome will be assessed with the indirect

effects of social support and positive thinking on suicide resilience in undergraduate students.

Variables of interest in this study are modifiable. For example, research shows that self-esteem develops over time and with experiences (Erol & Orth, 2011). Positive thinking and social support have the potential to be modified as well. They all have the potential to be strengthened through various interventions such as positive thinking interventions and/or social support, which has the potential of impacting suicide resilience in college students. College students may be unaware of available resources indicating the need for a professional help to point out positive support that is available to them or train the individual in positive thinking. Whereas, positive thinking and self-esteem has the potential to be developed though skilled help. If self-esteem were enhanced and the protective factors of positive thinking and social support are in place, suicide resilience also has the potential to be increased. To date, no previous studies have investigated the mediating effects of social support and/or positive thinking on suicide resilience as proposed in this study. The results of this study will provide directions for tailored nursing interventions to enhance suicide resilience in undergraduate students.

Previous uses in population

Resilience theory started as a way for researchers to understand the differences in outcomes of individuals experiencing the same negative experiences. It is important in understanding why one individual may thrive while another may be negatively impacted resulting in a negative outcome (Masten, 2013). The resilience theory fits well with the nursing profession as it is "seeking to promote strength in vulnerable individuals, groups, and societies (Yates, Tyrell, & Matson, 2015, p.773) which tends to be a common goal

for the profession. The resilience theory has been used in the adolescent population to explain healthy development or positive health outcomes despite being exposed to risk factors that threaten ones health (Zimmerman, 2013). Resilience has been used as a 'strengths-based approach' that can lead to forming an intervention in strengthening ones' resilience (Zimmerman, 2013, p. 281).

Conceptualizing resilience

The concept of resilience is thought to arise as a way of adapting with adversity and as a way of providing explanation of why one person might thrive, while another would be despaired (Wolff, 1995). Resilience originally was used in psychiatric literature to describe children who were 'invulnerable' to adverse situations during childhood (Earvolino-Ramirez, 2007). During that time resilience was thought to be a personality trait (Earvolino-Ramirez, 2007), therefore innate.

Over time, the concept of resilience changed and became a dynamic and modifiable process incorporating risk and protective factors (Luthar, Cicchetti, & Becker, 2000). Resilience further expanded to being used in family, community and cultural groups (Fleming & Ledogar, 2008). The concept of resilience has been used in many fields including; environmental, microbiology, engineering and business (Earvolino-Ramirez, 2007). Furthermore, resilience has been used as resilient reintegration and as an innate quality (Fleming & Ledogar, 2008). Resilient reintegration is the "new level of growth" that occurs after a person is confronted by an adverse event (Fleming & Ledogar, 2008, p. 7). Used as an innate quality, resilience is present in the individual but needs to be awakened (Felming & Ledogar, 2008). The concept of resilience has evolved and continues to expand in its use with different populations.

The three components of resilience involve a risk factor, protective factor and outcome, while three models of the resilience theory have been used. They are the compensatory, protective and challenge models. All the models explain the effect of protective factors on risk factors to change the outcome (Fergus & Zimmerman, 2005). The compensatory model has the protective factor work independently to counteract the risk factor and directly affect the outcome (Fergus & Zimmerman, 2005). Since the protective factor or "compensatory factor" works independently, there is a separate and direct effect on the outcome (Furgus & Zimmerman, 2005). The compensatory model show in Figure 2 will be used in this study. As we are testing the mediator effects, we will be looking at the separate and the direct as well as the indirect (mediating) effects on the outcome measure.
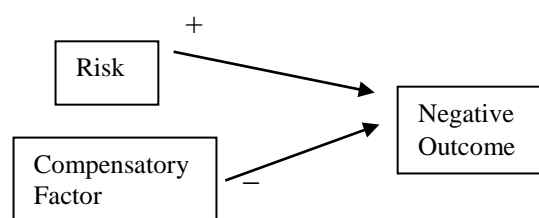
Figure 2. Compensatory model.

The protective factor model uses the protective factor to "moderate or reduce the effects of a risk on a negative outcome" (Fergus & Zimmerman, 2005, p. 301). In this model (Figure 3) the protective factor effects the relationship between the risk factor and the outcome. The protective factor can have a minimal effect or even neutralize the risk factors effect on the outcome (Fergus & Zimmerman, 2005). In the presence of a strong

risk factor this model allows for the potential of the effect of a risk factor to be decreased which can lead to healthier outcomes.
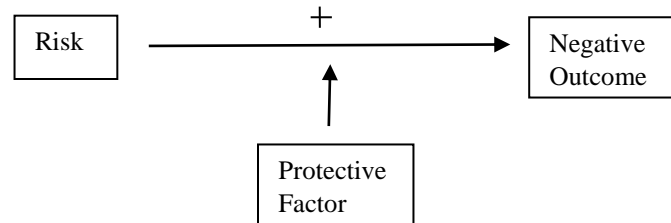
Figure 3. Protective model.

The third model, the challenge model (Figure 4), correlates to high/low levels of risk factors with negative outcomes. As the risk factor decreases, so does the negative outcome (Fergus & Zimmerman, 2005). This model indicates when exposed to a risk factor there is some degree of negative outcome however the opportunity to decrease the negativity of the outcome. One disadvantage to this model is the lack of the use of protective factors or their influence.
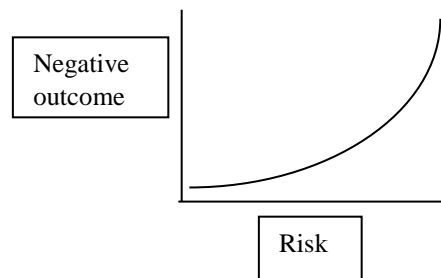
Figure 4. Challenge model.

Conceptualization of suicide resilience: The Self-esteem, Positive Thinking and Social Support Suicide Resiliency Model (SPSSR)

The resilience framework and the protective factor model of resilience allows for further exploration of the relationship of the college students self-esteem and suicide resilience (refer to Table 1).

Suicide resilience is the outcome of environmental and internal factors (Luthar, Cicchetti, & Becker, 2000) therefore is affected by the presence of risk and protective factors. In this study, we will determine if there is a relationship between self-esteem and suicide resilience. The relationship between self-esteem and stress was found in two studies. High self-esteem was found to decrease ones' emotional and psychological distress (Dang, 2014; Resnick et al., 1997) therefore, using these results one could assume self-esteem would effect ones suicide resilience. The existence of this model depends on a relationship existing between self-esteem and suicide resilience. Without this relationship the mediating effects would not be able to be assessed further.

This study will serve to analyze the relationship of these concepts on the relationship between self-esteem and suicide resilience. The second relationship being studied is the effect of self-esteem, positive thinking and suicide resilience. The study will look at the effect of these factors on suicide resilience. Another relationship that will be tested is self-esteem, social support and the effect on suicide resilience. The relationships in this study will enhance the knowledge of suicide resilience in college students and can help in adding to the knowledge on decreasing one's risk for suicide for college campus suicide prevention programs.

Table 1. Conceptual and theoretical definitions.

Definitions	
Conceptual Level	
Self-esteem	Self-esteem is defined as the feeling of being worthy of respect (Modrcin-Talbott, Pullen, Ehrenberger, Zandstra & Muenchen, 1998).
Positive Thinking	Positive thinking has been described as "a cognitive process that creates hopeful images" (p. 1076) helps in problem solving, and assists individuals to have a future positive outlook (Bekhet & Zauszniewski, 2013).
Social Support	Perceived social support is the perception of being understood by individuals in one's life and feeling supported (Liu, Mei, Tian, & Huebner, 2016).
Suicide Resilience	Resilience is a "product of complex interactions of personal attributes and environmental circumstances mediated by internal mechanisms" (Luthar, Cicchetti & Becker, 2000).
Theoretical Level	
Risk Factor	Risk factors are experiences "associated with negative or undesirable outcomes in a given population" (Yates, Tyrell, & Matsen, 2015).
Protective Factor	Protective factors "are conditions that promote resilience and ensure that vulnerable individuals are supported and connected with others during difficult times, thereby making suicidal behaviors less likely" (U.S Surgeon General and the National Action Alliance for Suicide Prevention, 2012, p. 13).
Resilience	The interplay between risk and protective factors that maintains ones' stability when encountering adversity with the ability to adapt to the situation (American Psychological Association, 2015a).

Literature review

The literature review included research from the United States, Japan, China, Europe, Spain, Guam, Taiwan, Turkey, Portugal, Malaysia, and Norway. Students from public and private schools were studied although no online universities were represented or studies comparing public to private universities.

Self-esteem in the literature

Self-esteem will be used as a risk factor in this study and subsequently will be analyzed for its effect on suicide resilience in college students. The findings from a longitudinal study by Erol and Orth (2011) indicated individuals' self-esteem changes from the ages of 14 to 30. According to the findings, self-esteem increases during adolescence and continues, although more slowly, into adulthood (Erol & Orth, 2011). Interestingly, the changes in self-esteem are similar for women and men but different among ethnicities (Erol & Orth, 2011).

