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Depression and Suicide Behavior Among College Students: Understanding the Moderator Effects of Self-Esteem and Suicide Resilience

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DEPRESSION AND SUICIDE BEHAVIOR AMONG COLLEGE STUDENTS:

UNDERSTANDING THE MODERATOR EFFECTS OF SELF-ESTEEM AND

SUICIDE RESILIENCE

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ABSTRACT

As suicide-related incidents on college campuses increase and receive intense

media coverage and a growing percentage of college students experience suicide ideation

and attempts, there is a desperate need for a more profound understanding of suicidality

and its risk and protective factors among college populations. Recent years there has been

a growing interest in the buffering effect of resilience on suicidality (Johnson, Wood,

Gooding, Taylor, & Tarrier, 2011). This study adds to the suicide literature by exploring

the relationship among depression, self-esteem, suicide resilience, and suicidality.

Undergraduate students from a large university in the Western United States were asked

to assess their depressive symptoms, level of self-esteem, level of suicide resilience, and

thoughts and behaviors of suicide. Multiple regression analyses were used to explore the

relationships between these variables. The results indicate that depression was a

statistically significant predictor of suicide behavior. Results also suggest that high self-

esteem and high suicide resilience were buffers that protect college students who

experience depression from developing suicide behavior. A three-way interaction of

depression, self-esteem, and suicide resilience in predicting suicide behavior was also

found to be statistically significant. It suggests that when self-esteem and suicide

resilience were both high, the association between depression and suicide behavior was

the weakest; when self-esteem and suicide resilience were both low, the association was the strongest. Additional clinical implications, limitations of the study, and suggestions for future research are addressed.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

Introduction

A number of tragic and grievous suicide-related instances amongst the increasing body of college students are reported in national surveys and covered by media every year. For example, Michelle Gluckman, John D. Skolnik, and Stephen Bohler from New York University all died of jumping off high university buildings in separate instances in the fall of 2003. Michele, a sophomore from Brooklyn, New York, said to her friend "I can't take it anymore" and then ended her life by jumping off a sixth-floor apartment in a private apartment building in the heart of the campus. Michael Frentzel from Ferrum College in Virginia hanged himself in his dorm room in February 2000 after being placed on disciplinary probation. Jason Altorn, a graduate student in the chemistry department at Harvard University drank a liquid laced with cyanide and ended his life in August 1998 (Kadison & DiGeronimo, 2005). Jacqueline Imbro, a freshman from a university at Albany died in "an apparent suicide" on Wednesday, February 3, 2011 (Kim, 2011).These are real suicide instances of college students in the US.

The increased suicide-related incidents among college students and intense media coverage of those incidents have brought rising concerns for and attention to mental health issues and suicide among college students (Drum, Brownson, Denmark, & Smith, 2009). National and international studies have shown that suicide is among the top three causes of death in the population of late adolescents and young adults. The national

1

surveys conducted by the Center of Disease Control and Prevention (2007) and Suicide

Prevention Center (2004) indicated that suicide is the third leading cause of death for

youths between ages of 15 and 24 years, following accidental injury and homicide (as

cited in Drum et al., 2009). Furthermore, suicide is believed to remain the second leading

cause of death in the 10 million college population in the US (Paladino & Minton, 2008).

Suicide ideation and attempts also have been found to be common among college

populations. Gutierrez, Osman, Kopper, Barrios, and Bagge (2000) concluded that the

reports of suicide ideation among college students range from 32% to 70% across studies.

Many studies on suicide ideation among college students revealed that over half of

college students had some form of suicidal thinking over the past year, with 8-15% acting

on these thoughts in some way (Bonner & Rich, 1988; Brener, Hassan, & Barrios, 1999;

Drum et al., 2009; Furr, Westefeld, McConnell, & Jenkins, 2001; Rudd, 1989).

Consequently, there is a desperate need for further exploration and better understanding

of suicidality and its risk factors as well as protective factors among college students in

order to prevent suicides among the college population.

Despite the prevalence of experiences of suicidal thoughts and extensive media

coverage of suicide attempts and instances among college students, it is reported that

fewer than 20% of those reporting suicide ideation were receiving counseling services

and approximately 80% of those who died by suicide never participated in counseling

services (Kisch, Leino, & Silverman, 2005; Schwartz, 2006). The commonly experienced

psychological pain and reoccurrences of tragic suicides in the US college student

population calls for deeper understanding of suicidality among those students.

2

In order to establish a more profound understanding of the suicidality of college students, it is central to mention and learn from suicidologists who made great contributions to suicide theories, including Emile Durkheim, Sigmund Freud, Karl Menninger, Edwin Schneidman, Aaron Beck, and Roy Baumeister. Emile Durkheim, a French sociologist, was the first person who viewed suicide from a sociological perspective rather than a psychological one as he believed that suicide is a social act and it is strongly influenced by societal pressures and other factors. He categorized four types of suicide, anomic, fatalistic, altruistic, and egoistic---based on level of social structure, the extent of integration and individual assimilation into the society, and the extent to which the individual conforms to society's rules (Holmes & Holmes, 2005; Maris, Berman, & Silverman, 2000).

Viewing suicide through the lens of psychology, Sigmund Freud developed the initial psychological theory of suicide (Holmes & Holmes, 2005). Freud viewed suicidal behaviors as the hostility directed towards self. He thought that when people experience depression, they would first kill an internalized object previously identified and turn this prior external death wish against part of their own ego in order to find the energy to kill themselves. Hence, the death instinct seeks to eliminate the tension of life itself, and the external aggression against others is a means to avoid self-destruction. Also, according to Freud, the suicide rate is higher in advanced civilizations because they require stronger repression of sexual and aggressive drives. Karl Menninger studied Freud's theory of suicide but further expanded his ideas. Menninger (1938) proposed that all suicides manifest three interrelated and unconscious dimensions: revenge/hate (a wish to kill),

depression and hopelessness (a wish to die), and guilt (a wish to be killed) (as cited in Maris et al., 2000).

Edwin Schneidman, Aaron Beck, and Majorie Weishaar all contributed in studying and explaining the relationship between suicide and cognition. The introduction of cognitive therapy marked the first time in the history of suicide theory development that thought process were considered as an influencing factor, precarious and protective, of suicide. Edwin Schneidman (1991) named the ten most common characteristics of suicides among which was rigid cognition and perceiving death as the only way out. Other characteristics included intolerable psychological and frustrated psychological needs, solution seeking, cessation of consciousness, a sense of loneliness and isolation, ambivalence, communication of intention, egression, and lifelong coping pattern (as cited in Jobes & Nelson, 2006; Maris et al., 2000). Other theorists such as Beck and Weishaar also viewed extremely inflexible and dichotomous thinking and inability to perceive other alternatives as important risk factors of suicides and salient traits of depressed and suicidal individuals (as cited in Ellis, 2006; Holmes & Holmes, 2005).

A new theory of suicide called "escape theory" was recognized as Baumeister published an article titled *Suicide as Escape from Self* in Psychological Review in 1990. Baumeister (1990) suggested that suicide is the result of an individual's belief that there is no escape after examining his or her life and this life has not met the expectations once held by this individual (as cited in Holmes & Holmes, 2005).

Previous suicide theories all suggested that various factors influence the development of suicidal thoughts and behaviors. Schaffer, Jeglic, and Stanley (2008) also

concluded that suicide ideation and suicidal behaviors are rarely caused by a single factor. Rather, they are affected by a variety of situational and/or personality factors, such as low self-esteem, depression, loneliness, hopelessness, academic problems, relational issues, financial stress, negative life events, substance abuse, lack of support and family cohesion, impulsivity, aggression, insufficient problem solving or coping skills, just to name a few (Schaffer et al., 2008).

Given that suicide ideation is a critical precursor and indicator of higher risk for suicide attempts and completed suicides, it is crucial to study the predictors and other influencing factors of suicide ideation among college students. This researcher is interested in understanding the roles of depression, self-esteem, and suicide resilience in predicting suicide ideation and behavior among college students in the U.S.

Existing literature indicates a well-established relationship between depression and suicide ideation as depression is suggested to be the primary predictor of suicide ideation in college students. Lester (1999) found that only depression predicted current and past suicidality in a sample of 152 college students, and other factors including locus of control, hopelessness, masculinity, and femininity did not significantly predict suicidality. De Man (1999) supported the finding of Lester (1999) by finding significantly weakened correlations between suicide ideation and its correlates (e.g. age, gender, self-esteem, locus of control, stress, social support, substance abuse) with the removal of the effect of depression. Knoick and Guiterrez (2005) found that depressive symptoms had the strongest predictive impact on suicide ideation in college students, compared to hopelessness and negative life events. Unsurprisingly, depression has been

shown to be the main predictor of suicide ideation of Asian adolescents and adults (Chiles et al., 1989; Lau, Chan, Lau & Hui, 1997; Yip, Ho, Hung, Laideler, & Leuing, 1998; Yip, Liu, Lam, Stewart, Chen, & Fan, 2004; Zhang, 1996).

Many studies also suggested that the impact of depression on suicidality can be moderated by various factors, such as family cohesion and social self-concept (Au, Lau, & Lee, 2009), self-esteem (Chen, Hong, & Yang, 2010), and acculturative stress and ethnic identity (Walker, Wingate, Obasi, & Joiner, Jr., 2008). Therefore, in order to enhance the understanding of the relationship between depression and suicidality among college students, this study aims at not only testing the predictive effect of depression on suicide behavior but also examining the moderating effects of self-esteem and suicide resilience.

Self-esteem is considered as a potential moderator in the model of this study because it has been found to be correlated with both depression and suicide behavior. Self-esteem often refers to a person's belief about self and overall evaluation or appraisal of one's own worth. In the mid-1960s, Morris Rosenberg and social-learning theorists defined self-esteem as a stable sense of personal worth or worthiness.

Baumeister (1990) and many other researches believed that low self-esteem contributes to vulnerability for developing suicide ideation. Many research studies have revealed a negative relationship between self-esteem ad suicide ideation (e.g. Beck, Brown, Steer, Kuyken, & Grisham, 2001; Lewinsohn et al., 1994; McGee, Williams & Nada-Raja, 2001). In addition, low self-esteem has been found consistently associated with suicidality in adolescents (Lewinsohn et al., 1994). McGee et al. (2001) then

supported the idea that low self-esteem in childhood as an individual characteristic has a direct effect on suicide ideation in early adulthood.

Low self-esteem has often been considered as a predictor for symptoms of depression (Franck & De Raedt, 2007). The "vulnerability model" that perceives low self-esteem as a risk factor for depression is well accepted and gained popularity in understanding the association between self-esteem and depression (Orth, Robin, Trzesniewski, Maes, & Schmitt, 2009). The cognitive theory of depression hypothesizes that the negative schemas containing dysfunctional beliefs about the self continue to persist in individuals who are vulnerable to depression even after their experiences of depressive episodes (Franck, De Raedt, & De Houwer, 2008). Furthermore, an increasing number of research studies supported the vulnerability model in recent years (e.g., Orth, Robins, & Meier, 2009).

The moderating effects of self-esteem have been postulated and explored in theory and research. Many diathesis-stress models of depression postulate that self-esteem moderates the relationship between stressful events and depression. That is to say, individuals with higher levels of self-esteem are buffered against the effect of stressful events on depression; and conversely, individuals with lower levels of self-esteem are more vulnerable to such effects (Orth et al., 2009). Diathesis-stress models of depression posit that when faced with challenging life stressors, individuals with low self-esteem are assumed to lack sufficient coping resources and thus are more vulnerable to depression while those with high self-esteem are assumed to have more effective coping resources and thus are protected from experiencing depression. Self-esteem's buffering effect on

the relationship between stressful events and subsequent depression has been tested in a number of studies (Orth et al., 2009). Self-esteem was found to moderate the effect of depression on suicide ideation in college students, which means that the negative effect of depression on suicide ideation would be reduced as the level of self-esteem increases (Chen et al., 2010).

Literature shows that the nature and direction of the relationship between self-esteem and depression remains unclear (Wild et al., 2004). Some studies indicated that low self-esteem and depression are independent predictors of suicide ideation, whereas other researchers suggested that low self-esteem interacts with depression when predicting suicide ideation. In addition, self-esteem has been investigated as a moderator or a buffer to protect self from harmful experiences. Thus, more research is needed to clarify the relationship among self-esteem, depression, and suicide ideation.