College students experience many stressors that have the potential to affect ones' self-esteem. The college experience presents a unique and challenging spectrum of stress, thus college students serve as an appropriate population for encountering effects of stress on ones' self-esteem. A cross-sectional study by Wilburn and Smith (2005) surveyed 88 college students using multiple regression analysis to examine the relationship between stress, self-esteem and suicide ideation. Suicidal ideation was predicted by negative stress and self-esteem (Wilburn & Smith, 2005). The researchers also assessed whether self-esteem would moderate negative stress on suicide ideation, the study did not support the moderating effects of self-esteem on suicide ideation in this sample of 88 college students

(Wilburn & Smith, 2005). When looking at types of stress, the differentiation between acute and chronic depended on whether experiencing stress occurred in the last 1-6 months for acute stress or 6-12 months for chronic stress (Wilburn & Smith, 2005). The effect of stress on self-esteem was found to be more negatively affected by chronic stress than acute stress (Wilburn & Smith, 2005). Therefore, although ones' level of self-esteem can be affected by stress, chronic stress was found to be more detrimental than acute stress. This finding is important because it indicates acute stress would likely not affect self-esteem on a day to day basis, indicating that self-esteem has some stability when being measured.

In the literature, self-esteem relating to suicide in college students was studied using suicide ideation or suicidal behavior not directly studying suicide resilience. High or low self-esteem in relation to suicide resilience was not found to be studied in the literature as proposed in this study, indicating a need to fill this gap in the literature. Self-esteem was found to predict suicidal behaviors in young adults (Buchmann, Blomeyer, & Laucht, 2012; Lakey, Hirsch, Nelson & Nsamenang, 2014). A cross-sectional study using the responses of 371 college students measured self-esteem, suicidal behaviors and depression (Lakey, Hirsch, Nelson, & Nsamenang, 2014). In the study, college students with high self-esteem were found to have a lower suicide risk than their peers who had low self-esteem (Lakey, Hirsch, Nelson & Nsamenang, 2014). De Man and Gutierrez (2012) had similar findings when they surveyed 131 undergraduate students. They also found SI was related to the level of self-esteem but not whether the participants' self-esteem was stable or not (De Man & Gutierrez, 2012). These studies indicate there is a

relationship between self-esteem and SI which supports the use of self-esteem in this study as a risk factor in relation to suicide resilience as an outcome variable.

Peter and Taylor (2014) studied 1,205 college students and found that self-esteem was a significant predictor for suicidality in both LGBTQ (lesbian, gay, bisexual, transgender, and queer) and non- LGBTQ participants (Peter & Taylor, 2014). A similar cross sectional study conducted in Europe, found a negative correlation between suicidal behaviors and self-esteem in a sample of 311 participants aged 19 to 23 years of age (Buchmann, Blomeyer & Laucht, 2012). Several studies have found a significant negative correlation between self-esteem and risk for suicide. Those studies indicate, in fact, that there is a positive correlation between self-esteem and suicide resilience.

In agreement with the previous studies mentioned, the literature also found a link between self-esteem and SI (Wilburn & Smith, 2005; Ridgway, Tang, & Lester, 2014; Peter & Taylor, 2014; Kidd & Shahar, 2008). SI differs from suicidal behaviors due to the nature of the suicidal behaviors being a lethal act that is intentional, unintentional or threatened (Sun, 2011). Whereas, SI refers to having thoughts of harming oneself without a behavioral act of harm towards oneself. These findings further support the use of self-esteem and suicide resilience in this study.

Studies analyzing the effects of self-esteem on suicide resilience revealed an unfilled gap in the literature. Self-esteem was a predictor of suicidal ideation and suicidal behaviors. Therefore, it is likely that self-esteem may affect ones' suicide resilience. This study will address the relationship between self-esteem and suicide resilience. To date, no studies have examined the mediating function of positive thinking and perceived social support on suicide resilience as proposed in this study

Positive thinking in the literature

Positive thinking has been described as having "…positive expectations for ones' future" (Scheier & Carver, 1993, p.26). These expectations affect ones' actions and experiences (Scheier & Carver, 1993). Positive thinking has been defined as an attitude reflected in ones "…thinking, behavior, feeling and speaking" that allows for "growth, expansion, and success" (Nasseem & Ruhi, 2010, p. 42). The relationship between positive thinking and stress have been studied indicating positive thinking has the potential to counteract the effects of stress and lead to better health outcomes (Nassem & Ruhi, 2010). A person who uses positive thinking will perceive a stressful event as less threatening and be able to cope better than people who have negative thoughts (Nassem & Ruhi, 2010). One study found positive thinking effective in decreasing high school students' academic burnout (Fandokht, Sa'dipour, & Ghawam, 2014). The students received ten 2-hour sessions on positive thinking and how the students can incorporate it into their lives (Fandokht, Sa'dipour, & Ghawam, 2014). The use of positive thinking as an intervention and the reported significant findings indicate positive thinking has the potential to be taught and incorporated into circumstances in ones' life.

In the literature search, positive thinking was not found to be studied in this population. Similar findings that arose were optimism, hope, positive expectations for the future and positive attitude. Optimism is considered a component of positive thinking that is more stable over time (Scheier & Carver, 1993). Whereas, positive thinking has been found to have the ability to be taught (Bekhet & Zauszniewski, 2013). Bekhet and Zauszniewski (2013), used the acronym THINKING to incorporate components of positive thinking in a manner that can be taught to participants in an intervention study.

The components included; "*T*ransforming negative thoughts into positive thoughts, *H*ighlighting positive aspects of the situation, *I*nterrupting pessimistic thoughts by using relaxation techniques and distraction, *N*oting the need to practice, *K*nowing now to break the problem into manageable parts, *I*nitiating optimistic beliefs with each part of the problem, *N*urturing way to challenge pessimistic thoughts, *G*enerating positive feelings by controlling negative thoughts" (Bekhet & Zauszniewski, 2013).

Although positive thinking was not studied in relation to resilience in college students, optimism and suicide ideation surfaced in the findings. In college students, higher optimism was found in students with lower levels of SI (O'Keefe & Wingate, 2013) whereas, lower optimism was found in students with increased SI (Sanchez-Teruel, Garcia-Leon, & Muela-Martinez, 2013; Hirsch, Wolford, LaLonde, Brunk, & Parker Morris, 2007; Yu & Chang, 2016). All the studies found in the literature review indicated a relationship between optimism and SI.

O'Keefe and Wingate's (2013) cross sectional study included 168 American Indian and Alaskan native college students from two Midwestern universities. The study found that students with higher levels of optimism also had lower levels of SI (O'Keefe & Wingate, 2013). Interestingly, the study also assessed the hope scale and its subscales with the acquired capacity for suicide. The Acquired Capacity for Suicide scale is a 20 item self-report measure assessing questions related to fearing pain from suicide or death with higher score indicating higher risk for attempting suicide. The results found that hope and its subscales predicted a higher rating on the Acquired Capacity for Suicide scale indicating a higher risk of those individuals attempting suicide (O'Keefe & Wingate, 2013). These results should be used with caution when attempting to generalize

to college students as the population assessed were American Indian and Alaska native college students ranging from 18-62. The broad range in age has the potential to greatly affect the results as suicide risk is increased during adolescence and elderly population. This population spans both at risk groups failing to accurately represent the college student population.

Another study used a secondary analysis of data from 2,835 students who responded to the Mental Health Survey of College Students in Taiwan, supported the previous studies findings. The college students who attempted suicide had lower levels of positive expectations for the future (Chou, Ko, Wu, & Cheng, 2013). In fact, the male and female students who reported attempting suicide had lower expectations for the future than their non-attempting classmates (Chou, Ko, Wu, & Cheng, 2013). In this study depressive symptoms were controlled for and the statistical tests used were an independent t tests and chi-square tests to determine differences between students who attempted suicide and those who did not. One of the issues noted with this study was that only one question was used to determine whether someone attempted suicide or not which has the potential to lead to incorrect data. These findings are parallel to the previous study mentioned on positive thinking as lower levels of expectations for the future would lead an individual to having lower levels of optimism.

All the studies reviewed above indicate that positive thinking and optimism play a role in SI and therefore are likely to affect ones' suicide resilience. To date, no studies have examined positive thinking in relation to suicide resilience in college students as proposed in this study. Needless to say, the connection between hope, positive expectations for the future, and optimism would suggest a relationship between suicide

resilience and positive thinking. The current study contributes to knowledge development by examining the mediating effects of positive thinking on the relationship between self-esteem and suicide resilience, thus filling the gap in the literature. Positive thinking is a modifiable variable that has the potential to be learned (Bekhet & Zauszniewski, 2013) and if found to be an effective protective factor in enhancing resilience, it can be utilized in future intervention studies on college campuses.

Social support in the literature

In the literature review, social support was researched in relation to resilience, SI, suicide risk or SA. Data regarding social support and suicide resilience did not surface in this literature review. One study found, as family support increases so does ones' general resilience (Adams, 2007). This cross-sectional study included 65 students who identified as lesbian, gay and/or bisexual (LGB). The findings indicated that positive LGB identity development and support from their families were among some of the factors that significantly correlated with being resilient (Adams, 2007). The significant findings of social support affecting ones' resilience promotes the use of social support affecting ones' resilience from attempting or committing suicide.

Social support studied in college students included; support from ones' family, specifically ones' parents, significant others or friends. Positive social support decreased SI (Hirsch & Barton, 2011; Ridgway, Tang, & Lester 2014) and in agreement with these findings, other studies found an increased risk for SI was seen in individuals with less social support (Sanchez-Teruel, Garcia-Leon, & Muela-Martinez, 2013, Liu & Mustanski, 2012; Zang & Sun, 2014; Yakunina, Rogers, Waehler, & Werth, 2010). Social support was found to be a crucial factor in college students experiencing SI.

Social support has the potential to buffer some of the negative experiences for college students. Antonio and Molerio (2015) report in their cross-sectional study that students 12-20 years old with low social support who experienced bullying had a negative emotional impact and more difficulties at school (Antnio & Moleiro, 2015). There was not a difference found between males and females experiencing cyberbullying but overall men were found to have greater levels of victimization than females (Antnio & Molerio, 2015). There are many reasons as to why this difference may have occurred. The study did not report levels of social support differentiated by gender. Females may have higher social support than males which would decrease the feelings of being victimized as reported by the female students in the study. Another factor to consider is perception of victimization or normalization of being a victim which could account for the differences in reporting between males and females. The participants for this study were collected via snowball sampling at a university in Spain with LGBT participants being over-represented. Due to the increased vulnerability of this population the results lack the ability to represent the general population of college students nationwide.

Unfortunately, according to 321 undergraduate students' responses to a survey on help-seeking behavior, the participants with higher SI also had lower social support and were less likely to seek help for SI from individuals other than professional services, such as a friend, family or significant other (Yakunina, Rogers, Waehler, & Werth, 2010). This would make these individuals more vulnerable and at greater risk for SA. Since this study used cross sectional correlational data a cause effect relationship is not able to be determined between the variables but rather the existence of its occurrence.

The findings from the previous study were partially supported in another study by Kimura, Umegaki and Mizuno (2014) using a cross-sectional study designed to investigate help seeking behaviors, social support, SI along with other variables. According to their study, social support encouraged willingness to seek help in females but not men in Japanese university students with SI (Kimura, Umegaki & Mizuno, 2014). Some of the limitations of their study included the cross-sectional design which only allowed for a one point in time collection of the data, so that the social support and help seeking behaviors and suicidal ideation could not be assessed over time. Their findings should be assessed with caution given the possibility of cultural differences as they studied Japanese students. One potential reason for the decrease in willingness to seek help may have been the lack of in acceptance of mental illness.

Family support was found to be important in decreasing suicide in college students. In college students, family functioning was found to be inversely correlated to SI (Chen, Wu & Bond 2009, Kok, can Schalkwky, & Chan, 2015), low social support was a predictor for SI (Arria, O'Grady, Calderia, Vincent, & Wilcox, 2009; Wilcox, Arria, Caldera, Vincent, Pinchevsky, & O'Grady, 2010) and associated with SA (Blum, Sudhinaraset, & Emerson, 2012). In a study conducted by Westefeld and colleagues (2006), low social support was also discussed in distance from family or high school support groups, indicating regardless of a college students' support group, the physical distance between the individual and who they perceive as being supportive also likely plays a role in accessing the support that is needed (Westefeld, Button, Button, & Haley, 2006).

When assessing support from ones' parents, studies found the relationship with ones' father was important in decreasing SI (Arria, O'Grady, Caldeira, Vincent, Wilcox, & Wish, 2009) and suicidal behavior (Nkansah-Amankra, Diedhiou, Agbanu, Agbanu, Opoku-Adomako, & Twumasi-Ankrah, 2012). Arria et al. (2009) analyzed 1,249 first year college students in face to face interviews. The responses demonstrated that regardless of the presence of high depressive symptoms, low social support was the main risk factor indicated for SI (Arria et al., 2009). Therefore, when screening individuals for having a risk for SI you cannot solely rely on screening someone for depressive symptoms. Another finding from this study indicated having a conflict with ones' father was associated with SI (Arria et al., 2009). Therefore, the perception of support from ones' family and specifically their father, is indicated to be a factor in suicide risk. Therefore, the perception of support may also play a role in building resilience against suicidal behavior. The researchers concluded that more research needs to be done to identify the type of support fathers can provide to decrease SI and for those who do not live in the same household as their father how this parental support can be fostered in other ways.

A longitudinal study by Nkansah-Amankra et al., (2010) using the respondents from the National Longitudinal Study of Adolescent Health (*N*=9,412) had similar findings. The study was initiated in 7-12 grade starting in 1994, and ended when the participants reached 26-34 years old in 2008. A strength of this study was the ability to capture data over time and measure changes in responses. The findings indicate females with low parental support had an increase in SI in early adulthood (Nkansah-Amankra et

al., 2010). In the male respondents, SI was only associated with having low support from their father rather than both parents (Nkansah-Amankra et al., 2010).

Other than ones' family, another source of support for college students is through their peers. College students indicated support from their friends as being the most important when experiencing a suicidal crisis (Rice, 2016). Unfortunately, students who sought help from their peers and felt their problem was minimized or if they felt shamed during that interaction had an increase in SA (Rice, 2016). Often another form of support from their peers is through college clubs such as sororities and fraternities. For college students being a part of a fraternity or sorority did not decrease ones' risk of SI (Ridgway, Tang, & Lester, 2014), unlike what would be expected of students joining college groups. These findings indicate that social support can be an effective factor in preventing suicide although negative social interactions can also have an adverse effect on ones' mental health.

Two studies used social support as a moderator. Social support was found to moderate SI and age, marital status, sexual orientation and anxiety symptoms (Shtayermman, Reilly, & Knight, 2012). The second study found that social support moderated the relationship between impulsivity and suicide risk (Kleiman, Riskind, Schaefer, & Weingarden, 2012). Neither study used social support as a mediator for self-esteem and suicide resilience as proposed in this study.

The studies that have been reviewed so far indicated that social support is important in reducing SI in college students which should increase suicide resilience in this population as well. To date, no studies has investigated the mediating effects of social support on suicide resilience as proposed in this study.

Campus Interventions for suicide prevention in the literature

Suicide interventions on college campuses vary greatly in their approach to suicide prevention. According to one of the studies, seventy-one percent of college students indicated they did not know what resources for suicide prevention are available to them on campus (King, Vidourek, & Strader, 2008). The participants for this study included 1,019 students from three universities who were asked questions regarding perceived self-efficacy in identifying warning signs of suicide and campus suicide intervention resources available (King et al., 2008). Another alarming finding from this study indicated only 11% of the students strongly believed they could recognize if a friend was at risk for suicide and only 17% felt they would be able to ask a friend if they were suicidal (King, Vidourek, & Strader, 2008). This was consistent with the cross-sectional study by VanDesusen, Ginebaugh and Wallcott (2015) that also found students felt they lacked information on suicide and were not familiar with warning signs for suicide. Sixty-six percent of the students from this study believed seeking treatment for suicide would result in the social stigma (VanDesusen et al., 2015). These findings are alarming as they do not promote safety for the individual or their classmates on college campuses. The minority of students who were confident in recognizing individuals at risk for suicide either were exposed to suicide prevention education in high school and/or experienced a family or friend with SI (King et al., 2008). The literature reviewed indicated students lacked information on resources available to them through their university and often gained confidence through other experiences.

Many initiatives have been suggested by different studies including; decreasing stigma through use of the media, providing peer services, and education on suicide

(Cimini & Rivero, 2013). Also, another resource that has been used online suicide prevention brochure that educates students on suicide including myths, warning signs and steps to take when encountering someone who is suicidal on their university webpage (Westefeld, Button, & Haley, 2006). When there is a threat or attempted suicide, some universities use the Consultation and Resource Evaluation (CARE) program (Rivero et al, 2014). The CARE program is a guide for staff members in the counseling center and Department of Residential Life to intervene when a student is at risk for attempting suicide (Rivero et al., 2014).

Counseling centers on-campus provide avenues to facilitate identification and interventions of students at risk. Such centers offer a unique centralized and coordinated resource to help screen, initiate treatment and triage students affected by mental health issues including SI. One important barrier to accessing help is the reluctance of individuals to recognize when help is needed and then seek out available resources. One of the issues with getting individuals help is their willingness to access these services. A study surveying 1,162 students from two different universities found of the 84.4% who were at moderate or high risk for suicide, only 19.4% met with a counselor in-person (Haas et al., 2008). The student counseling services were more likely to be accessed by college students who engaged with a counselor online (Haas et al., 2008). From what have been reviewed so far, it became more apparent that most of the efforts and the interventions are directed more toward secondary prevention. In other words, the students who have suicidal ideation or suicide attempts were less likely to access help when needed. This study will inform the development of tailored intervention that will focus more on primary prevention and building resiliency. For example, a positive thinking

training intervention campus wide using an acronym for the content and chunking to help

students remember the positive thinking skills (Bekhet & Zauszniewski, 2013).

Gaps in the literature

This study contributed to scientific knowledge development and fills a gap in the

literature that is much needed. To date, no studies have investigated the mediating effects

of positive thinking and/or social support on suicide resilience among undergraduate

college students as proposed in this study. A gap in the literature exists between the

variables of interest in the current study, namely positive thinking, social support, self-

esteem, and their relationship to suicide resilience. Of note, the studies that were

reviewed focused on suicide behavior, risk for suicide or SI. To date, none of the

reviewed studies have focused on positive concepts such as suicide resilience and its

relation to positive thinking and social support as proposed in this study, which are

important contributions to the scientific body of knowledge. As the current trend now is

to move toward primary prevention, it is important to study the relationships between

positive thinking, self-esteem, social support, and suicide resilience to develop tailored

interventions to build suicide resiliency and prevent suicide in undergraduate students.

Research question & hypotheses

The purpose of this study is to determine whether positive thinking and/or social

support have a mediating effect on suicide resilience. The study will address the

following research questions:

RQ1: Do self-esteem, positive thinking, and social support have direct effects on suicide

resilience?

RQ2: Does self-esteem have a direct effect on positive thinking and/or social support?

RQ3: Does positive thinking and/or social support have a mediating effect on suicide resilience?

The hypotheses of the study are:

H1: Self-esteem, positive thinking, and social support will have a direct positive effect on suicide resilience.