More and more researchers recognize that risk factors cannot be used solely to predict suicide ideation and suicidal behavior and protective factors need to be taken into account in suicide assessment and studies (e.g. Rutter, Freedenthal, & Osman, 2008). Resilience is introduced as a moderator in this study because it has been perceived as an important protective factor against the development of psychological distress and psychiatric disorders in the face of adversity (Rutter, 1985). The concept of resilience includes an individual's ability to adapt and be successful under difficult or challenging circumstances, the ability to cope with stress, stay calm and regulate emotions, or the ability to recover from negative life events (Conner, 2006; Olsson, Bond, Burns et al., 2003; Tusaie & Dyer, 2004).

8

In the last decade, more researchers have started to look into the relationship between resilience and suicide directly or indirectly. Empirically supported factors that influence an individual's resilience to suicidality include, but are not limited to, family history of suicide, childhood trauma, self-esteem, peer affiliation, and school achievement (Fergusson et al., 2003; Rutter, 1993). In order to better assess the relation between resilience and suicide, Osman et al. (2004) developed The Suicide Resilience Inventory (SRI-25), a content-specific measure of suicide resilience, by incorporating resilience along with other protective factors in a brief self-report measure of those cognitive and affective processes which helps individual deal with suicide ideation and attempts. In SRI-25, suicide resilience is operationalized as the perceived ability, resources, or competence to regulate suicide-related thoughts, feelings, and attitudes (Osman et al., 2004). Roy et al.'s (2007) study on resilience in relation to attempting suicide suggested the possibility that low resilience may be a risk factor for suicidal behavior, and a significant negative correlation between depression and resilience was also found in a follow up study.

Positive self-concept or positive self-appraisals is considered as a critical part of the concept of resilience, and the Schematic Appraisals Model of Suicide (SAMS; Johnson, Gooding, & Tarrier, 2008) suggested that it may play an important role in buffering against suicide ideation and suicidal behaviors. The buffering effect of resilience was also investigated in a few studies. For example, positive self-appraisals have been found to moderate the association between stressful life events and suicidality (Jonson et al., 2008). Nrugham, Holen, and Sund's (2010) study supported their

9

hypothesis that resilience moderates the relationship between violent life events and suicide attempts.

Since literature review of studies on resilience indicates a growing interest in and attention to the buffering effect of resilience on suicidality and those studies remained limited, this study adds to the literature by testing the buffering effect of resilience in relation to suicide ideation and behavior among college students. In addition to empirical support of the association between resilience and suicidality, existing literature also suggests that resilience is correlated with self-esteem. For instance, resilience together with self-esteem were found to moderate the impact of Posttraumatic Stress Disorder symptoms in adolescents who have been exposed to violence (Salami, 2010). Positive self-esteem and resilience worked together to protect adolescent boys and girls from increased smoking and use of cannabis (Veselska, 2009). Moreover, Lee, Brown, Mitchell, and Schiraldi (2008) found that self-esteem was significantly correlated with resilience and was one of the significant predictors of resilience in Korean women immigrants who experienced great adversities in their lives.

As mentioned previously in the introduction, research studies indicated that there are associations among resilience, self-esteem, depression, and suicide behavior. However, no study of suicide ideation has revealed a three way interaction of depression, self-esteem, and suicide resilience in predicting suicide behavior. Therefore, the last hypothesis of this study aims at testing such a three-way interaction to fill the gap and extend literature on suicide studies.

To conclude, the purpose of this study was to examine the relationships amongst depression, self-esteem, suicide resilience, and suicide behavior in college students in the United States. Hence, the following hypotheses were tested: (1) depression predicts the suicide behavior among sample college students; (2) the level of self-esteem moderates the relationship between depression and suicide behavior, meaning high self-esteem buffers the effect of depression on suicide behavior and low self-esteem increases such effect; (3) suicide resilience moderates the relationship between depression and suicide behavior, meaning high level of resilience buffers the effect of depression on suicide behavior and low resilience increases such effect; (4) there is a three-way interaction of depression, self-esteem, and suicide resilience in predicting suicide behavior, such that the association is weakest when self-esteem is low and resilience is low.

Five hundred thirty-six participants were recruited from colleges and universities in Midwest of the U.S. The demographics of participants were anticipated to be similar to the national college students' demographics in terms of age, gender, and ethnicity or race. A questionnaire including the Center of Epidemiology Scale of Depression, Rosenberg Self-Esteem Scale, Suicide Resilience Inventory, and Suicide Behavior Questionnaire-Revised, and a demographic questionnaire was administered to participants to collect data including their demographic information, level of depressive symptoms, level of self-esteem, level of suicide resilience, and severity of suicide behavior. Multiple regression was applied to analyze the predictive effects and moderator effects in the hypothesized model.

Definition of Major Concepts

College Students: Students enrolled in a college or university. In fall 2010, a record 19.1 million students are expected to attend the Nation's 2-year and 4-year colleges and universities, an increase of about 3.8 million since fall 2000 (U.S. Department of Education, 2009). Females are expected to comprise the majority of college students: 10.9 million females will attend in fall 2010, compared with 8.3 million males. Although the majority of students will attend full time (an estimated 11.9 million for fall 2010), about 7.2 million are expected to attend part time (U.S. Department of Education, 2009). Between 2000 and 2009, the 18- to 24-year-old population rose from approximately 27.3 million to approximately 30.1 million and the percentage of 18- to 24-year-olds enrolled in college also was higher in 2009 (41.3 percent) than in 2000 (35.5 percent) (U.S. Department of Education, 2009 and U.S. Department of Commerce, Census Bureau, Current Population Survey, October 2009). Increasing numbers and percentages of Black and Hispanic students are attending college. Between 2000 and 2008, the percentage of college students who were Black rose from 11.3 to 13.5 percent, and the percentage of students who were Hispanic rose from 9.5 to 11.9 percent (U.S. Department of Education, 2009). The increases reflect growing numbers of college-age Blacks and Hispanics and higher enrollment rates for Hispanics. Also, according to the statistics from The Chronicle of Higher Education in the 2007 school year, there are over 750,000 international students currently studying in the U.S.

Depression: Everyone occasionally feels blue or sad, but these feelings are usually fleeting and pass within a couple of days. When a person has a depressive disorder, it interferes with daily life, normal functioning, and causes pain for both the person with the disorder and those who care about him or her. There are several forms of depressive disorders. The most common are major depressive disorder and dysthymic disorder. Major depressive disorder, also called major depression, is characterized by a combination of symptoms that interfere with a person's ability to work, sleep, study, eat, and enjoy once–pleasurable activities. Major depression is disabling and prevents a person from functioning normally. An episode of major depression may occur only once in a person's lifetime, but more often, it recurs throughout a person's life. Dysthymic disorder, also called dysthymia, is characterized by long–term (two years or longer) but less severe symptoms that may not disable a person but can prevent one from functioning normally or feeling well. People with dysthymia may also experience one or more episodes of major depression during their lifetimes. Depressive symptoms include persistent sad, anxious or "empty" feelings, feelings of hopelessness and/or pessimism, feelings of guilt, worthlessness and/or helplessness, irritability, restlessness, loss of interest in activities or hobbies once pleasurable including sex, fatigue and decreased energy, difficulty concentrating, difficulty remembering details and making decisions, insomnia, early-morning wakefulness, or excessive sleeping, overeating or appetite loss, thoughts of suicide, suicide attempts, persistent aches or pains, headaches, cramps or digestive problems that do not ease even with treatment (NIMH, 2011).

Diathesis-stress Model of Depression: The terminology of diathesis-stress interaction was developed in theories of schizophrenia in the 1960s (Monroe & Simons, 1991). The diathesis-stress model suggests that a person is more likely to suffer some form of psychopathology if he or she has a particular *diathesis* (i.e., vulnerability or susceptibility) and is under a high level of stress (Ainette & Wills, 2008). The diathesis-stress model implies that the greater vulnerability an individual has, the less more likely that individual will become ill due to environmental stress. Recent theories of depression have incorporated the concept of diathesis-stress interaction, which is often referred to as the diathesis-stress model of depression. The diathesis-stress model of depression suggest that cognitive or social factors can be conceptualized as a diathesis (Abramson et al., 1989; Alloy, Hartlage, & Abramson, 1988; Bebbington, 1987; Beck, 1987; Brown & Harris, 1978; Perris, 1987; Robins & Block, 1989, as cited in Monroe & Simons, 1991).

Moderator: According to Baron and Kenny (1986), in general terms, a moderator is a categorical (e.g., sex, race, class) or continuous (e.g., level of reward) variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or outcome variable. A moderator effect is an interaction whereby the effect of one variable depends on the level of another. Hierarchical multiple regression is strongly recommended by statisticians over the practice of comparing correlations between groups to explore moderator effects (Frazier, Tix, & Barron. 2004). Cohen et al. (2003, pp. 285-286) proposed three types of interactions between two continuous variables: enhancing interaction, i.e. both the predictor and moderator affect the outcome variable in the same direction and together have a stronger effect; buffering interaction,

i.e. the moderator variable weakens the effect of the predictor variable on the outcome variable; and antagonistic interaction, i.e. the predictor and moderator have the same effect on the outcome variable but the interaction is in the opposite direction (as cited in Frazier et al., 2004). In this study, buffering interactions among variables were explored and examined.

Protective factors: Protective factors in suicidality refer to supportive conditions that prevent individual from engaging in intentional self-harm behaviors or help decrease the possibility that an individual will intentionally harm self. Gutierrez, Rodriguez, and Garcia (2001) framed protective factors as external (social support, peer, and family accord) and internal (resilience, positive self-concept, and emotional stability), and external and internal protective factors seem to differ across ethnicities.

Resilience: According to Tusaie and Dyer (2004) refers to an individual's ability to adapt and be successful under difficult or challenging circumstances. Other researchers defined resilience as the capacity for successful adaptation to change, the ability to cope with stress, stay calm and regulate emotions, the character of hardiness and invulnerability, or the ability to recover from negative life events or thrive in the face of adversity (Conner, 2006; Olsson, Bond, Burns et al., 2003, as cited in Roy, Sarchiapone, & Carli, 2007).

Self-appraisals: Assessment of one's own capability and character. Positive self-appraisals is considered as a critical part of the concept of resilience, and may be important for buffering suicide ideation and behaviors (Johnson, Gooding, & Tarrier, 2008).

Self-Esteem: Self-esteem is believed to reflect a person's overall evaluation or appraisal of one's own worth and competence (McGee, Williams, & Nada-Raja, 2001; Ukeh, Aloh, & Kwahar, 2011). In the mid-1960s, Morris Rosenberg and social-learning theorists defined self-esteem in terms of a stable sense of personal worth or worthiness. In psychology research studies, self-esteem is often operationalized as beliefs about onself.

Scar Model: The hypothesis that low self-esteem is an outcome rather than a cause of depression (Orth et al., 2009). The scar effects refer to negative personality change that develops during an major depressive episode and persists beyond major depressive episode remission (Ormel, Oldehinkel, & Vollebergh, 2004).

Stress: The term *stress* refers to events and experiences that may cause psychological distress (Ainette & Wills, 2008). Stress can influence mechanisms that help to maintain the stability of an individual's cognition, physiology, and emotion. In studies of depression that found empirical support for the diathesis-stress model, stress has most commonly been operationalized as having experienced major negative events within the past year (Ainette & Wills, 2008).

Suicidality: Suicidality refers to the presence of any degree of thoughts, feelings, or behaviors toward the act of killing oneself (Latham & Prigerson, 2004).

Suicide Ideation: Suicide ideation involves a continuum of suicidal thoughts, from the wish to be dead to thinking about detailed plans to commit suicide (Joiner, Steer, Brown, Beck, Pettit, & Rudd, 2003). Some studies used past suicidal behavior as an indicator in the suicidality measures (Osman et al., 2001).

Suicide Behavior: Suicide behavior are thoughts or tendencies that put a person at risk for completed suicide.

Suicide Resilience: Suicide resilience was operationalized as the perceived ability, resources, or competence to regulate suicide-related thoughts, feelings, and attitudes in the Suicide Resiliency Inventory-25 (Osman et al., 2004).

Vulnerability Model: The vulnerability model came from the self-esteem theories of depression, suggesting that vulnerable self-esteem plays a pivotal role in the onset, maintenance, and recurrence of the depressive disorder after life stress or negative life events (e.g., Beck, 1967). Empirical evidences supported the hypothesis that low self-esteem and its related constructs like negative self-schemata are risk factors for depression (e.g., Metalsky, Joiner, Hardin, & Abramson, 1993; Roberts & Monroe, 1992).