H2: Self-esteem will have a direct positive effect on positive thinking and on social support.

H3: Positive thinking and/or social support will have a mediating (indirect effect) on suicide resilience.

Summary

This chapter defined resilience and the conceptual use of suicide resilience for this study. Self-esteem, positive thinking and social support were searched in the literature in relation to suicide resilience in college students. The literature revealed a lot of information on SI and suicidal behavior, which would affect ones' suicide resilience, but lacked studies incorporating suicide resilience and its relationship to positive thinking and social support. To the researcher's knowledge suicide resilience has not been studied in relation to self-esteem with the proposed protective factors. The relationship between positive thinking and suicide resilience has yet to be studied and this study would fulfill this gap that currently exists. These factors may play a significant role in the prevention of suicide in college students and could be implemented in suicide prevention strategies. This study is essential to help guide future prevention strategies.

CHAPTER III. RESEARCH DESIGN AND METHODS

Introduction

The methodology of the study will be discussed in this chapter. More specifically, the chapter will include a description of the research design and sampling issues (including sample characteristics, inclusion and exclusion criteria, and sample size determination based on power analysis). This chapter will also include the data collection procedures, the issues of measurement and instrumentation, protection of human rights, data management, and finally, a description and discussion of the analysis.

Research Design

The proposed study uses a cross-sectional, predictive correlational design analyzing the proposed research questions. This design allows for suicide resilience to be studied using a non-experimental design to "analyze direction, degree, magnitude, and strength of the relationships or associations" (Sousa, Driessnack, & Costa Mendes, 2007, p. 504) of the variables tested. A correlational design allows researchers to evaluate the strength of the relationship between variables and direction of the relationship of the variables (Curtis, Comiskey, & Dempsey, 2016). This design often is cost effective and can generate hypotheses for future research studies to expand on (Curtis, Comiskey & Dempsey, 2016).

The three type of correlational designs are descriptive, predictive and model testing (Sousa et al., 2007). A predictive correlational design, as used in this study, allows for the variables to be tested without manipulation to predict the "variance of one or more variables based on the variance of another variable (s)" (Sousa et al., 2007, p. 504).

Cross–sectional design is appropriate for this study because it allows one time sampling of undergraduate students to enhance the understanding of suicide resilience in a cost-effective way that can be used to predict how the relationship of these factors affect undergraduate college students. This study was designed to incorporate ease of completion, add to the existing body of knowledge in this area and to be used for future intervention studies for suicide reduction programming.

Setting

A randomly selected sample of undergraduate students for this study was recruited via email from the university student database. The survey was created and the responses were collected using Qualtrics. The survey database, Qualtrics, allows for responses to be obtained without linking the Internet Protocol (IP) Address to the survey responses, therefore the survey is not connected to the participant.

Sampling Issues

Sample Specification and Recruitment

A randomly selected sample was obtained by emailing potential subjects until the desired size of 120 was reached. The emails were randomly selected from a list of students enrolled part or full-time in an undergraduate program and provided by the office of Institutional Research and Analysis at the university. The assistant director from the office of Institutional Research and Analysis e-mailed a list of students that met the IRB criteria for the study. On reviewing the inclusion criteria, the assistant director informed the researchers that the sample could not be based on age due to the Family Educational Rights and Privacy Act (FERPA) restrictions and suggested adding a

response option for question 1, with a skip logic to filter out those who are not 18-25 years old. The question asked: What is your age? If the participant was not 18-25 years old, as discussed in the primary email communication and consent form, the survey closed and those meeting the criteria were able to access the survey. After the addition of this question, the remaining research criteria for the study was entered into the student database and the computer randomly composed a list of 370 participants. The assistant director confirmed in the email containing the list of study participants that a representative, randomly selected sample of undergraduate student emails was obtained. However, out of these 370 e-mailed participants, the survey was closed when 120 students completed in the study and collected a gift card, so the resulting sample might not be representative to all undergraduate students.

Inclusion and exclusion criteria

The students eligible for the study included 18-25 years old, currently enrolled in an undergraduate program as part or full-time status and able to read and speak English. Participants were required to have access to the internet to complete the survey. Those 18-25 year old are the group at greatest risk of those above 18 years old to make a suicide plan (U.S. Department of Health and Human Services, 2014). Along with this increased risk, in 2013 there was an increase in college students having SI (U.S. Department of Health and Human Services, 2014). Therefore, college students in this age group are at an increased risk for having suicidal ideation (SI) and creating a suicide plan.

Sample Size Determination

The most effective method in determining the sample size is through power analysis. Researchers suggested sample size be determined by "the model distribution of the variables, amount of missing data, reliability of the variables, and strength of the relations among the variables" (Muthen & Muthen, 2002, p. 599-600). Determination of the sample size depends on the number and type of variables, Type 1 and 2 error and effect size (Beaujean, 2014). The Monte Carol method uses estimates from previous research findings or "…the best estimates available for population vales…" (Muthen & Muthen, 2002, p. 601).

The effect size refers to the magnitude of the findings, which is a measure of how strong the effect of the independent variable will be on the dependent variable (Polit & Beck, 2012). According to Polit and Beck (2012), the effect size should be based on previous work, if it exists, rather than simply picking a "moderate effect" from Cohen tables. It should be noted that no study has explored the relationship among these study variables as proposed in this study. The effect size depends on the type of variables and statistical tests performed. This study required multiple regression because it examined the direct effect of the relationship between self-esteem and suicide resilience and the mediating effects of perceived social support and positive thinking on suicide resilience.

The effect size was based on the direct effect of the relationship between self-esteem and suicide resilience and indirect effects of perceived social support and positive thinking on the relationship between self-esteem and suicide resilience. Two studies found that adolescents with high self-esteem had less emotional (Resnick, 1997) and psychological distress (Dang, 2014). One of the studies further indicated low self-esteem

was linked to higher psychological distress (Dang, 2014). A connection between high self-esteem and mental health was found in the studies. Mental health plays a role in suicide resilience although no studies report directly finding a link between self-esteem and suicide resilience. Therefore, a low effect (b=0.1) was used in this study for the relationship between self-esteem and suicide resilience.

A medium effect (b=0.3) was used for the relationship between self-esteem and social support. The medium effect was established when analyzing findings in two studies. A qualitative study on at-risk youth indicated one's identity is formed by the adults in ones' life and these adolescents were more resilient if they had positive factors relating to their identity (Ungar, 2004). Another study indicated specific positive factors in ones' life included appearance, self-worth, and feeling socially accepted were protective factors when the adolescent was confronted with stress (Rew et al., 2012).

For the relationship between social support and suicide resilience the study used the higher end of a medium effect (b=0.45). This was used due to the findings of social support or social connectedness increasing mental health (Dang, 2014) and decreasing risk for suicide ideation (Resnick et al., 1997). A study on the psychometric properties of the SRI-25 and MSPSS found a medium correlation (r=0.28), although this study did not examine social support as a mediating effect on the relationship self-esteem and suicide resilience. Therefore, in this study it is argued that the relationship will have more of an effect when taking into account the relationship of self-esteem and suicide resilience.

The relationship between self-esteem and positive thinking was identified as having a medium effect (b=0.3). Having positive self-esteem can be a protective factor against 'negative messages or stressors' (Mann, Hosman, Schaalma, & de Vries, 2004, p.

363). In children, self-esteem can be affected by the way they evaluate or monitor themselves in comparison to their peers, which can be influenced by thinking positively or negatively (Seligman et al., 1995).

A medium effect between positive thinking and suicide resilience (b=0.45) was used for this study. Interventions using positive thinking in different populations to increase ones' quality of life and ability to adapt (Bekhet & Zauszniewski, 2013). The effect between these two concepts was on the higher end of having a medium effect due to positive thinking interventions being used and found to be effective in enhancing mental health, which in turn should increase one's suicide resilience.

When calculated, the Monte Carlo simulation (2015) sample size estimated 120 adolescents were an adequate sample size for the study, and the total effect was 0.37 (Monte Carlo, Inc). The Monte Carlo simulation to estimate sample size was done in the software R 3.4 (R Core Team, 2017) with the package simsem (Pornprasertmanit, Miller & Schoemann, 2016) following the approach presented by Schoemann, Miller, Pornprasertmanit, and Wu (2014).

Study Variables and Instruments

Measurements that were used in this study were selected based on strong evidence of psychometric properties, including reliability and validity. The numbers of items for each instrument were taken into consideration to minimize missing data and as well as to decrease subjects' burden. Permission from the authors was obtained for the instruments used in the proposed study. These instruments are the Collective Self-Esteem Scale, Positive Thinking Skills Scale, the Multidimensional Scale of Perceived Social Support, and the Suicide Resilience Inventory.

Instruments

Independent Variable

Self-esteem was measured using the Collective Self-Esteem Scale (CSES). The CSES is a 16-item, 7-point Likert scale, ranging from (1) strongly disagree to (7) strongly agree. The subscales are membership self-esteem, private collective self-esteem, public collective self-esteem, and importance to identity. Each subscale has four items used for scoring the answers. The 16 items that have reverse coding will be adjusted prior to adding the items and multiplying by 4 for the subscale score. This study will use the total composite score for the CSES, which has been used before in previous studies (Rahimi & Rousseau, 2013; Pedersen et al., 2013). Higher scores, indicate increased self-esteem. The Cronbach alphas ranged from .73-.80 for the subscales and .85 for the total scale (Luhtanen & Crocker, 1992). When assessing validity, there was a moderate correlation between the CSES and the Rosenberg Self-esteem Scale.

A second study to retest the reliability and confirm validity of the previous study used responses from 83 undergraduate psychology students. Reliability was demonstrated with a 6 week test-retest of the scale, although there was "some shifting in individuals' levels of collective self-esteem" (Luhtanen & Crocker, 1992, p. 310). The scale showed validity when a significant correlation was found with the subscales from the Collective Self-Esteem Scale and the Rosenberg (1965) Self-Esteem Scale, the Janis-Field Feeling of Inadequacy Scale (Janis & Field, 1959), and the Coppersmith (1965) Self-Esteem Inventory (Luhtaen & Crocker, 1992).

Mediating Variables

Positive thinking was measured using the Positive Thinking Skills Scale (PTSS), an 8-item 4-point scale ranging from (0) never to (3) always. The final scores can range from (0) not using the positive thinking skills to (24) more frequently using the skills (Bekhet & Zauszniewski, 2013). The PTSS was studied in 109 caregivers of persons with autism spectrum disorder. Reliability was assessed using Cronbach's alpha which was found to be .90. The correlations between items ranged from $r= .30$ and $r= .07$ which also indicates internal consistency (Bekhet & Zauszniewski, 2013). The PTSS was compared to the Depressive Cognitions Scale which also measures positive cognitions, when scores are not reversed because all the items are phrased in a positive direction, but does not have the frequency of positive thinking skills. There was a significant positive correlation found, $r=.53$, $p<.01$. Construct validity was tested using PTSS with resourcefulness, depression, and general well-being (Bekhet & Zauzniewski, 2013). The expected outcomes were present when tested, as positive skills increased, depressive symptoms decreased, resourcefulness was increased and psychological well-being was increased (Bekhet & Zauzniewski, 2013).

Social support was measured using the Multidimensional Scale of Perceived Social Support (MSPSS) scale. The MSPSS is, a 12-item 7-point Likert scale ranging from (1) very strongly disagree to (7) very strongly agree. The three subscales for MSPSS are significant other, family and friends. The higher the score indicates greater social support. For each subcategory, there are 4 items with no reverse coding. To calculate the composite scores, you add the four responses indicated and divide by 4. For an on overall score, you take the sum of the 12 items and divide by 12. The MSPSS was

studied in 265 pregnant women, 74 adolescents and 55 pediatric residents. The scale was

found to have good internal reliability, with the Cronbach's alpha for the subscales: 0.81

to 0.98 and 0.84 to 0.92 for the scale as a whole (Zimet, Powell, Farley, Werkman &

Berkoff, 1990). Factorial validity for the subscales was tested using subscale validity

using a multivariate analysis of the variance, with $p< .005$ (Zimet, Powell, Farley,

Werkman, & Berkoff, 1990).

Another study that was competed including 222 urban adolescents found the

MSPSS to be reliable and valid. Reliability was assessed using Cronbach's alpha which

was found to be .91, .89, .91 for the subscales and the total scale was .93 (Canty-Michell

& Zimet, 2000). Discriminant validity for the family subscale was found through

analyzing the correlation with the Adolescent Family Caring Scale (AFCS). The

correlation between family subscale from the MSPSS and AFSCS was significantly

stronger ($r = .76, p < 001$) than the friends ($r = .33, p < .001$) and significant other

subscales ($r = .48, p <.001$) (Canty-Michell & Zimet, 2000).

Dependent variable

Suicide resilience was measured in this study using the Suicide Resilience

Inventory (SRI), a 25-item, 6-point Likert scale ranging from (1) strongly disagree to (6)

strongly agree. To arrive to the composite scores, the sum of the score items were divided

by 25. The scale ranges from 1-6, with the higher scores indicating less suicide risk

(Rutter, Freedenthal, & Osman, 2008). None of the items have reverse coding. The SRI

has three subscales including Internal Protective, Emotional Stability and External

Protective factors. The three factors account for a total of 61.8% of the variance in adult

and adolescent inpatient psychiatric patients (Osman, Gutierrez, Muehlenkamp, Dix-

Richardson, Barrios, & Kopper, 2004). The reliability analysis indicated the Cronbach alpha of this sample of high school and college students at .96. The instrument was also assessed for the reliability of the subscales. The three subscales were assessed with the Cronbach alpha findings of the Internal Protective scale .94, Emotional Stability scale .93, External Protective scale .90.

When analyzing the discriminant validity for all three sub-scales, the resiliency scores of the Suicidal Ideation (SI) group was higher than the Suicide Risk group and the Non-suicidal subgroup was significantly higher than the Suicide Risk group. The Suicide Risk group had a higher risk of attempting suicide, whereas SI is a lower level of risk for suicide. The Nonsuicidal group and the SI group indicated a higher resilience mean score than the Suicide Risk group (Osman et al., 2004). The findings were consistent with the level of resiliency one would expect in the groups.

The validity of the SRI was established by examining the psychometrics of the SRI across populations, including adolescents and young adults (Osman et al., 2004), college students (Rutter et al., 2008) and psychiatric adolescent inpatients (Gutierrez et al., 2012). In one study, the reliability was established with the Cronbach alpha scores (.92, .92, .86) for the three scales (Rutter et al., 2008). The SRI was indicted to be valid and reliable in assessing suicide resilience in college students, as well as other populations, which supports use in the proposed study.

Table 2. Summary of instruments and their reliabilities

Variables	Concepts	Measurements	Number of Items	Score of Range	Total Scores	Reliability reported
<u>Independent</u> Collective Self-Esteem Scale	Self-Esteem	Likert scale	16	1-7	16-112	Overall: .85 Subscales: .73-.8
<u>Mediating</u> Positive Thinking Skills Scale	Positive Thinking	Likert scale	8	0-3	0-24	.9
<u>Mediating</u> Multidimensional Scale of Perceived Social Support	Social Support	Likert scale	12	1-7	12-84	Overall: .93 Subscales: .91, .89, .91
<u>Dependent</u> Suicide Resilience Inventory	Suicide Resilience	Likert scale	25	1-6	1-6	Overall: .96 Subscales: .94, .93, .9

Data Collection Methods

Information on participating in the online one-time survey was distributed via email to the university students meeting the initial criteria and enrolled as part or full-time status. The student emails were obtained from the Office of Institutional Research and Analysis from the student database. The emails were entered into Qualtrics and sent to the participants with a link to the survey allowing for a one-time completion of the survey. The survey began with the consent form prior to initiating the demographic information and four assessment tools. At the end of the survey there were instructions and a link to a second survey. The second survey allows for the students to have a gift card sent to them without their survey being attached to the email they used to maintain anonymity. The information from the completed surveys while collecting the data was

stored in a password protected log-in on Qualtrics. Students were given reminder emails on a weekly basis until the sample size is reached. The information obtained on Qualtrics was transferred to a password protected laptop file in the Statistical Package for the Social Sciences, version 21.0 (SPSS, Inc.).

Research Procedures

The online survey was a one-time data collection point chosen to allow for reaching multiple educational programs, students on and off campus and students with varying daily schedules. Recruitment was initiated immediately following IRB approval with the potential participants sent an email with information regarding the study, information on counseling services and emergency hotlines, and a link to the survey. The survey began with an explanation of the study itself, contact information for the primary investigator if questions arose and the IRB department. Next, the consent form contained information regarding participants' right to end the survey at any time without penalties and for their information to remain confidential at all times. The survey ended with phone numbers to the counseling service and emergency hotlines. On completion of the survey, the participants were emailed an $8 gift card.

Statistical Procedures and Rationale

The study will address the following research questions:

RQ1: Do self-esteem, positive thinking, and social support have direct effects on suicide resilience?

RQ2: Does self-esteem have a direct effect on positive thinking and/or social support?

RQ3: Does positive thinking and/or social support have a mediating effect on suicide

resilience?
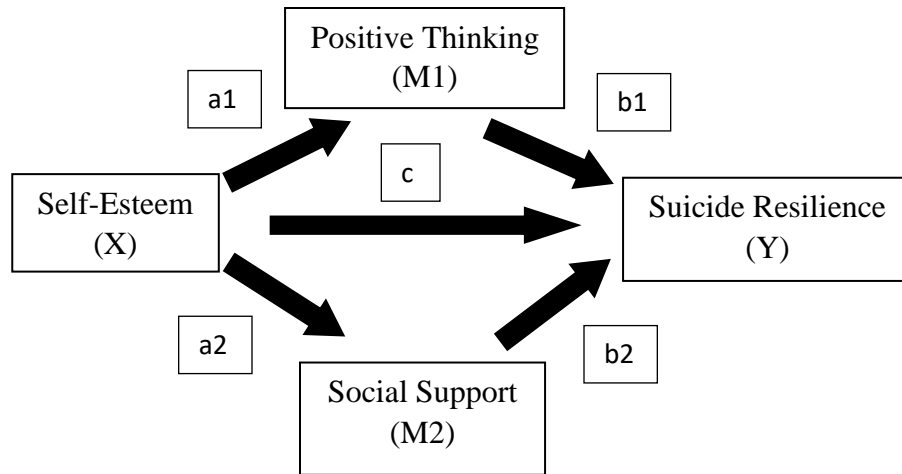
Figure 5. Mediation model.

The analysis was run with the software R 3.4 (R Core Team, 2017), using the

package lavaan (Roseel, 2012). Within the Structural Equation Modeling (SEM) the path

analysis regression allows to inclusion of all the variables and relationships in a

comprehensive meaningful model, as presented in Figure 1 (Little, 2013; Kline, 2015).