CHAPTER TWO

Literature Review

Overview

A number of tragic and grievous suicide-related instances amongst the increasing body of college students are reported in national surveys and covered by media every year. Studies and national surveys (e.g. Centers of Disease Control and Prevention, 2007; Global Burden of Disease, 2000; Paladino & Minton, 2008; Suicide Prevention Center, 2004; Ustun, Ayuso-Mateos, Chatterji, Mathers, & Murray, 2004) indicated that suicide remains the one of the three leading causes of death for youths between ages of 15 and 24 years. In addition, suicide ideation and suicidal behaviors are not uncommon in college population. Guiterrez et al. (2008) concluded that reports of suicide ideation among college students ranged from 32% to 70% across studies.

In order to better understand the factors influencing college students' suicidality, it is necessary to understand the theories of suicide due to their influence on suicide studies as well as suicide assessment, prevention, and intervention. Suicidologists including Emile Durkheim, Sigmund Freud, Karl Menninger, Edwin Schneidman, Aaron Beck, Majorie Weishaar, and Roy Baumeister and their theories of suicide are mentioned in the literature review.

Since suicide ideation and behavior is usually perceived as the precursor and indicator of higher risk for suicide attempts and completed suicide, most suicide studies

focused on exploring and identifying risk factors of suicide ideation. Despite a variety of objectives and focuses in suicide studies, researches agree that suicide ideation is usually caused by various factors. Mostly commonly identified and empirically supported risk factors contributing to suicide ideation among college students include, but are not limited to, depression, hopelessness, low self-esteem, loneliness, student stress, academic problems, relationship and family issues, financial concerns, adjustment to college, negative life events, substance abuse (e.g. Arria et al., 2009; Konick & Gutierrez, 2005; Paladino & Minton, 2008).

Chapter two provides a review of the importance literature on (a) suicidality among American college students, (b) suicide theories, (c) depression and suicide behavior, (d) self-esteem, depression, and suicide behavior, (e) suicide resilience, depression, and suicide behavior, and (f) suicide resilience, self-esteem, depression, and suicide behavior.

A. Suicidality among US College Students

Silverman, Meyer, Sloane, Raffel, and Pratt's (1997) Big Ten Student Suicide Study undertaken from 1980-1990 collected data on 261 suicides of registered students at 12 midwestern campuses. The data indicated that the overall completed student suicide rate was 7.5/100,000, which was one half of the completed national suicide rate (15.0/100,000). The largest number of suicides for both male and female students were in the 20-24 years old age group (46%), and amongst graduate students (32%). The analysis also revealed that students aged 25 and over had a significantly higher risk than younger students, the suicide rate amongst graduate women was 9.1/100,000 and graduate men

19

was 11.6/100,000. The American College Health Association –National College Health

Assessment Survey (ACHA-NCHA) in 2006 surveyed over 46,000 college students

across 74 college campuses, and reported similar results with their national survey in

2000 and 2005, indicating that 10.1% of students reported that they seriously considered

attempting suicide and 1.4% reported attempting suicide in the prior year. The ACHA-

NCHA survey in fall 2010 found that in the past year 58.3% of students felt very sad

(47.8% of male and 64.2% of female), 28.4% of students felt so depressed that it was

difficult to function (24.1% of male and 30.7% of female), 6.0% of students seriously

considered suicide (5.7% of male and 5.9% of female), 5.1% of students intentionally cut,

burned, bruised, or otherwise injured self (4.3% of male and 5.3% of female), and 1.3%

of students attempted suicide (1.4% of male and 1.1% of female).

The recent grievous suicide-related incidents on college campuses and the broad

media coverage of those incidents have drawn increasing concern for and attention to

mental health issues and suicide among college students (Drum et al., 2009).

Several national and international studies show that suicide is among the top three

causes of death in the population of late adolescent and young adult. According to Global

Burden of Disease (2000), suicide is among one of the three leading causes of death in

the population aged 15-34 years and it ranks as the first or second cause of death for both

women and men in this age range (Ustun et al., 2004). The national surveys conducted by

Centers of Disease Control and Prevention (2007) and Suicide Prevention Center (2004)

indicated that suicide is the third leading cause of death for youths between the ages of 15

and 24 years, following accidental injury and homicide (Drum et al., 2009). It is also

believed that suicide has remained the second leading cause of death in the college population of 10 million in the United States (Paladino & Minton, 2008). Suicidal ideation and attempts have been found to be common among college population.

In 1987, Westefeld and Furr conducted a study designed to examine issues related to college student suicide. 962 college students from three institutions participated in a survey regarding their experiences with depression and suicide. Results showed that 81% of the respondents reported experiencing what they identified as "depression" during college, and 32% of the respondents stated that they had suicide ideation and thoughts, with 1% reporting having made a suicide attempt while in college. Schwartz and Whitaker (1990) examined the research on college student suicide rates over a 60-year period (1928-1988) at 12 higher education institutions, and they concluded that the completed suicide rate among college students was approximately half that of the non-student group.

However, the severity of presenting problems of students who sought counseling services at the college counseling centers was reported to have increased (Heppner et al., 1994). Also, the average level of suicide ideation experienced by college students was reported to be higher than that experienced by adults of the same age range in the community (Reynolds, 1991). It is concluded by Gutierrez et al. (2000) that the reports of suicide ideation among college students range from 32% to 70% across studies. Many studies on college student suicide ideation supported that over half of college students had some form of suicidal thinking over the past year, with 8-15% acting on these thoughts in some way (Bonner & Rich, 1988; Brener et al., 1999; Drum et al., 2009;

Rudd, 1989). Furr et al. (2001) surveyed 1,455 college students at four different colleges and universities, and results indicated that 53% of the sample stated that they experienced depression since beginning college, with 9% reporting that they had considered committing suicide and 1% reporting that they had attempted suicide while at college. The American College Health Association-National College Health Assessment Survey (ACHA-NCHA) in 2000 found that 9.5% of students had seriously considered attempting suicide and 1.5% had attempted suicide within the past school year (Kisch, Leino, & Silverman, 2005). However, fewer than 20% of those who reported suicidal ideation were receiving counseling services. It is also estimated that nearly 80% of those students who died by suicide never participated in counseling services (Schwartz, 2006). The 2005 ACHA-NCHA reported similar results, indicating that 11% of female and 9% of male respondents seriously considered suicide in the past year. The highest suicide rates were found among students over the age of 25 and those enrolled in graduate school. Men have higher suicide rate than women at both undergraduate and graduate level (Garlow et al., 2008). The National Institute of Mental Health (2008) estimated that there are 100-200 attempts for every completed suicide among youth (as cited in Paladino & Minton, 2008).

Most recently, in the 2010 National Survey of Counseling Center Directors, directors from 320 counseling centers reported 133 student suicides in the past year, only 13% of these were current or former counseling center clients, 79% of suicide students were male and 88% were undergraduates, and most of the suicides (81%) occurred off-campus. 83% were Caucasian, 7% were Asian or Pacific Islanders and 4 % were African American. To the extent that it was known, 84% of the students were depressed, 56% had

22

relationship problems, 20% had academic problems,18% had financial concerns, and 12% had health issues. In addition, 27% were on psychiatric medication, and 18% were known to have had previous psychiatric hospitalizations. Directors, however, did not know the previous psychiatric history of 64% of these students. Also, 28% committed suicide by hanging, 25% by use of a firearm, 9% by ingesting toxic substances, 6% by jumping, and 32% by other methods (Gallagher, 2010).

Given that suicide ideation and behavior is a critical precursor and indicator of higher risk for suicide attempts and completed suicide, it is essential to better understand the predictors and other influencing factors of suicide ideation and behavior among college students. Suicide ideation involves a continuum of suicidal thoughts, from the wish to be dead to thinking about detailed plans to commit suicide (Joiner et al., 2003). Also, suicidal ideation can be recurrent because those who have one episode of suicidal ideation or urge are likely to have more (Drum et al., 2009).

Schaffer et al. (2008) concluded that suicidality is rarely caused by a single factor. Suicidal ideation and behavior are usually affected by various situational and/or personality factors. Empirically supported risk factors contributing to suicidal ideation and behavior include, but are not limited to, low self-esteem, student stress, depression, loneliness, hopelessness, academic problems, relationship and family issues, financial concerns, and adjustment to college (Eisenberg, Gollust, Golberstein, & Hefner, 2007; Gutierrez et al., 2000; Konick & Gutierrez, 2005; Wilburn & Smith, 2005, as cited in Paladino & Minton, 2008); negative life events (e.g., Bonner & Rich, 1988; Konick & Gutierrez, 2005); the belief that one lacks control over outcomes of one's life (e.g., De

23

Man, 1999; Lester, 1999); substance abuse (Arria et al., 2009; Garlow et al., 2008; Schaffer et al., 2008); insufficient social support (Arria et al., 2009); dysfunctional family system and problematic parent-child relationships (Silverman et al., 2005); and personality traits, such as hopelessness, helplessness, impulsivity, aggression, and ineffective problem solving or coping skills (Heisel, Flett, & Hewitt, 2003; Stephenson, Pena-Shaff, & Quirk, 2006; Zweig, Phillips, & Lindberg, 2002, as cited in Schaffer et al., 2008). Acculturative stress and ethnic identity have also been investigated as influencing factors of college students' suicidality. Walker, Wingate, Obasi, and Joiner (2008) emphasized that cultural elements need to be considered to identify suicide risk factors. They found that acculturative stress and ethnic identity moderated the depression-suicide relationship for African American but not European American college students, i.e. African American college students' suicidal ideation is increased when they are both depressed and acculturatively stressed or have poor group identity. Other studies have found evidence for increased suicide risk and depression in acculturated Central American and Mexican adult and youth immigrants (Hovey, 1998; Hovey, 2000a, 2000b, as cited in Walker et al., 2009).

B. Suicide Theories

Many suicidologists have contributed to the theoretical components of suicidology. Emile Durkheim was the first person that viewed suicide from a sociological perspective rather than a religious or psychological one (Holmes & Holmes, 2005, pp.28-32). He believed that suicide is a social act because it is strongly influenced by societal pressures and other factors. Durkheim (1897/1951) categorized four types of suicide:

24

anomic, fatalistic, altruistic, and egoistic based on level of social structure, the extent of

integration and individual assimilation into the society, and the extent individual

conforms to society's rules. Anomic and fatalistic are polar types as well as egoistic and

altruistic. Anomic and fatalistic suicides are results of social deregulation or

hyperregulation. *Anomic suicides* occur when there are drastic changes in the norms and

values of a society and abrupt disruption of rules and regulations. *Fatalistic suicides* are

generated by excessive regulation, such as prison suicides. Egoistic and altruistic suicides

are defined by the degree of social participation or involvement. *Egoistic suicide* results

from lack of social integration and is characterized by apathy. On the contrary, *altruistic*

suicide results from insufficient individuation and is characterized by energy or activity

and "heroic death."

Sigmund Freud developed initial psychological theories of suicide, and he viewed

suicidal behaviors as the hostility directed towards self (Holmes & Holmes, 2005, p. 34).

Freud proposed that death instinct sought the elimination of the tension of life itself, and

external aggression against others was to avoid self-destruction. Frued also thought that

when people experiences melancholia (depression), they would first kill an internalized

object previously identified and turn this prior external death wish against part of their

own ego in order to find the energy to kill themselves. He also believed that suicide is

more manifested in advanced civilizations which requires greater repression of sexual

and aggressive drive. Karl Menninger (1938) expanded Freud's ideas and proposed that

all suicides manifest three interrelated and unconscious dimensions: revenge/hate (a wish

to kill), depression/hopelessness (a wish to die), and guilt (a wish to be killed) (as cited in

25

Maris et al., 2000, p.52). For example, the loss of an important love object (such as the loss of a spouse) that has been internalized as part of one's own ego ("introjection") can often result in depression. According to Freud, trying to kill an introjected object is likely to cause ego splitting and regression. Then, the suicidal person also feels guilty for having aggressive wishes towards their loved one. Thus, "a wish to die" may rise from the guilt and hostility towards self.

It was not until the introduction of cognitive therapy that the relationship between cognition and suicide was considered clinically important. It was also the first time in the history of the suicide theory development that thought process were perceived not only as part of the problem of suicide, but also as a part of a potential solution (Ellis, 2006). Edwin Schneidman (1991) found ten most common characterisitics or risk factors of suicides, in which cognition was taken into consideration. The ten common characteristics include: (1) intolerable psychological pain (stimuli), (2) frustrated psychological needs (stressor), (3) seek a solution (purpose), (4) cessation of consciousness (purpose), (5) a sense of loneliness and isolation, and feelings of hopelessness and helplessness (emotion), (6) ambivalence (internal attitude), (7) constriction and perceiving death as the only way out, which Durkheim would call anomic suicide, (cognition), (8) communication of intention (interpersonal act), (9) egression (action), and (10) lifelong coping patterns (consistency) (Jobes & Nelson, 2006). Beck (1973) also suggested that suicide may seem rational when someone experiences depression, lacks hopefulness about life and feels despair in spite their effort to live better (such as engaging in repeated psychotherapy and psychiatric treatment).