The model of interest (Figure 5) presents the direct effect of self-esteem (c1),

positive thinking (b1), and social support (b2) on suicide resilience; the direct effect on

self-esteem on positive thinking (a1) and on social support (a2). The mediating (indirect)

effect of self-esteem through positive thinking and social support are estimated as the

product of direct effects, for positive thinking this effect would be a1*b1, and for social

support this effect would be a2*b2. This way we can also estimate the total effect of self-

esteem through positive thinking (a1*b1 + c1), the total effect of self-esteem through

social support (a2*b2 + c1), the total effect of self-esteem on suicide resilience (a1*b1 +

a2*b2 + c1), and the difference between indirect effects (a1*b1 –a2*b2).

Since the product terms do not follow a normal distribution, in order to test the

null hypothesis of these parameters being equal to 0 bootstrap was used as the proper

method to estimate and make proper inferences about indirect effects (MacKinnon,

Fairchild, & Fritz, 2007; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Little,

2013). This way the bootstrap standard error and confidence intervals are used to describe

the parameters and make inferences.

The indirect effects (a1*b1, and a2*b2) represent how much self-esteem predicts

suicide resilience through each of the mediators. The direct effect of self-esteem on

suicide resilience (c1) represents the effects parting out the indirect effects. The total

effects represent the sum of the indirect effects plus the direct effect. The difference

between indirect effects (a1*b1 –a2*b2) allows comparison of which indirect route has a

higher impact on the outcome.

Human Subjects Protection

Institutional Review Board (IRB) was obtained from the university prior to the

initiation of the study, recruitment of students, or collection of data. The study

participants were provided an explanation of the study. An IRB approved consent form,

that included the purpose of the research and the confidentiality issues were on the first

page of the survey. Participants were informed that their participation in the study is

voluntary and they can withdrawal at any time without penalty. The study involved

minimal risks to the participants and potential benefits. The potential risks due to the

nature of the study include the concerns of people experiencing thoughts of suicide after

being asked about SI. A review of the literature between 2001 and 2013 examined 13 publications on whether being asked about SI increased ones' thoughts of SI, no statistical significance was found in those studies (Dazzi, Gribble, Wessely, & Fear, 2014). However, contact information for the university counseling center, a national suicide hotline, and a crisis text line were provided on the email invitation to participate in the study. Students who decline the study were not identified and the data was not collected. Only the de-identified data of those who agreed to participate was included.

The participants' right to confidentiality and anonymity was discussed in the consent form. Confidentiality and anonymity was strictly enforced through using the password protected Qualtrics program from which the de-identified data was downloaded into SPSS version 21.0 for analysis. Only the researchers have access to the data. The participants were assured that their participation was voluntary and that any given information will not be shared with anyone other than the research staff. In the consent form the participants were notified that the information on the survey would not be linked to individual emails or IP addresses. Furthermore, all the data will be reported in aggregate rather than individually. On completion of the survey each participant was emailed a code to redeem an $8 gift certificate to Starbucks.

Limitations

There were several limitations related to methodological and sampling issues. First, although a random sample was selected, the survey was closed after 120 completed the information for the gift card out of the 370 e-mailed participants, so the resulting sample might not be representative to all undergraduate students.

Second, given the fact that this study is cross sectional, it is difficult to assess changes in the study variables over time. Therefore, measuring positive thinking and social support at a single point in time may not take into account previous positive thinking and social support. A longitudinal study may be useful in examining causal effects among the study variables in college students over time. The study was also limited to representing the findings from one university and those enrolled at the time of the study. Those who do not have access to the internet, students who took a semester off for various reasons, or those who dropped their program would not be represented in this sample.

Summary

Chapter 3 discussed setting, sample, variables used in the study, instruments, data collection, research procedures, methods, statistics utilized, limitations, and protection of human subjects.

CHAPTER IV. MANUSCRIPT 1: RESILIENCE IN ADOLESCENTS WHO
SURVIVED A SUICIDE ATTEMPT FROM THE PERSPECTIVE OF REGISTERED
NURESE IN INPATIENT PSYCHIATRIC FACLITIES

The manuscript option for the dissertation requires inclusion of two manuscripts

replacing chapters four and five of the dissertation. The following published manuscript

replaces Chapter four:

Matel-Anderson, D. M. & Bekhet, A. K. (2016). Resilience in adolescents who survived

a suicide attempt from the perspective of registered nurses in inpatient psychiatric

facilities. *Issues in Mental Health Nursing, 37*(1), 839-846.

CHAPTER V. MANUSCRIPT 2: MEDIATING EFFECTS OF POSITIVE THINKING
AND SOCIAL SUPPORT ON SUICIDE RESILIENCE

With the manuscript option for dissertations, one manuscript is to include the

major findings from the dissertation. This manuscript, replacing the traditional Chapter

five for this dissertation follows:

Matel-Anderson, D., & Bekhet, A.K., & Garnier-Villarreal, M (2017). Mediating Effects

of Positive Thinking and Social Support on Suicide Resilience. Submitted to

WJNR October 5, 2017

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Mediating Effects of Positive Thinking and Social Support on Suicide Resilience

Suicide has been the 2nd leading cause of death for 18-24-year-olds in the US since 2011. The stress experienced by undergraduate college students has the potential to increase ones' risk for suicide. Resilience theory was used as a theoretical framework to examine the interplay between risk and protective factors. A cross-sectional and correlational design was used to assess the mediating effects of positive thinking and/or social support on suicide resilience in 131 college students 18-24 years old who completed an online survey. An indirect effect of self-esteem on suicide resilience was found through positive thinking and social support indicating that as self-esteem increases, positive thinking and social support also increase, which leads to an increase in resilience. The study also found a direct effect of self-esteem, positive thinking, and social support on suicide resilience. The findings inform the development of tailored interventions to build suicide resilience in college students.

Key words: suicide resilience, college students, positive thinking, social support, self-esteem

Mediating Effects of Positive Thinking and Social Support on Suicide Resilience

More than 800,000 deaths by suicide occur world-wide every year, with a suicide completion occurring approximately every 40 seconds (World Health Organization [WHO], 2014). Suicide is a death that occurs as a result of harming oneself with the intention of dying (WHO, 2014). Currently, suicide ranks as the second leading cause of death for 15-29-year-olds globally as well as in the US (WHO, 2014; Centers for Disease Control and Prevention [CDC], 2016). In the US, deaths by all other causes such as heart disease, cancer, and chronic lower respiratory disease have decreased or remained stable, while death by suicide has increased and became a national tragedy in recent years (Johnson, Hayes, Brown, Hoo, & Ethier, 2014).

When comparing 18-25-year-olds with other adult age groups, young adults were found to have an increase in suicidal ideation (SI) (CDC, 2016). From 1999 to 2014, there has been a steady increase in deaths by suicide for young adults (CDC, 2016). From 2012 to 2013, there was an increase from 6.6% to 8% of full-time college students having serious thoughts of suicide (U.S. Department of Health and Human Services [US DHHS], 2014). Due to the increasing number of deaths by suicide, the need for suicide prevention programs has become an important initiative. Recommendations for suicide prevention from the Department of Human Services (US DHHS, 2014) indicate the need to examine the risk and protective factors in forming suicide prevention efforts.

Research on Suicide

The negative psychological effects of SI and suicide attempts (SA) not only affects the individual, but also impacts the mental health of the society itself (Osman, Gutierrez, Muehlenkamp, Dix-Richardson, Barrios, & Kopper, 2004). For every death by

suicide, the affected family and friends are considered to be the loss survivors of suicide. In 2014, it was estimated that there were18 suicide loss survivors per death by suicide; indicating each year around 750,000 loss survivors are living beyond a death caused by suicide (American Association of Suicidality, 2015). The survivors of suicide have an increased risk for attempting suicide themselves, blaming themselves for not preventing the suicide and grieving their personal loss (CDC, 2016).

College is a time of transition when individuals experience stress due to environmental and developmental changes (Hunt & Eisenberg, 2010). College students experience many stressors that have the potential to affect ones' self-esteem and social support. The college experience presents a unique and challenging spectrum of stress. The stress experienced by undergraduate college students has the potential to increase ones' risk of suicide (Wilburn & Smith, 2005).

Resilience Theory

Resilience theory serves as the framework for this study. Resilience is the interplay between risk and protective factors that maintains ones' stability when encountering adversity; thus enhancing the ability to adapt to challenging situations (American Psychological Association, 2015). Due to the dynamic nature of resilience, individuals can respond differently to the same adverse event (Yates, Tyrell, & Masten, 2015). Resilience is associated with healthy development, positive health outcomes, and ability to withstand stressors in one's life (Yates, Tyrell, & Matsen, 2015). Having resilience allows for a decrease risk for suicide especially when an adverse event arises.

Risk factors are stressors that lead to a decrease in "physical health, mental health, academic achievement or social adjustment" (Braverman, 2001, p.1). Risk factors are

often "associated with negative or undesirable outcomes in a given population" (Yates, Tyrell, & Matsen, 2015, p. 775) and increase one's risk for attempting suicide (Suicide Prevention Resource Center, 2014). One of the risk factors for suicide is low self-esteem that has been found to be a risk factor for suicide in college students (Suicide Prevention Resource Center, 2014). Self-esteem is defined as the feeling of being worthy of respect (Modrcin-Talbott, Pullen, Ehrenberger, Zandstra, & Muenchen, 1998). College students who have low self-esteem were found to have an increased risk of suicidal behavior, whereas students with higher self-esteem have a lower risk of suicide (Lakey, Hirsch, Nelson, & Nsmengang, 2014). Another study found that SI was predicted by negative stress and self-esteem (Wilburn & Smith, 2005).