26

There were also other theorists see that inflexible thinking and an inability to seek or generate solutions to problems play an important role in completed suicides (as cited in Holmes & Holmes, 2005, p.34). For example, Weishaar and Beck (1992) pointed out that one of the salient mental traits of depressed suicidal individuals is the narrowing of their perceived viable alternatives due to their extremely dichotomous thinking.

Baumeister (1990) proposed a novel theory, which is called "escape theory." He believed that suicide often occurs when the person believes there is no escape. The process of making decision to end one's life involves this person examining his or her life and how that life has not measured up to the expectations once held. This theory applies to both young and old. It may be especially true for elderly people because they may feel there is little time left, whereas younger people may feel that there is still time to fulfill their dreams and expectations (as cited in Holmes & Holmes, 2005, pp35).

In this dissertation study, the hypotheses and ideas were constructed mostly under the influence of suicide theories developed by Freud and his follower Karl Menninger, Edwin Schneidman, Beck, and Weishaar. When suicidality was first viewed from a psychological perspective, Freud and his follower Karl Menninger saw a relationship between depression and suicide ideation (a wish to die). Based on this theory, this dissertation study tested a linear relationship between depression and suicide ideation. In more contemporary suicide theories, cognitive theorists such as Edwin Schneidman, Beck, and Weishaar recognized the significance of the association between cognition and suicide, suggesting that rigid and irrational thinking or beliefs can cause inability to seek alternatives and increase feelings of despair that lead to suicidal thoughts and behaviors.

27

Guided by the cognitive theory of suicide, I hypothesized the moderation effects of self-esteem (beliefs about self) and suicide resilience (beliefs about one's ability to seek resources to regulate suicide ideation and behaviors) on suicide ideation as self-esteem and suicide resilience are essentially core beliefs about self and own ability that influence the development of suicidality.

C. Depression and Suicide Behavior

Depression is commonly believed to predict suicide behavior in college students. Kempton and Forehand (1992) reported that depression should be a high risk factor/indicator of potential suicide, and it appeared to be more true for the white female participants than for male white male participants and participants from other ethnic group (as cited in Holmes & Holmes, 2005, pp127). Weissman et al. (1999) suggested that depression has greater negative impact on adolescents than older adults (as cited in Holmes & Holmes, 2005, pp127).

Many other researchers have studied the strong influence of depression on college students and high school students, especially the development of their suicide behavior. In 1999, Lester studied the relationship between depression and suicidality in a sample of 152 college students and found that only depression scores predicted current and past suicidality among college student participants, and scores on locus of control, hopelessness, masculinity, and femininity did not make significant contribution to the prediction of suicidality. De Man (1999) supported the findings of Lester (1999) by studying the relationship between suicide ideation and its influencing factors with the effect of depression removed, and concluded that the removal of the effect of depression

28

resulted in a weakened relationship between suicide ideation and its correlates, i.e. age, gender, self-esteem, locus of control, stress, social support, anomy, health, alcohol use, and drug use. The sample of this study included 758 English-Canadian and 558 French-Canadian high school students, and the statistical analysis identified depression as the best single predictor of suicide ideation because it accounted for 36.8% of the variance in suicide ideation.

National College Health Assessment Survey (NCHA), sponsored by the American College Health Association, measured depression, suicide ideation, and suicide attempts among 15,977 college students in the academic year 1999-2000. The NCHA findings suggested a relationship between suicide ideation and depressed mood. Although not all students who report depressive symptoms have considered suicide, depressive symptoms are almost always present among those who have considered suicide. Among those students who considered suicide, 94% reportedly experienced feeling so depressed that it was difficult to function at least once during the previous 12 months. Among those who seriously considered suicide, 78% reportedly felt so depressed they could not function on 3 or more occasions. Of those students who reported an attempted suicide, 92.8% reportedly felt so depressed that it was difficult to function. Therefore, "feeling so depressed it was difficult to function" is considered a warning sign for seriously considering suicide.

Furr et al. (2001) surveyed 1,455 college students at four different college and universities and found out that 53% of the sample stated that they experienced depression since beginning college, with 9% reported that they had considered committing suicide

since beginning college. Konick and Guiterrez (2005) conducted a study examining the risk factors of suicide ideation, i.e. negative life events, hopelessness, and depressive symptoms. The risk model of suicide ideation they constructed from this study indicated that depressive symptoms and hopelessness are predictors of suicide ideation in college students, and depressive symptoms had a stronger influence on suicide ideation than hopelessness.

Garlow et al. (2008) supported the depression as the risk factor by finding a strong relationship between severity of depressive symptoms and suicidal ideation in college students. A history of past suicide attempt is a definite factor for subsequent attempt because adolescents who previously attempted suicide are much more likely to attempt suicide again in the future (Garlow et al., 2008; Jeglic, Pepper, Vanderhoff, & Ryabchenko, 2007).

Many studies have also shown that depression is the primary predictor of suicide ideation of Asian adolescents and adults (Chiles et al., 1989; Lau et al., 1997; Yip et al., 1998; Yip et al., 2004; Zhang, 1996). For example, Yip et al. (2004) examined the prevalence of suicidality among secondary school students in Hong Kong using a representative sample of 2,586 students. They found that students' depressive symptom scores were highly correlated with their suicide ideation and behaviors, and depression was thus suggested to be the primary risk factor of suicidality. Chiles et al. (1989) compared the suicidality and its risk factors in Chinese and American psychiatric patients and found that depression was related to suicidal intent in both Chinese and American suicidal patients.

Existing literature also suggests that the well-established relationship between depression and suicide ideation can be moderated by various factors. The study conducted by Au et al. (2009) examined the moderation effects of family cohesion and social self-concept on the relation between depression and suicide ideation and confirmed that family cohesion and social self-concept were significant moderators for children and adolescents. The results showed that when experiencing depressive symptoms, a positive social self-concept and a family environment with strong emotional connectedness, commitment, and support from family members can buffer the impact of depression on suicide ideation by alleviating the risk of having or expressing suicidal thoughts. Walker et al. (2008) found that acculturative stress and ethnic identity moderated the relationship between depression and suicide ideation for African American but not European American college students. They found that depressive symptoms were similarly correlated with suicide ideation in African American and European American college students, acculturative stress was related to suicide ideation in both African American and European American students, but ethnic identity was only related with suicide ideation in African American students. The results further indicated that ethnic identity moderated the effect of depression on suicide ideation for only African American students because suicide ideation was increased in African American students who were experiencing both depression and acculturative stress. Also, in African American students, those who were less attached to their ethnic group reported a stronger relationship of depression to suicide ideation that those who reported a stronger attachment to their group.

31

Hypothesis 1: Depression statistically significantly predicts the suicide behavior among college students.

D. Self-Esteem, Depression, and Suicide Behavior

Self-esteem is believed to reflect a person's overall evaluation or appraisal of one's own worth and competence (McGee et al., 2001; Ukeh et al., 2011). In the mid-1960s, Morris Rosenberg and social-learning theorists defined self-esteem in terms of a stable sense of personal worth or worthiness. In psychology research studies, self-esteem is often operationalized as beliefs about onself. Self-esteem has been studied as one of the risk factors of depression and suicide behavior but there is limited literature on its buffering effect on the relationship between depression and suicide behavior.

Many researchers have studied the association between self-esteem and suicidality. Low self-esteem has been found consistently associated with suicidality in adolescents (Lewinsohn et al., 1994; as cited in Wild, Flisher, & Lombard, 2004). Also, through analysis of data obtained from three studies on Mexican adolescent students, Tapia, Barrios, and Gonzalez-Forteza (2007) found that a greater proportion of adolescent women reported low self-esteem as well as higher suicide ideation and depressive symptoms than adolescent men. Some researchers suggested that low self-esteem contributes to vulnerability for developing suicide ideation (e.g. Baumeister, 1990). According to Baumeister (1990), people develop suicide ideation when they fail to achieve their goals and strongly desire to escape from negative self-attributions of their failure.

32

A negative relationship between self-esteem and suicide ideation were revealed several studies (e.g. Beck, Brown, Steer, Kuyken, & Grisham, 2001; McGee, Williams, & Nada-Raja, 2001). McGee et al. (2001) supported the idea that low self-esteem in childhood as the individual characteristic has direct effect on their suicide ideation in early adulthood. Swann, Chang-Schneider, and McClarty (2007) criticized some researches examining the relationship between self-esteem and suicide ideation is that important mediating or moderating variables are not often specified or controlled in those studies. For example, Harter (1999) thinks that negative self-views are related to depressed mood and hopelessness when predicting suicide ideation.

Since some studies show that self-esteem and depression are independent predictors of suicide ideation whereas other researchers suggest that self-esteem interact with depression when predicting suicide ideation, more research is needed to clarify the relationships among self-esteem, depression, and suicide ideation. Another criticism on the studies examining the association between self-esteem and suicide ideation suggest that many researches conceptualized self-esteem as personal evaluations of self-worth (i.e. self-based self-esteem), and ignored one's belief about how other people value onself (i.e. other-based self-esteem) in predicting suicide ideation (McGee et al., 2001). In order to address the above concerns, Bhar, Ghahramanlou-Holloway, Brown, & Beck (2008) surveyed 338 adult psychiatric outpatients and found out that self-based self-esteem and other-based self-esteem were both negatively associated with suicide ideation after controlling for depression and hopelessness, and other-based self-esteem was the more vigorous predictor of suicide ideation.

Low self-esteem has been found to correlate with depression in the literature. Since depression is characterized by lower levels of self-esteem, low self-esteem has often been theorized as a predictor for symptoms of depression (Franck & De Raedt, 2007). In addition, the cognitive theory of depression proposes that the negative schemas containing dysfunctional beliefs about the self. The cognitive errors and distortions continue to persist even beyond the depressive episode in individuals vulnerable to depression (Franck, De Raedt, & De Houwer, 2008).

The hypothesis stating that low self-esteem acts as a risk factor for depression is also called the "vulnerability model" (Beck, 1967; Metalsky, Joiner, Hardin, & Abramson, 1993; Roberts & Monroe, 1992; as cited in Orth, Robins, Trzesniewski, Maes, & Schmitt, 2009). In recent years, a growing body of research supported the vulnerability model. For example, Orth, Robins, & Meier (2009) analyzed three longitudinal studies of adolescents and young adults and found out that low self-esteem independently predicted subsequent depression. However, several studies failed to prove that self-esteem predicts subsequent depression (Butler, Hokanson, & Flynn, 1994; Roberts & Gotlib, 1997; Shahar& Davidson, 2003, as cited in Orth et al., 2009). Orth et al. (2009) analyzed the data from two large longitudinal studies and the findings indicated that low self-esteem predicted subsequent depressive symptoms, but depression symptoms did not predict subsequent levels of self-esteem. Their findings also suggest that low self-esteem is a risk factor for depressive symptoms at all phases of the adult life span. Since some prior research did not support the "vulnerability model," other researchers hypothesize that low

self-esteem is an outcome rather than a predictor of depression, which is also called the "scar model" (Orth et al., 2009).

Self-esteem has also been investigated as a buffer for the self, as higher self-esteem providing protection from experiences that are harmful. Many diathesis-stress models of depression postulate that self-esteem moderates the relationship between stressful events and depression. That is to say, individuals with higher levels of self-esteem are buffered against the effect of stressful events on depression; and conversely, individuals with lower levels of self-esteem are more vulnerable to such effect (Orth et al., 2009). Diathesis-stress models of depression believe that when faced with challenging life stressors, individuals with low self-esteem are assumed to lack sufficient coping resources and thus are more vulnerable to depression while those with high self-esteem are assumed to have more effective coping resources and thus protected from experiencing depression. However, emerging studies on self-esteem suggest that the benefits of high self-esteem have been overweighed. High self-esteem is found to be associated with self-focus or in achieving goals, which can result in increased competitiveness and impediment to relatedness, learning, and self-regulation (Baumiester, Campbell, Krueger, & Vohs, 2003; Crocker & Park, 2004). These researchers propose that it is more important to focus on the process of fostering self-esteem rather than the degree of self-esteem. Sinclair et al. (2010) further explain that the extent to which people experience a sense of agency to affect their situation may be independent of whether their self-views are more or less positive. Due to the contradictory views on the benefits of

high self-esteem, there is a need for further investigation of the role of high self-esteem in protecting self from negative experiences.

The self-esteem's buffering effect on the relationship between stressful events and subsequent depression has been tested in a number of studies (Orth et al., 2009). For example, in Abela's (2002) study, 136 high school seniors applying early decision to the University of Pennsylvania completed measures of depressive mood, hopelessness, self-esteem, and depressogenic inferential styles 3 times, i.e. before receiving their admission decision, shortly after they received their admission decision, and four days later. The results indicated that depressogenic inferential styles about consequences, causes, and the self for achievement events interacted with low self-esteem to predict enduring depressive mood reactions in negative outcome students. Therefore, Abela (2002) suggested that self-esteem had a moderator effect on the relationship between negative life event and depression. Wilburn and Smith (2005) examined the relationships among stress, self-esteem, and suicide ideation in a group of college students. Results suggested that both stress and self-esteem were significantly correlated with suicide ideation, and low self-esteem and stressful life events significantly predicted suicide ideation. Multiple regression analysis also supported the hypothesis that self-esteem would moderate the effects of life stressors on suicide ideation at the .06 level.

Also, according to Orth et al. (2009), four studies supported the moderation effect (Abela, 2002; Fernandez, Mutran, & Reitzes, 1998; Metalsky et al., 1993; Ralph & Minela, 1998); seven studies failed to confirm the moderation effect (Butler, Hokanson, & Flynn, 1994; Cheng & Lam, 1997; Kernis et al., 1998; Lewinsohn, Hoberman, &

Rosenbaum, 1988; Murrell, Meeks, & Walker, 1991; Roberts & Monroe, 1992; Southall & Roberts, 2002); three studies failed to find the moderation effect but found a three-way interaction of self-esteem, stressful events, and third variables such as dysfunctional attitudes and their impact on subsequent depression (Abela & Skitch, 2007; Abela et al., 2006; Robinson, Garber, & Hilsman, 1995). One study investigated self-esteem's moderation effect on the relationship between depression and suicide ideation. Chen, Hong, and Yang (2010) studied 732 college students and concluded that self-esteem influence suicide ideation directly, or through depression indirectly. Self-esteem was found to moderate the effect of depression on suicide ideation, which means that the negative effect of depression on suicide ideation would reduce as the level of self-esteem increases.

In summary, depression and self-esteem were found to both predict suicide ideation in prior research. However, depression and self-esteem tend to be significantly and highly correlated with each other, and the nature and direction of the relationship between them remains unclear (Wild et al., 2004). My hypothesis in this proposal postulates that self-esteem might moderate the relationship between depression and suicide ideation, with high self-esteem buffering the impact of depression on suicide ideation. The studies testing self-esteem buffering hypothesis yielded highly inconsistent results. Still, there are many questions about the relations between depression, self-esteem, and suicide ideation stayed unanswered. Hence, this study intends to clarify the links between depression, self-esteem, and suicide ideation by testing the moderator effect on the relationship between depression and suicide ideation.

37

Hypothesis 2: The level of self-esteem is a statistically significant moderator of the relationship between depression and suicide behavior, meaning high self-esteem buffers the effect of depression on suicide behavior and low self-esteem increases such effect.

E. Resilience, Depression, and Suicide Behavior

The majority of the studies on the influencing factors of suicide focus on suicide risk factors and neglect the strengths and resilience that protect people from developing suicide ideation and attempting suicide, despite depression, hopelessness, substance abuse, and other suicide risk factors. Rutter, Freedenthal, and Osman (2008) mentioned in their article that suicide statistics indicated that risk factors cannot be used solely to predict suicide ideation and behavior, and they suggested that protective factors need to be taken into account in suicide assessment. For example, 2%-19% of people treated for depression on an outpatient or inpatient basis died by suicide. Evidence also indicated that the majority of those with depressive disorders do not develop suicide ideations or engage in suicidal behaviors (Kovacs et al., 1993; Clark & Goebel-Fabbri, 1999; Bostwick & Pankratz, 2000, as cited in Fergusson, Beautrais, & Horwood, 2003). Also, 25% of 180 youth with past history of suicide attempt attempted suicide subsequently and none completed suicide within 5 years after discharge (Rutter et al., 2008). Protective factors in suicidality refer to supportive conditions that prevent individual from engaging in intentional self-harm behaviors or help decrease the possibility that an individual will intentionally harm self. Gutierrez, Rodriguez, and Garcia (2001) framed protective factors as external (social support, peer, and family accord) and internal (resilience,

positive self-concept, and emotional stability), and external and internal protective factors seem to differ across ethnicities.

Resilience, according to the Merriam-Webster dictionary, means "an ability to recover from or adjust easily to misfortune or change." Resilience has been perceived as an important protective factor against the development of psychological distress and psychiatric disorders in the face of adversity (Rutter, 1985). The concept of resilience is not new in the clinical literature. According to Tusaie and Dyer (2004) refers to an individual's ability to adapt and be successful under difficult or challenging circumstances. Other researchers defined resilience as the capacity for successful adaptation to change, the ability to cope with stress, stay calm and regulate emotions, the character of hardiness and invulnerability, or the ability to recover from negative life events or thrive in the face of adversity (Conner, 2006; Olsson, Bond, Burns et al., 2003, as cited in Roy, Sarchiapone, & Carli, 2007). Resilience is considered as a positive personality trait, especially in Positive Psychology. Various factors are believed to have influence on individual's resilience to suicidality, such as family history of suicide, childhood sexual abuse, neuroticism, novelty seeking, self-esteem, peer affiliations, and school achievement (Fergusson et al., 2003). In addition, after conducting an extensive review of conceptual issues related to resilience, Rutter (1993) found that developmental factors of childhood trauma can negatively influence resilience.

In the last decade, more researchers have started to examine the relationship between resilience and suicide directly or indirectly. In order to develop a content-specific measure of suicide resilience, Osman et al. (2004) incorporated resilience along

with other protective factors in a brief self-report measure of those cognitive and affective processes which helps individuals deal with suicide ideation and attempts. In this suicide resilience measure, suicide resilience was operationalized as the perceived ability, resources, or competence to regulate suicide-related thoughts, feelings, and attitudes (Osman et al., 2004). The Suicide Resilience Inventory (SRI-25, Osman et al., 2004) consists of three domains of global resilience. (1) The internal protective domain which represents positive beliefs about self and satisfaction with life (positive self-concept and resilience), for example, "I am proud of many good things about myself." This domain also reflect one's ability to hold a sense of self and of personal efficacy while still understanding one's ability to overcome current challenges by seeking strengths from past personal victories. (2) The external protective domain include one's positive beliefs or feelings that the individual can recognize or seek out external resources that are helpful when faced with personal difficulties or suicidal thoughts. This domain reflects one's ability or confidence to seek social support from family and friends when experiencing suicide ideation, and discuss the suicide ideation with identified support system. An example item would be "People close to me would find the time to listen if I were to talk seriously about killing myself." (3) The emotional stability domain contains items that reveal one's positive beliefs about the individual's ability to regulate suicide ideation and suicidal behaviors when confronting emotionally or psychologically distressing events such as depressive symptoms or interpersonal conflicts. Emotional stability requires the individual to demonstrate the ability to go through emotionally upsetting experiences while not becoming acutely depressed, hopeless, or hostile. For

example, "I can handle thoughts of killing myself when I feel lonely or isolated from other people."

Roy et al. (2007) conducted a preliminary study to examine resilience in relation to attempting suicide. In their study, 100 abstinent substance dependent patients were interviewed about whether they had ever attempted suicide and completed the Connor-Davidson Resilience Scale. The results of this study confirmed patients who had attempted suicide scored significantly lower on the resilience scale than patients who had never attempted suicide. This suggested the possibility that low resilience may be a risk factor for suicidal behavior. The researchers of this study noted in their paper that depressive symptoms can be a possible confound for resilience scores, and thus recognized a need for including measures of depression to further evaluate the relationship between resilience and suicidal behavior in future studies. In a subsequent study, Roy et al. (2007) included participants with depressive symptoms in their sample and included the Beck Depression Inventory (BDI; Beck et al., 1961) in the administered measurements. The results showed that attempters scored significantly higher on BDI than non-attempters, and there was a significant negative correlation between depression and resilience.

Positive self-concept or positive self-appraisals is considered as a critical part of the concept of resilience, as mentioned in the construct of resilience. The Schematic Appraisals Model of Suicide (SAMS; Johnson, Gooding, & Tarrier, 2008) suggests that positive self-appraisals may be important for buffering suicide ideation and behaviors. In order to test the SAMS, Jonson, Gooding, Wood, & Tarrier (2010) conducted a study

aimed at exploring whether positive self-appraisals buffer individuals against suicidality in the face of stressful life events. In this study, 78 college students who reported experiencing some degree of suicide ideation and suicidal behaviors were recruited from a university in the northwest of England, and they completed a battery of tests including measures of suicidality, stressful life events, and positive self-appraisals. The Resilience Appraisals Scale (RAS: Jonson et al., 2008) administered to examine participants' self-appraisals of their ability to cope with emotions, solve problems, and gain social support appears to have similar construct with SRI-25. The results showed that positive self-appraisals moderated the association between stressful life events and suicidality, meaning participants who reported moderate or high levels of positive self-appraisals did not develop or increase suicidal thoughts or behaviors when faced with stressful life events. Johnson et al.'s (2010) study was one of the few studies that studied the buffering effect of resilience since most studies examining resilience to suicide have often focused on the direct linear relations between resilience and suicidality. Nrugham, Holen & Sund (2010) also studied the moderator effect of resilience on suicidality. They hypothesized that resilience moderates the relationship between violent life events and suicide attempts. A sample of 2792 depressed adolescents were selected from eighth and ninth grade in 1998 in Norway, and their experiences of violent traumatic life events, depressive symptoms, resilience, and suicide attempts were examined, followed up after 1 year and reassessed 5 years later. The results confirmed researchers' hypothesis by yielding significantly negative association between the resilience and suicide attempt in those young adults, even if they had been depressed at age 15 and victims of violent life events

42

during their lifetime. Nrugham et al. (2010) also concluded that higher resilience is a protective factor of suicidality in young adults even in the context of antecedent depression and survival of violence.

Literature review of studies on resilience shows that the buffering effect of resilience has drawn more attention from researchers in the past few years. This research study also intends to examine the buffering effect of resilience in relation to suicidality. For example, for someone with low resilience, it would be expected that there would be a stronger association between depression and suicide ideation, but for someone with high resilience, the relationship would be expected to be weaker.

> *Hypothesis 3*: Suicide resilience is a statistically significant moderator of the relationship between depression and suicide behavior, meaning high level of resilience buffers the effect of depression on suicide behavior and low resilience increases such effect.

F. Resilience, Self-esteem, Depression, and Suicide Behavior

Despite limited studies on the relationship among resilience, self-esteem, depression, and suicide ideation, currently existing literature does suggest that there is a relationship between resilience and self-esteem. Salami (2010) found that resilience together with self-esteem and social support moderate the impact of Posttraumatic Stress Disorder symptoms in adolescents who have been exposed to violence. Veselska (2009) explored the association of self-esteem and resilience with smoking and cannabis use among adolescents. 3694 adolescents with a mean age of 14.3 years in Slovakia were administered questionnaires including Rosenberg Self-esteem scale, the Resiliency scale

and cigarette and cannabis use. The results indicated that positive self-esteem and resilience (e.g. structured style and family cohesion) protected both adolescent boys and girls from the increase of smoking and use of cannabis.

In a study examining the protective role of self-esteem, social involvement, and secure attachment among homeless, Kidd and Shahar (2008) suggested that self-esteem was found as a key protective factor that increased homeless youth's resilience against the levels of loneliness, feeling trapped, and suicide ideation. Benetti and Kambouropoulos (2006) examined the influence of trait resilience and trait anxiety on self-esteem among 240 participants with a mean age of 21.55 years. They found that both trait resilience and trait anxiety had indirect positive and negative effects on individual's self-esteem by regulating their affective experiences. In addition, a study exploring the association between resilience and psychosocial variables such as self-esteem, optimism, religiousness, cultural interdependency, and belief in higher education in a population of elderly Korean women and their daughters who experienced great adversities in their lives such as psychological and physical losses from war as well as current and past difficulties with immigration (Lee, Brown, Mitchell, & Schiraldi, 2008). Lee et al. (2008) found that self-esteem was significantly correlated with resilience and was one of the significant predictors of resilience in those Korean women who immigrated to the U.S.