The second component of resilience is referred to as "protective factors." Protective factors, "are conditions that promote resilience and ensure that vulnerable individuals are supported and connected with others during challenging times, thereby making suicidal behaviors less likely" (US Surgeon General and the National Action Alliance for Suicide Prevention, 2012, p. 13). A protective factor decreases the effects of the negative outcomes from the risk factors (Braverman, 2001) or in other words, they mitigate the effects of risk factors and decrease the threat of attempting suicide (Suicide Prevention Resource Center, 2014; Yates, Tyrell, & Matsen, 2015).

For this study, social support and positive thinking will be conceptualized as protective factors. Positive thinking has been defined as "a cognitive process that creates hopeful images" (p. 1076) helps in problem solving, and assists individuals to have a future positive outlook (Bekhet & Zauszniewski, 2013). The effects of positive thinking include, "positive feeling, positive emotions and positive behavioral qualities" (Nassem

& Khalid, 2010, p. 43). Whereas, perceived social support is the perception of being understood by individuals in one's life and feeling supported (Liu, Mei, Tian, & Huebner, 2016). Perceived social support is the perception of being understood by individuals in one's life and feeling supported (Liu, Mei, Tian, & Huebner, 2016). The perception of the presence of social support, or perceived social support, is the "subjective judgement of the assistance quality" by those who are considered to be someone's social support (Awang, Kutty, & Ahmad, 2014, p. 263). Perceived social support also includes availability of the support provided by others and the history of the relationship (Awang, Kutty, & Ahmad, 2014). The perception of social support for adolescents often comes from their family, especially their parents, and from their community.

The outcome variable, suicide resilience is "the perceived ability, resources, or competence to regulate suicide-related thoughts, feelings and attitudes" (Osman et al., 2004, p. 1351). The level of one's resilience has been linked to their risk for suicide. In undergraduate college students, low levels of hardiness, or resilience, and stress were predictors for SI (Abdollahi, Talib, Yaccob, & Ismail, 2015). These studies show a connection between risk for suicide and resilience in undergraduate students. Therefore, in analyzing the interplay of self-esteem with perceived social support and/or positive thinking on suicide resilience, this study has the potential to aid in the key components for interventions aimed to decrease suicide attempts in college students.

Most of the research that has have been done among undergraduate students focused on suicide behavior, risk for suicide, or SI (Wang, Lightsey, & Tran, 2013; Peter & Taylor, 2014). To date, none of the reviewed studies have focused on positive concepts, such as positive thinking and its relationship to suicide resilience and self-

esteem in undergraduate students as proposed in this study. As the current trend now is to move toward primary prevention, it is important to study the relationships between positive thinking, self-esteem, social support, and suicide resilience to develop tailored interventions to build suicide resiliency and to facilitate prevention of suicide in undergraduate students. The results of this study will provide directions for tailored nursing interventions to enhance suicide resilience in undergraduate students.

Purpose of the study

The purpose of this study is to determine whether positive thinking and/or social support have a mediating effect on suicide resilience in college students.

Research questions

1. Do self-esteem, positive thinking, and social support have direct effects on suicide resilience?

2. Does self-esteem have a direct effect on positive thinking and/or social support?

3. Does positive thinking and/or social support have a mediating effect on suicide resilience?

Methods

Design

The study used a cross-sectional, correlational design to assess whether positive thinking and/or social support have a mediating effect on suicide resilience in college students.

Sample

The study included 131 undergraduate students, who were 18-25 years old, enrolled part or full-time in an undergraduate program, and were able to read English.

The sample was obtained by emailing 370 randomly selected students. The Monte Carlo

simulation (2015) sample size (Monte Carlo, Inc) was used in determining the sample

size. The effect sizes were based off previous work done in this area of study. A low

effect size (b=0.1) was used in this study for the relationship between self-esteem and

suicide resilience. For the relationship between self-esteem and social support and

between self-esteem and positive thinking a medium effect (b=0.3) was used. For the

relationship between social support and suicide resilience and the relationship between

positive thinking and suicide resilience we used the higher end of a medium effect

(b=0.45). When calculated, the Monte Carlo simulation (2015) sample size estimated 120

adolescents were an adequate sample size for the study, and the total effect was 0.37.

Data collection procedure

Institutional Review Board (IRB) approval was obtained from the university prior

to the initiation of the study, recruitment of students, or collection of data. The study

participants were provided an explanation of the study by email with a link to the survey.

An IRB approved consent form, that included the purpose of the research and the

confidentiality issues, was posted on the first page of the survey. The survey data was

collected on Qualtrics, which allowed for the survey responses not to be linked to the IP

address. Participants were informed that their participation in the study was voluntary and

they could withdrawal at any time without penalty. Contact information for the university

counseling center, a national suicide hotline, and a crisis text line were provided in the

email invitation to participate in the study. Students who declined the study were not

identified and the data were not collected.

Variables and Measures

Table 1 shows the instruments and their reliabilities.

Independent Variable. Self-esteem was conceptualized as a risk factor for this study and was measured using The Collective Self-Esteem Scale (CSES). The CSES is a 16-item, 7-point Likert scale, ranging from (1) strongly disagree to (7) strongly agree. The scores may range from 112 to 16, after reverse coding 8 items, with the higher scores indicating higher self-esteem (Luhtanen & Crocker, 1992).The Cronbach alpha was .85 for the total scale (Luhtanen & Crocker, 1992). When assessing validity, there was a moderate correlation between the CSES and the Rosenberg Self-esteem Scale in a sample of 83 psychology students (Luhtanen & Crocker, 1992). The Cronbach alpha reported in that study was .68 (Luhtanen & Crocker, 1992).

Mediating Variables. Positive thinking was measured using the Positive Thinking Skills Scale (PTSS), an 8-item 4-point scale ranging from (0) never to (3) always. The final scores can range from (0) not using the positive thinking skills to (24) more frequently using the skills (Bekhet & Zauszniewski, 2013). The PTSS was studied in 109 caregivers of persons with autism spectrum disorder. Reliability was assessed using Cronbach's alpha which was found to be .90. Validity was established by significant correlations in the expected direction with measures of resourcefulness, depression, and general well-being ($r = .63, -.45, .40; p < .01$ respectively) (Bekhet & Zauzniewski, 2013).

Perceived social support was conceptualized as a protective factor in this study and was measured using the Multidimensional Scale of Perceived Social Support (MSPSS) scale. The MSPSS is a 12-item 7-point Likert scale ranging from (1) very

strongly disagree to (7) very strongly agree. To calculate the total score, the sum of all of the 12 items (12-84 points) was divided by the total number of items (12) and the resulting scores may range from 1-7 with higher scores indicating high support (Zimet, Powell, Farley, Werkman & Berkoff, 1990). The MSPSS was studied in 265 pregnant women, 74 adolescents and 55 pediatric residents. The scale was found to have good internal reliability, with the Cronbach's alpha 0.84 to 0.92 for the scale as a whole (Zimet, Powell, Farley, Werkman & Berkoff, 1990). Factorial validity for the subscales were tested using a multivariate analysis of variance, with $p < .005$ (Zimet, Powell, Farley, Werkman, & Berkoff, 1990). This finding supports the validity of the MSPSS.

Dependent Variable. Suicide resilience was measured using the Suicide Resilience Inventory (SRI); a 25-item, 6-point Likert scale ranging from (1) strongly disagree to (6) strongly agree. To score the SRI-25 total, the sum of the items (25-150 points) was divided by the total number of items (25). The score ranges from 1-6, with higher scores indicating less suicide risk (Rutter, Freedenthal, & Osman, 2008). The reliability analysis indicated the Cronbach alpha of this sample of high school and college students was .96. The validity of the SRI was established by examining the psychometrics of the SRI across populations, including adolescents and young adults (Osman et al., 2004), and college students (Rutter et al., 2008). When analyzing the discriminant validity for all three sub-scales for adolescents and young adults, the resiliency score of the Suicidal Ideation (SI) group was higher than the Suicide Risk group and the Non-suicidal subgroup was significantly higher than the Suicide Risk group. The Suicide Risk group had a higher risk of attempting suicide, whereas SI is a lower level of risk for suicide. The nonsuicidal group and the SI group indicated a higher

resilience mean score than the Suicide Risk group (Osman et al., 2004). The findings

were consistent with the level of resiliency one would expect in the groups. The validity

of the SRI was also supported in a sample of 239 college students when there were

correlations with the Becks Hopelessness Scale (r= -.68) and Suicidal Ideation

Questionnaire (r= -.67) (Rutter et al., 2008). The Cronbach alphas reported in this study

were .92, .92, and .86 (Rutter et al., 2008).

Data Analysis

Data analysis was done with the software R (R Core Team, 2017), using the

package lavaan (Rosseel, 2012). The mediation analysis was done from the framework of

Structural Equation Modeling (SEM; Kline, 2015; Little, 2013), SEM allows us to

estimate the direct and indirect effects simultaneously in a comprehensive model. For the

appropriate estimation of the indirect effects, bootstrap was used as a resampling method

(MacKinnon, Fairchild, & Fritz, 2007; MacKinnon, Lockwood, & Williams, 2004). The

indirect effects were tested by creating an empirical distribution based on the bootstrap

resamples, these empirical distributions were tested against the null hypothesis value of 0,

and the inferences were made as a function of the Confidence Intervals (CI). The model

was estimated with 5000 bootstrap samples, and estimated with Maximum Likelihood,

and bias corrected CI.