As mentioned in previous sections, research studies indicated that there are associations among resilience, self-esteem, depression, and suicide ideation. However, no study on suicide ideation has revealed a three way interaction of depression, self-esteem, and resilience in predicting suicide ideation. The purpose of the last hypothesis is to fill

44

the gap and extend literature of suicide studies by testing the three-way interaction of depression, self-esteem, and suicide resilience in predicting suicide ideation. In order to investigate such three-way interaction, we need to consider four possible situations: what will happen to the association between depression and suicide ideation (1) when self-esteem is high and suicide resilience is low, (2) when self-esteem is high and suicide resilience is high, (3) when self-esteem is low and suicide resilience is low, and (4) when self-esteem is low and suicide resilience is low?

Self-esteem and suicide resilience were found to be negatively associated with suicidality in a number of studies (e.g. Beck et al., 2001; McGee et al., 2001; Roy et al., 2007). In addition, the buffering effects of self-esteem and suicide resilience have been investigated as they protect individuals from experiences that are harmful, including depression (Orth et al., 2009), suicide ideation (Chen et al., 2010), suicide attempt (Nrugham et al., 2010). Hence, I predict that, when students have high self-esteem and high suicide resilience, the association between depression and suicide ideation would be further weakened because both high self-esteem and high suicide resilience protect individuals from developing suicide ideation. That is to say, students who have high self-worth and self-satisfaction are also confident in their abilities to solve problems, come up with alternatives, and reach out for resources and support, which are crucial to regulate suicide ideation and suicidal behaviors. On the contrary, when students have low self-esteem and low suicide resilience, the association between depression and suicide ideation would be strengthened and students would be most vulnerable to suicide ideation when experiencing depression. The underlying logic of this prediction is that students

45

who have low self-worth and low satisfaction with self as well as negative beliefs of their abilities to confront their emotional distress and reach out for support are at highest risk for suicide ideation or suicidal behaviors.

Given that high self-esteem and high suicide resilience have the most protective effect and low self-esteem and low suicide resilience have the least protective or even harmful effect on individuals, I predict that, when students have high self-esteem and low suicide resilience, or low self-esteem and high resilience, the association between depression and suicide ideation may still be weakened, but the buffering effect is smaller than high self-esteem and high suicide resilience, but greater than low self-esteem and low suicide resilience. In other words, depressed students who have either high self-esteem and low suicide resilience or low self-esteem and high suicide resilience are less protected from suicide risk than those with high self-esteem and high suicide resilience, but more protected than those with low self-esteem and low suicide resilience.

To further illustrate, when depressed students have high self-esteem and high suicide resilience, the association between depression and suicide ideation is weakened and those students are least likely to develop suicide ideation. When depressed students have low self-esteem and low suicide resilience, the association between depression and suicide ideation seems to be enhanced and those students are most likely to develop suicide ideation. Yet, when depressed students have high self-esteem and low suicide resilience, the association between depression and suicide ideation may be somewhat weakened because of the buffer effect of self-esteem against depression on suicide ideation; this association may be significant different from zero since suicide resilience is

46

low. For those college students with low self-esteem and high suicide resilience, the association between depression and suicide ideation is still somewhat significant because the low self-esteem worsens the association between depression and suicide ideation. Yet, their high suicide resilience may be somewhat weaken the strength between depression and suicide ideation. Figure 1 also shows that depressed students with low self-esteem and high suicide resilience may be at higher risk for suicide ideation than depressed students with high self-esteem and high suicide resilience. In other words, those students with high self-esteem/low suicide resilience or low self-esteem/high suicide resilience are more susceptible to suicide ideation than students with high self-esteem and high suicide resilience, but more protected from suicide ideation than other students with low self-esteem and low suicide resilience.

> *Hypothesis 4:* There will be a three-way interaction of depression, self-esteem, and resilience in predicting suicide behavior, an individual is most vulnerable to suicide behavior when the self-esteem is low and suicide resilience is low.

CHAPTER THREE

Methodology

Participants

Participants in this study were 490 college students who were at least 18 years old or older from a university in the Midwestern United States. Demographic characteristics of this sample are listed in Table 1, with 98% of the participants between ages of 18 and 25. Approximately 59% were first year students, 17% were second year students, 12% were third year students, and 12% were fourth year students. There were 39% males and 60% females. There were 394 White students (81%), 36 Hispanic students (7%), 20 Asian or Asian American students (4%), 18 Biracial or Multiracial students (4%), 11 Black or African American students (2%). About 8% of the students identified with non-dominant/non-heterosexual sexual orientations, 37% reported having previous counseling experience, and 17% reported family history of mental health issues. In terms of parents' relationship status, approximately 64% reported that their parents are still married, 20% reported their parents were either divorced or separated, and 11% reported their parent(s) were remarried. Regarding socioeconomic status (SES), 76% were from a middle SES family, 17% were from an upper SES family, and 7% were from a lower SES family. It was estimated that in fall 2010, 19.1 million students were expected to attend 2-year and 4-year colleges or universities in the U.S., among which were 10.9 million females (57%) and 8.3 million males (43%). According to statistics between 2000 and 2009, the

percentage of 18- to 24-year-old students enrolled in college rose from 35.5% to 41.3%

(U.S. Department of Education, 2009 and U.S. Department of Commerce, Census Bureau,

Current Population Survey, October 2009). Students who are black still accounted for the

largest minority group on campus, followed by Hispanic students and Asian students. The

statistics also indicated that the number of minority students grew in the past decade. For

example, the percentage of Black college students rose from 11.3% to 13.5%, and the

percentage of Hispanic college students rose from 9.5% to 11.9% (U.S. Department of

Education, 2009). The trend of college student demographics also indicated a growing

number of foreign born college students and international students (The Chronicle of

Higher Education, 2007).

Table 1

Overview of Demographic Variables

Characteristic	Frequency	Percentage
Total Viable Participants	490	100
Age		
18-25	478	97.6
26-35	9	1.8
36-45	2	0.4
46-55	1	0.2
Gender		
Female	295	60.2
Male	193	39.4
Transgender	1	0.2
Missing	1	0.2
Race/Ethnicity		
American Indian or Alaska Native	4	0.8
Asian or Asian American	20	4.1
Black or African American	11	2.2

Hispanic or Latina/Latino	36	7.3
Native Hawaiian or other Pacific Islander	1	0.2
White	394	80.4
Biracial/Multiracial	18	3.7
Other	5	1.0
Missing	1	0.2

Year in College

First Year	288	58.8
Second Year	83	16.9
Third Year	61	12.4
Fourth Year	57	11.6
Missing	1	0.2

Relationship Status

Single	295	60.2
In a Committed Relationship	182	37.1
Married	9	1.8
Divorced or Separated	2	0.4
Missing	2	0.4

Sexual Orientation

Bisexual	14	2.9
Gay or Lesbian	9	1.8
Heterosexual	453	92.4
Not Sure/Questioning	7	1.4
Other	7	1.4

Counseling Experience

Yes	179	36.5
No	310	63.3
Missing	1	0.2

Family History of Mental Health Issues

Yes	83	16.9
No	4.3	82.2
Missing	4	0.8

Parents' Relationship Status

Remain Married	312	63.7
Divorced or Separated	97	19.8
Remarried	52	10.6
Other	24	4.9
Missing	5	1.0

Family's Socioeconomic Status		
High SES	82	16.7
Middle SES	370	75.5
Low SES	36	7.3
Missing	2	0.4

The sample size of 386 was determined by a preliminary power analysis using α = 0.01 as the Type I error rate, assuming a small effect size of $f^2 = 0.02$, and statistical power of 0.34 with four predictor variables. Aguinis et al. (2001) suggested that the power to detect interaction effects in a typical study is .20 to .34, much lower than the recommended level of .80. A power analysis was conducted by using G*Power 3.1.7 (Erdfelder, Faul, & Buchner, 2007) to estimate the sample size. A sample size of 386, 58, and 29 was needed for a small, medium, and large effect size, respectively. In this study, a sample size of 490 would be sufficient to detect a three-way interaction with a 0.02 effect size and a power of 0.47.

Measures

Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) is a 20-item self-report questionnaire that measures symptoms associated with depression experienced in the past week. The CES-D was originally designed as an epidemiological measure to estimate the prevalence of depressive symptoms in general population rather than a diagnostic instrument for psychiatric illness (Radloff, 1977). However, it has been used in both clinical and related epidemiologic studies with predicting depression and with depression predicting other health outcomes (Beekman et al., 1998; Blumenthal et al., 2003; Ried & Planas, 2002; as cited in Stansbury, Ried, & Velozo, 2006). The items were selected from a pool of items from previously validated depression scales (e.g.,

51

Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Gardner, 1968; Raskin, Schulterbrandt, Reatig, & McKeon, 1969; Zung, 1965). The items are consistent with the current categorical model of diagnosis that dominates the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR; American Psychiatric Association, 2000). The CES-D was originally designed to have a 4-factor structure representing depressed affect, absence of positive affect or anhedonia, somatic activity or inactivity, and interpersonal challenges (Radloff, 1977). The CES-D comprises six scales that reflect major dimensions of depression: depressed mood, feelings of guilt and worthlessness, feelings of helplessness and hopelessness, psychomotor retardation, loss of appetite, and sleep disturbance (Radloff, 1977). These main components of depressive symptomatology were identified from the clinical literature and factor analysis (Radloff, 1977). Sample items include "I was bothered by things that usually don't bother me." "I felt hopeful about the future." "I felt lonely." "I thought my life had been a failure." The instrument is set on a 4-point rating scale with response choices ranging from 0 (rarely or none of the time, less than 1 day) to 3 (most or all of the time, 5 to7 days) in terms of severity. Sixteen items are negatively worded, whereas, four items are positively worded to assess positive affect (or its absence). Scores for positively worded items 4, 8, 12, and 16 are reversed before summing all items to yield a total score. Total scores can range from 0 to 60. Higher total scores indicate more severe depressive symptoms. Scores less than 15 are typically categorized as no depression, scores between 15 and 21 are categorized as mild to moderate depression, and scores over 21 are categorized as major depression. A score of 16 or higher has been used extensively as the cut-off point for

depressive risk on this scale (Radloff, 1977). A validation study of CES-D (Myers & Weissman, 1980) indicated that the cutoff score of 16 was good in a community sample (94%) and the sensitivity was moderate (64%). However, false positives on the order of 15% to 20% have resulted from use of this cut-off point, leading some researchers to suggest that a higher cut-off point be used (Boyd, Weissman, Thompson, & Myers, 1982; Zich, Attkisson, & Greenfield, 1990). The CES-D usually takes about 5 minutes to complete.

The CES-D has shown strong reliability and validity. Many studies suggested that the CES-D is a reliable measure for assessing the number, types, and duration of depressive symptoms across racial, gender, and age categories (Knight, Williams, McGee & Olaman, 1997; Radloff, 1977; Roberts, Vernon, & Rhoades, 1989). High internal consistency has been reported with Cronbach's alpha coefficients ranging from .85 (general population sample) to .90 (patient sample) across studies (Radloff, 1977). It was found to have adequate test-retest reliability. It also has demonstrated adequate concurrent validity by clinical and self-report criteria, as well as construct validity (Radloff, 1977). The CES-D discriminates between psychiatric inpatient and general population samples, and among levels of severity within patient groups. Also, it is associated with other measures of depressive symptomology. However, there is evidence that the CES-D, while a useful measure of the level of depressive symptoms, may not be a good tool for screening for clinical depression or major depression (Roberts, Vernon, & Rhoades, 1989). Hicks and McCord (2012) conducted a pilot study to investigate the correlation between CES-D and Beck Depression Inventory-II (BDI-II; Beck et al., 1996).

The results indicate that the CES-D, as a well-constructed, public-domain, free instrument, was highly correlated to the commercial and copyrighted instrument, the BDI-II (r=.89, p< .001).

Some researchers have also questioned the validity of several items on the CES-D (Carleton et al., 2013). Items assessing somatic concerns (e.g., "I felt that everything I did was an effort") may have inflated scores for elderly or chronic pain populations (Snarski & Scogin, 2006; as cited in Carleton et al., 2013). For the item 17 (i.e., "I had crying spells"), there appears to be a significant sex difference in responses, suggesting inflation of women's CES-D scores due to gender norms regarding emotional expression. Carleton et al. (2013) found that men and women respond similarly to item 17 and score 0 (rately or none of the time) when depressive levels are low or slightly above average (-2.5 SD to +0.5SD); however, women score higher compared to men as levels of depression increase.

Rosenberg Self-Esteem Scale (RSES, Rosenberg, 1965) is a 10-item instrument designed to assess adolescents' global feelings of self-worth. RSES is probably the most widely used measures of global self-esteem in social science research today. The literature search of the RSES in the PSYCHINFO database resulted in 1,785 references, indicating its popularity in research and clinical settings. Twenge and Campbell (2001) found that the RSES had been used in 199 studies with a total of 65,965 participants (as cited in Sinclair et al., 2010). The original sample consisted of 5,024 high school juniors and seniors from 10 randomly selected schools in New York State. RSES was designed to be a Guttman scale, meaning that items were to represent a continuum of self-worth with statements ranging from statements that are endorsed even by individuals with low

self-esteem to statements that are endorsed only by persons with high self-esteem. It was designed as a six-item Guttman Scale, the first item included question 1 through 3 and received a positive score if two or three of its questions were answered positively; questions 4 and 5 and question 9 and 10 formed another two items that were scored positively, if both questions in the item had positive answers; question 6, 7, 8 formed the last three items. The higher score represents higher self-esteem. However, not all studies that employed the RSES have used Guttman Scaling to obtain a self-esteem score. Some researchers preferred to calculate the scale's total score by summing participants' responses across all then questions. In addition, some researchers used a 4-point scale or a 6-point scale when assessing for self-esteem, and these versions of RSES were shown to be reliable (e.g., McCarthy & Hope, 1982; Shahani, Dipboye, & Phillips, 1990). Emerging research has divided RSES into two subcomponents, self-competence and self-liking. Self-competence is understood as one's instrumental value, indicating one feels confident and capable. Self-liking is seen as one's intrinsic value, suggesting one feels good about themselves and socially accepted (Tafarodi & Milne, 2002; Schmitt & Allik, 2005, as cited in Sinclair et al., 2010). Sample items include "I felt that I am a person of worth, at least on an equal plane." "I am able to do things as well as most other people." "On the whole, I am satisfied with myself." "At times I think I am no good at all."

The scale used in the current study was presented with four response choices (strongly agree, agree, disagree, strongly disagree). Five items are positively worded and five are negatively worded. Positively worded items are reverse scored before summing

55

the total scores. Higher total scores represent higher self-esteem. Total scores can range from 10 (poor) to 40 (Excellent).

Over the past two decades, the RSES has been used extensively with both non-clinical and clinical samples. The measure possesses good reliability (.85) and confirmed construct and convergent validity have been reported. Multiple studies have been conducted to investigate the validity and reliability of the RSES, and many studies have shown that the scale is a valid and reliable unidimensional measure of self-esteem (Silbert & Tippett, 1964; Kaplan & Pokorny, 1969; Crandal, 1973; Rosenberg, 1979; McCarthy & Hoge, 1982; Goldsmith, 1986; Shahan et al., 1990; Hagborg, 1993). RSES has also been commonly used to investigate self-esteem as a resilience factor of suicidality (Blankstein et al., 2007; Kidd & Shahar, 2008; De Man & Gutierrez, 2002; Lieberman et al., 2005, as cited in Johnson, Wood, Gooding, Taylor, & Tarrier, 2011). Researchers also suggest that RSES is more suited for university undergraduate population, and RSES scores vary significantly across age, gender, race/ethnicity, employment status, income, and marital status (Sinclair et al., 2010)

The Suicide Resiliency Inventory (SRI-25, Osman et al., 2004) is a 25-item measure that explores protective factors through three subscales: internal protective scale (9 items), external protective scale (8 items), and emotional stability scale (8 items). The Suicide Resilience Inventory (SRI-25, Osman et al., 2004) consists of three domains of global resilience. (1) The internal protective domain which represents positive beliefs about self and satisfaction with life (positive self-concept and resilience), for example, "I am proud of many good things about myself." This domain also reflects one's ability to

hold a sense of self and of personal efficacy while still understanding one's ability to overcome current challenges by seeking strengths from past personal victories. (2) The external protective domain include one's positive beliefs or feelings that the individual can recognize or seek out external resources that are helpful when faced with personal difficulties or suicidal thoughts. This domain reflects one's ability or confidence to seek social support from family and friends when experiencing suicide ideation, and discuss the suicide ideation with identified support system. A sample item would be "People close to me would find the time to listen if I were to talk seriously about killing myself." (3) The emotional stability domain contains items that reveal one's positive beliefs about the individual's ability to regulate suicide ideation and suicidal behaviors when confronting emotionally or psychologically distressing events such as depressive symptoms or interpersonal conflicts. Emotional stability requires the individual to demonstrate the ability to go through emotionally upsetting experiences while not becoming acutely depressed, hopeless, or hostile. For example, "I can handle thoughts of killing myself when I feel lonely or isolated from other people."

SRI-25 uses a 6-point response scale ranging from 1 (strongly disagree) to 6 (strongly agree). Higher scores indicate less suicide risk. The original sample comprised 540 adolescents and young adults (M = 5.4, SD= .70). Estimated alpha for the total inventory and scales was .90 to .95, confirming a high reliability. In the original study, the inventory scores significantly differentiated between participants with (a) no prior suicidal thoughts and attempts, (b) brief suicidal thoughts, and (c) prior suicide plans or attempts, suggesting that SRI-25 is useful for assessing the construct of suicide resilience.

57

Rutter, Freedenthal, and Osman (2008) suggested that SRI-25's correlations with the

Beck Hopelessness Scale (BHS) (r = - .68) and Suicidal Ideation Questionnaire (SIQ) (r =

- .67) supported the scale's validity, although the external protective subscale and

Multidimensional Scale of Perceived Social Support (MSPSS) were only moderately

correlated (r = .47). Overall, the SRI-25's reliability and validity support its use in suicide

research.

   The Suicide Behaviors Questionnaire-Revised (SBQ-R; Osman et al., 2001) is a

4-item, self-report instrument of examining an individual's past suicidal behaviors

including ideation and attempt. Each item taps a different dimension of suicidality. Item 1

(i.e., "Have you ever thought about or attempted to kill yourself?") taps into lifetime

suicide ideation and/or suicide attempt; Item 2 ("How often have you thought about

killing yourself in the past year?") assesses the frequency of suicidal ideation over the

past twelve months; Item 3 ("Have you ever told someone that you were going to commit

suicide or that you might do it?") assesses the threat of suicide attempt; Item 4 ("How

likely is it that you will attempt suicide in the future?") evaluates self-reported likelihood

of suicidal behavior in the future. Previous studies have used the single item 1 ("Have

you ever thought about or attempted to kill yourself?") to assess for suicide risk. The total

scores are obtained by summing all the item scores. The total scores can range from 3 to

18.

   SBQ-R is modified from the Suicidal Behaviors Questionnaire (SBQ), a 34-item

self-report survey developed by Linehan (1981), to assess for the frequency and severity

of suicidal behaviors and past history of suicide attempts. To date, there are several

different versions of the 4-item SBQ in the suicide literature (Cole, 1988; Gutierrez, Osman, Kopper, Barrios, & Bagge, 2000; Osman et al., 1996, as cited in Osman et al., 2001). The SBQ-R is considered a very useful screening tool with a number of good qualities, such as its brevity, straightforward language, simple format, excellent sensitivity, and the ability to obtain a broad range of information related to suicide risk behaviors (Winters, Myers, & Proud, 2002).

The psychometric properties of SBQ-R were tested in clinical and nonclinical samples including psychiatric inpatient adolescents, high school students, psychiatric inpatient adults, and undergraduates (Osman et al., 2001). The SBQ-R yielded a high internal consistency reliability (α=.97) with an undergraduate sample (n= 275). The SBQ-R has yielded very good internal consistency when used with normal high school and inpatient clinical samples, and girls endorsed higher scores than boys. The SBQ-R demonstrated adequate to high level of reliability coefficient that ranged from .76 (the undergraduate sample) to .88 (the psychiatric adolescent inpatient sample). Convergent validity was established as the total scores of the SBQ-R correlated moderately and significantly with the six Adult Suicidal Ideation Questionnaire (ASIQ; Reynolds, 1991) critical items (r= .40, p<.01) as well as the Suicide Probability Scale (SPS; Cull & Gill, 1982) total score (r= .65, p<.01).

The SBQ-R is shown to be useful as a risk measure of suicide to differentiate between suicide-risk and non-suicidal groups. The most useful cutoff scores on the SBQ-R were 7 for non-suicidal samples, and 8 for clinical samples in maximizing the sensitivity and specificity rates. A cutoff score of 2 or higher on the SBQ-R Item 1 is

59

suggested for use with both clinical and nonclinical samples. In an inpatient adolescent sample, a score of 1 or higher on the SBQ-R item 1 differentiated between the non-suicidal and the suicide attempter group with high sensitivity (100%) and specificity (100%). The SBQ-R total scores were found to correlate significantly with age for the undergraduate groups and psychiatric inpatient adults. In undergraduate groups, the SBQ-R scores did not vary significantly by gender or ethnicity.

Demographic Questionnaire. By answering this questionnaire, participants will give information on their gender, age, ethnicity, year in college, relationship status, sexual orientation, previous and current counseling experience, family history of mental health issues including suicide, parents' relationship status, and socioeconomic status.

Procedure

Prior to recruiting participants for this study, the dissertation research proposal and pertinent information regarding this study were submitted to the University of Denver Institutional Review Board (IRB) for review and approval. After receiving approval from the University of Denver IRB, a pilot study was conducted to gather feedback regarding the online accessibility and item feasibility of the online survey for this study. A link to the study was sent to five colleagues and feedback was collected and incorporated regarding the study's description, informed consent, instructions, and survey items. In order to recruit undergraduate students from a large college it the Western United States, approval was sought and granted by the IRB at this college.

Participants were recruited via e-mail sent to college students who were at least 18 years old or older in the psychology research pool at a large college in the Western

United States. College students who were interested in participating in this study clicked a hyperlink included in the email that directed them to a Survey Monkey webpage containing a description of this study's purpose and procedures as well as participants' rights (see Project Information Sheet Appendix D). Those who consented were directed to the survey page that consists of a demographic questionnaire, Center of Epidemiology Scale of Depression, Rosenberg Self-Esteem Scale, Suicide Resilience Scale, and Suicide Behavior Questionnaire-Revised. The survey was sent out in December, 2012.

In the informed consent, participants were informed that this study was being performed as this investigator's doctoral dissertation to examine the risk factors as well as protective factors of suicide ideation among college students. Participation in this study was completely voluntary, and if they experienced any discomfort during the survey, they were encouraged to discontinue their participation at any time. Contact information for their college's counseling center was also provided in the informed consent.

Participation in this study was anonymous. Also, all survey data were collected and stored on a secure server provided by Survey Monkey. Only this investigator had access to the survey data, and those survey data were accessed by entering a secure password into the website, known only by this investigator. For the purposes of data analysis, survey data were downloaded and saved in a password protected computer file.

Expected Preliminary Analysis

The descriptive statistics, correlations among variables, and internal consistency reliability estimates were examined for this study. Multiple regression analyses were

performed to investigate the relationship among depression, self-esteem, suicide

resilience, and suicide ideation. Data were examined to ensure it met the regression

assumptions of normality, linearity, and homoscedasticity (Cohen, Cohen, West, & Aiken,

2003, pp. 130-141). In the multiple regression analyses, extraneous variables (age,

gender, ethnicity, sexual orientation, relationship status, history of past suicide attempt,

socioeconomic status) needed to be controlled because they are likely to have influence

on the relationship among the independent variable (depression), moderators (self-esteem,

suicide resilience), and the dependent variable (suicide behavior).

The current study focused on examining the relationship between depression, self-

esteem, resilience, and suicide ideation in U.S. college students via testing the following

hypotheses: (1) depression predicts the suicide behavior among sample college students;

(2) the level of self-esteem moderates the relationship between depression and suicide

behavior, meaning high self-esteem buffers the effect of depression on suicide behavior

and low self-esteem increases such effect; (3) resilience moderates the relationship

between depression and suicide behavior, meaning high level of resilience buffers the

effect of depression on suicide behavior and low resilience increases such effect; (4) there

is a three-way interaction of depression, self-esteem, and resilience in predicting suicide

behavior, such that the association is weakest when the self-esteem is low and resilience

is low.