The model included the indirect effect of self-esteem to resilience through

positive thinking (a1*b1), and the indirect effect of self-esteem on resilience through

social support (a2*b2), the direct effect of self-esteem on resilience (c'), the total effect of

self-esteem on resilience (a1*b1+a2*b2+c'), the difference between the indirect effects

(a1*b1-a2*b2).

Results

Descriptive statistics

The sample consisted of 131 students from a Midwestern university. The participants were 18-24 years old with a mean age of 20 (*M*=20, *SD*=1.29). The majority of the students indicated that they were white (70.99%), single (60.31%), and female (67.94%). The remaining participants indicated they were Asian (12.9%), Hispanic (7.6%), African American or Black (5%), or Other (3%) (Table 2). The four students who considered themselves as "other" wrote in: multi-ethnic, Asian/white, French mix white and African and Mexican-American. The level of college was mixed ranging from freshman to senior level. The participants were either single, dating or married/or in a domestic partnership.

Do self-esteem, positive thinking, and social support have direct effects on suicide resilience?

Table 3 shows the parameter estimates for the indirect effect model. All the direct effects (b1, b2, c') are different from 0 (CI does not include 0); both indirect effects (a1*b1, a2*b2) also are different from 0. The total effect of self-esteem (a1*b1+a2*b2+c') to resilience as well is different from 0. The difference between indirect effects shows that the indirect effects are not equal.

Does self-esteem have a direct effect on positive thinking and/or social support?

The data indicated that as self-esteem increased 1 point, positive thinking increased (a1) 0.094 points, the standardized value indicated that positive thinking increased 0.261 standard deviations, which is considered a small to medium effect size. The $R^2 = 0.068$, indicating that 6.8% of the variance in positive thinking was explained

by self-esteem. As self-esteem increased 1 point social support increased (a2) 0.043

points, the standardized value indicated that social support increased 0.552 standard

deviations, which is considered a medium to large effect size. The $R^2 = 0.305$, indicating

that 30.5% of the variance of social support was explained by self-esteem.

Does positive thinking and/or social support have a mediating effect on suicide

resilience?

The indirect effect of self-esteem on resilience through positive thinking showed

that as self-esteem increased, leading to an increase in positive thinking, which lead to an

increase in resilience, the standardized estimate showed that the effect size of the indirect

effect was trivial. The indirect effect of self-esteem on resilience through social support

followed the same pattern, as self-esteem increased, leading to an increase in social

support, and leading to an increase in resilience, the effect size of the indirect effect

showed that this was a small to medium effect size. For the overall model, Resilience had

an $R^2 = 0.476$, indicating that 47.6% of the variance in resilience was explained by self-

esteem, positive thinking, social support, and the indirect effects of self-esteem through

positive thinking and social support.

As self-esteem increased 1 point resilience increased 0.010 points, the

standardized value indicated that resilience increased 0.170 standard deviations, which is

considered a small effect size. As positive thinking increased 1 point, resilience increased

0.039 points, the standardized value indicated that resilience increased 0.241 standard

deviations, which is considered a small to medium effect size (Diagram 1, Table 3). As

social support increased 1 point, resilience increased 0.329 points, the standardized value

indicated that resilience increased 0.446 standard deviations, which is considered a

medium effect size (Diagram 1, Table 3). The correlation between positive thinking and social support showed that they have a medium positive linear relation between them, subjects with a high score in one tended to have a high score in the other.

The total effect of self-esteem on resilience showed the sum of the direct and indirect effects, this showed that as self-esteem increased resilience increased, the standardized estimate showed that this was a medium effect size. The difference between indirect effects showed that they were not equal, the effect size of this difference was small based on the standardized estimate. The indirect effect through social support was larger than the one through positive thinking.

Discussion

To date, this is the first study that investigated the mediating effects of positive thinking and social support on self-esteem and suicide resilience in college students. It is also the first to investigate the direct effects of self-esteem, positive thinking, and social support on suicide resilience. The results from this study found an indirect effect of self-esteem on resilience through social support, indicating that as self-esteem increases, social support increases, which leads to an increase in resilience. In fact, the Suicide Prevention Resource Center (2014) pointed out the fact that low self-esteem and social isolation or a lack of parental support in college students increase one's risk for suicide, which is in alignment with the findings from this study. Furthermore, the results of this study found an indirect effect of self-esteem on resilience through positive thinking indicating that as self-esteem increases, positive thinking also increases, which leads to an increase in resilience. The results of this study are consistent, in part, with the findings from another study where the results demonstrated college students who had higher self-

esteem had less risk for suicide (Lakey et al., 2014). The study also found a direct effect of self-esteem, positive thinking, and social support on suicide resilience. These findings collectively have implications for practice. For example, positive thinking training interventions can help college students to build suicide resiliency. The Positive Thinking Skills Scale (PTSS) is a short 8 item scale that measures the frequency of the use of positive thinking skills. Consequently, this can be used as a screening measure to see which skills are used by the students and which are not, so that interventions can be tailored according to their needs (Bekhet & Zauszniewski, 2013). The cut off score that was recently developed for the PTSS, can be used for early identification of depressive thoughts (Bekhet & Garnier-Villarreal, 2017). Also social support interventions can focus on building and strengthening social networks that could be avenues for supportive relationships and for behavioral modifications for college students (Hogan, Linden, & Najarian, 2002).

The study has some limitations. First, the data were collected from one university, which might not be representative of all college students. Second, although a random sample was selected, the resulting sample might not be representative of all undergraduate students; 360 subjects were invited to participate and the survey was closed when 120 gift cards were redeemed leaving only 131 subjects completing the study. Third, as data were collected through Qualtrics, the study did not include those who do not have access to the internet. Finally, since the study was cross sectional, it is difficult to assess changes in the study variables over time. Future research should include a larger sample size using various private and public universities. A future longitudinal study might be useful in examining causal effects among the study variables

in college students over time. Despite these limitations, the findings from this study support the use of positive thinking and social support in enhancing suicide resilience in college students.

In conclusion, as the number of suicide completions has increased, primary preventative efforts become more valuable in screening and tailoring effective interventions for college students. This study identified modifiable protective variables against suicide, positive thinking and social support, to inform the development of tailored intervention programs on college campuses for the goal of building suicide resiliency. Positive thinking and social support have the potential to be strengthened, improving suicide resilience in college students. College students may be unaware of available resources indicating the need for professional help to point out available support to them or train the individual in positive thinking.

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Diagram 1
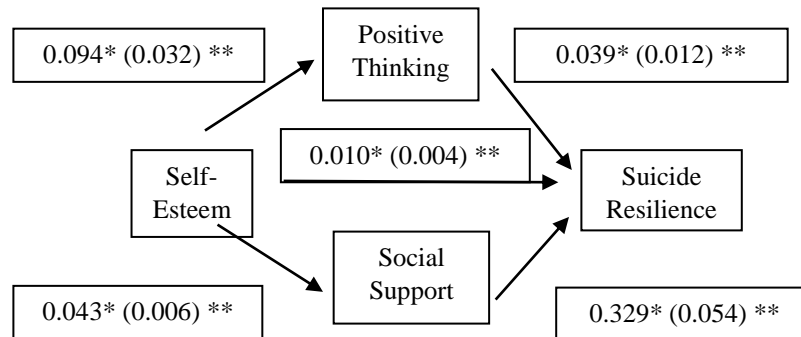
* indicates the estimate of the direct effect.

** indicates the standard error of the direct effect.

Table 1

Summary of instruments and their reliabilities

Variables/concepts	Measures	Number of Items	Possible Scores	Actual Scores	M (SD)	Reliabilities reported in this study
Independent: Self-Esteem	Collective Self-Esteem Scale	16	16-112	48-112	87.29 (12.5)	0 .862
Mediating: Positive Thinking Skills	Positive Thinking Skills Scale	8	0-24	1-24	12.62 (4.49)	0.853
Mediating: Perceived Social Support	Multidimensional Scale of Perceived Social Support	12	1-7	2-7	5.81 (.98)	0.923
Dependent Suicide Resilience	Suicide Resilience Inventory	25	1-6	2.28-6	5.23 (.72)	0.952

Table 2

Descriptive Statistics

Variable			
Age	M = 20.05, SD = 1.29	Range = 18-24	
		(n = 131)	%
Gender	Male	42	(32.06%)
	Female	89	(67.94%)
Race			
White		93	(70.99%)
Asian		17	(12.98%)
Hispanic		10	(7.63%)
African American		7	(5.34%)
	Other	4	(3.05%)
Level in College			
	Freshman	35	(26.72%)
	Sophomore	32	(24.43%)
	Junior	30	(22.9%)
	Senior	34	(25.95%)

Table 3

Indirect effects model parameters

Parameter	Label	Estimate (SE)	CI	standardized
SE → PT	a1	0.094 (0.032)	0.031, 0.155	0.261
SE → SS	a2	0.043 (0.006)	0.031, 0.056	0.552
SE → RS	c'	0.010 (0.004)	0.003, 0.018	0.170
PT → RS	b1	0.039 (0.012)	0.018, 0.064	0.241
SS → RS	b2	0.329 (0.054)	0.219, 0.432	0.446
SS ↔ PT	R	1.065 (0.314)	0.499, 1.756	0.304
SE → PT → RS	a1*b1	0.004 (0.002)	0.001, 0.008	0.063
SE → SS → RS	a2*b2	0.014 (0.003)	0.009, 0.021	0.246
Total	a1*b1+a2*b2+c'	0.028 (0.004)	0.019, 0.036	0.480
Difference	a1*b1-a2*b2	-0.011 (0.004)	-0.018, -0.004	-0.183

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