In addition, predictor and moderator variables were standardized in order to

reduce multicollinearity (Frazier, Tix, & Barron, 2004). Interaction terms of depression $\times$

self-esteem, depression $\times$ suicide resilience, and depression $\times$ self-esteem $\times$ suicide

62

resilience were created. After centering predictor and moderator variables and creating interaction terms, variables were entered into the regression equation through a series of steps (Aiken & West, 1991; Cohen et al., 2003). To test Hypothesis 1, regression analysis was conducted to examine whether depression is positively associated with suicide behavior. To test Hypothesis 2, a two-way interaction of depression and self-esteem was tested via step 1, 2, and 3. In Step 1, covariates (age, gender, ethnicity, sexual orientation, relationship status, history of past suicide attempt, socioeconomic status) were tested. In Step 2, depression and self-esteem were entered in the regression equation, and their correlations with suicide behavior were examined. In Step 3, the effect of a two-way interaction of depression $\times$ self-esteem in predicting suicide behavior was investigated. If the regression coefficient for the two-way interaction of depression $\times$ self-esteem was statistically significant, the next step was to interpret the interaction (test the moderator effect). A common strategy is to examine its effect at two levels (i.e. lower levels of self-esteem and higher levels of self-esteem) by plotting self-esteem scores for depression scores of one standard deviation above and below the mean (Aiken & West, 1991). Simple regression analyses were conducted to check whether the slopes of simple regression lines at high and low self-esteem significantly differed from zero. If the slopes are significantly different from zero at high and low self-esteem, it means that with lower levels of self-esteem, college students who reportedly experience depression are more vulnerable to suicide ideation and, with higher levels of self-esteem, college students who experience depression reported significantly lower scores on their suicide behavior.

The examination of Hypothesis 3, the moderator effect of suicide resilience, also followed 3 steps similar to the examination of Hypothesis 2. In Step 1, covariates (age, gender, ethnicity, sexual orientation, relationship status, history of past suicide attempt, socioeconomic status) were tested. In Step 2, depression and suicide resilience were entered as predictors, and their correlations with suicide behavior were examined. In Step 3, the effect of a two-way interaction of depression $\times$ suicide resilience in predicting suicide behavior was investigated. If the regression coefficient for the two-way interaction of depression $\times$ suicide resilience was statistically significant, I tested the moderator effect of suicide resilience at two levels (i.e. lower levels of suicide resilience and higher levels of suicide resilience) by plotting suicide resilience scores for depression scores of one standard deviation above and below the mean (Aiken & West, 1991). Simple regression analyses were conducted to check whether the slopes of simple regression lines at high and low self-esteem significantly differed from zero. If the slopes are significantly different from zero at high and low suicide resilience, it means that with lower levels of suicide resilience, college students who experience depression are more vulnerable to suicide ideation and, with higher levels of suicide resilience, college students who experience depression reported lower scores on their suicide ideation.

To test Hypothesis 4, the three-way interaction among depression, self-esteem, and suicide resilience, involves four steps. In Step 1, same as the previous three hypotheses, covariates (age, gender, ethnicity, sexual orientation, relationship status, history of past suicide attempt, socioeconomic status) were tested. In Step 2, three predictors (i.e., depression, self-esteem, and resilience) were entered. In Step 3, all two-

64

way interaction terms (i.e., depression $\times$ self-esteem, depression $\times$ suicide resilience, and self-esteem $\times$ suicide resilience) were entered. In the Step 4 regression analyses, a three-way interaction term (depression $\times$ self-esteem $\times$ suicide resilience) was entered. If the three-way interaction was statistically significant, I then used the same procedure described earlier to plot the three-way interaction at (1) high self-esteem and high suicide resilience, (2) high self-esteem and low suicide resilience, (3) low self-esteem and high suicide resilience, and (4) low self-esteem and low suicide resilience one standard deviation above and below the mean.

CHAPTER FOUR

Results

Preliminary Analysis and Descriptive Statistics

A post-hoc power analysis was conducted to estimate the power. In this study, a

sample size of 490 would detect a three-way interaction with a 0.02 effect size and a

power of 0.47. A sample size of 386, 58, and 29 was needed to detect a small, medium,

and large effect size, respectively. Analyses were conducted to examine the descriptive

statistics and correlations among depression (CES-D), self-esteem (RES), suicide

resilience (SRI-25), and past suicidal thoughts and behaviors (SBQ-R). Table 2 shows the

means, standard deviations, correlations, and alpha coefficients. The correlations among

variables showed that depression was positively related to past suicidal thoughts and

behavior ($r=0.15$, $p<0.001$). Depression was negatively related to self-esteem ($r=-0.78$,

$p<0.01$). Depression was also negatively associated with suicide resilience ($r=-0.64$,

$p<0.01$). Self-esteem ($r=-0.55$, $p<0.01$) and suicide resilience ($r=-0.65$, $p<0.01$) were

negatively related to past suicidal thoughts and behavior.

Table 2

Correlations, Means, Standard Deviations, and Alphas among the Variables

Variable	1	2	3	4	5
1. Past Suicidal thoughts and Behaviors	1				
2. Sexual Orientation	.15***	1			
3. Depression	.52**	.18***	1		
4. Self-Esteem	-.55**	-.14**	-.78**	1	
5. Suicide Resilience	-.65**	-.14**	-.64**	.74**	1
Mean	5.44	0.08	13.67	32.09	5.33
SD	1.98	0.26	10.3	5.61	0.62
α	0.74	NA	0.92	0.92	0.94
Skewness	1.44	NA	1.13	-0.35	-1.35
Kurtosis	1.43	NA	1.01	-0.66	1.95

Note. $N = 490$. * $p < .05$. ** $p < .01$. *** $p < .001$.

A series of one-way multivariate analyses of variance (MANOVAs) were conducted to examine whether the four main variables varied by differences in age, gender, ethnicity, year in college, relationship status, sexual orientation, previous counseling experience, family history of mental health issues, parents' relationship status, and SES. Results suggested that there were no significant differences for all four main variables in age, year in college, relationship status, and SES. Because participants' age, ethnicity, relationship status, and SES were not significantly related to the dependent

variable (i.e., suicidal ideation and behavior), none of these variables were used as covariates in subsequent analyses. Furthermore, suicidal ideation and behavior varied by differences in participants' sexual orientation.

Locating Outliers

Because the multiple regression is particularly sensitive to outliers, it is important to check for extreme scores that may have undue influence on the relationship between the independent and dependent variables. Outliers were located through a variety of methods. First, a box-plot graph was generated from the data, which assists the visual detection of extreme scores. In order to evaluate the statistical significance of the extreme data points within each variable, the studentized residuals were calculated. All cases with a studentized residual exceeding ± 2 were removed (Belsey et al., 1980). This led to the removal of 31 cases. Next, the Cook's distance value for each case was examined (Cook, 1982). Cases containing Cook's Distance value higher than 4/n (.0079 in this case) were removed (Bollen & Jackman, 1990). Hence, 15 offending cases were removed. In all, forty-six cases were identified as outliers and removed from the analysis. As a result, 490 (i.e. 536-31-15= 490) cases were entered into the multiple regression analysis.

Primary Analysis

Multiple regression analyses were performed to investigate the relationship among depression, self-esteem, suicide resilience, and suicide ideation. To properly conduct multiple linear regression analysis, regression assumptions of normality, linearity, and homoscedasticity must be tested first (Cohen, Cohen, West, & Aiken, 2003, pp. 130-141). To test for violations of normality, each of the predictor variables included in the

68

regression analysis were examined separately. The distribution of scores on the all three of the independent variables (CES-D, RSES, SRI-25) and the dependent variable (SBQ-R) were visually inspected for evidence of skewness and kurtosis. See Table 2. CES-D (Depression, M= 13.67, SD= 10.3, Skewness = 1.13, Kurtosis= 1.01) and SBQ-R (Suicide Behavior, M= 5.44, SD= 1.98, Skewness = 1.44, Kurtosis= 1.43) displayed a positive skew. RES (Self-Esteem, M= 32.09, SD= 5.61, Skewness = -0.35, Kurtosis= -0.66) and SRI-25 (Suicide Resilience, M= 5.33, SD= 0.62, Skewness = -1.35, Kurtosis= 1.95) displayed a negative skew. In order to correct for this assumption violation, CES-D was square root transformed before it was entered into regression analyses. This type of transformation procedure is often recommended for the statistical investigation of positively skewed data (Cohen, Cohen, West & Aiken, 2003; Tabachnik & Fidel, 2007).

Another assumption of multiple regression is the presence of linearity and homogeneity of variance across levels of the predictor variables (homoscedasticity). To check for violation of these assumptions, scatter plots were generated using the predicted values for all possible pairs of independent and dependent variables. Visual inspection of the plots verified that linearity was maintained.

The current study focused on examining the relationship between depression, self-esteem, resilience, and suicide behavior in U.S. college students via testing the following hypotheses: (1) depression predicts the suicide behavior among sample college students; (2) the level of self-esteem moderates the relationship between depression and suicide behavior, meaning high self-esteem buffers the effect of depression on suicide behavior and low self-esteem increases such effect; (3) suicide resilience moderates the

relationship between depression and suicide behavior, meaning high level of resilience buffers the effect of depression on suicide behavior and low resilience increases such effect; (4) there is a three-way interaction of depression, self-esteem, and suicide resilience in predicting suicide behavior, such that the association is weakest when the self-esteem is low and resilience is low.

To reduce multicollinearity, the covariate, predictor, and moderator variables were standardized (Aiken & West, 1991; Frazier, Tix, & Barron, 2004). Interaction terms of depression $\times$ self-esteem, depression $\times$ suicide resilience, self-esteem $\times$ suicide resilience, and depression $\times$ self-esteem $\times$ suicide resilience were created. After standardizing predictor and moderator variables and creating interaction terms, variables were entered into the regression equation through a series of steps (Aiken & West, 1991; Cohen et al., 2003).

Depression and Suicide Behavior

To test Hypothesis 1, regression analysis was conducted to examine whether depression is positively associated with suicide behavior. As was predicted, it was indicated that depression (r=0.52, *p*<.01) was positively associated with past suicidal thoughts and behaviors. The significant positive relationship found between depression and past suicidal thoughts and behaviors suggests that individuals who struggle with severe levels of depression are more likely to report past suicidal thoughts and behaviors.

Self-Esteem as a Moderator on the Association between Depression and Suicidal Behavior

To test Hypothesis 2, a two-way interaction of depression and self-esteem was tested via step 1, 2, and 3. In Step 1, the covariate (sexual orientation) was tested. In Step 2, depression and self-esteem were entered into the regression equation, and their effects on suicide behavior were examined. In Step 3, the effect of a two-way interaction of depression $\times$ self-esteem in predicting suicide behavior was investigated (see Table 3). Sexual orientation was significantly correlated with past suicide ideation and behaviors (r=0.15, p<0.001). Sexual orientation accounted for 2% of the variance in suicide behavior ($\Delta R^2 = 0.02$, $p < .01$). However, we need to be cautious to interpret the sexual orientation result because it might be significant as a result of great differences in sample sizes (92% of participants were heterosexual and only 8% were non-heterosexual). Table 3 showed that, after controlling for the covariate (in step 1), depression and self-esteem in Step 2 accounted for 31% of the variance in suicide ideation and behavior ($\Delta R^2 =0 .31$, $p < .001$). Depression significantly predicted suicidal ideation and behavior ($b = 0.54$, $p < .001$) and self-esteem significantly predicted suicidal ideation and behavior ($b = -0.65$, $p < .001$). In Step 3, the two-way interaction of depression and self-esteem accounted for an additional 4 % of the variance in suicidal ideation and behavior ($\Delta R^2 = 0.04$, $p < .001$). Additionally, the effect of depression on suicidal ideation and behavior was moderated by the interaction between depression and self-esteem ($b = -0.40$, $p < .001$). Champoux and Peters (1987) and Chaplin (1991) comprehensively reviewed the social science literature and reported that interaction terms typically account for approximately 1% to 3% of the variance; J. Cohen (1992) indicated that an R^2 value of .01 indicates a small effect size.

Table 3

A Two-way Interaction of Depression × Self-Esteem on Suicidal Ideation and Behavior

Step	B	SE B	Beta	ΔR^2	ΔF
Step 1 (covariate)				0.02	11.34**
Sexual Orientation	0.28	0.28	0.04		
Step 2 (predictor)				0.31	111.33***
Depression (DEP)	0.54	0.12	.26***		
Self-Esteem (SE)	-0.65	0.12	-0.31***		
Step 3 (two-way interaction)				0.04	30.58***
DEP × SE	-0.40	0.07	-0.20***		

Note. N = 490. * *p* < .05. ** *p* < .01. *** *p* < .001.

Since the regression coefficient for the two-way interaction of depression × self-esteem was statistically significant, the next step was to interpret the interaction (test the moderating effects of self-esteem). A simple effects analysis was conducted to understand the nature of the interaction (Frazier, Tix, & Barron, 2004). A common strategy is to examine its effect at two levels (i.e. lower levels of self-esteem and higher levels of self-esteem) by plotting self-esteem scores for depression scores of one standard deviation above and below the mean, and then followed steps suggested by Aiken and West, 1991. Simple regression analyses were conducted to check whether the slopes of simple regression lines at high and low self-esteem significantly differed from zero. Figure 1 indicated that the slope was significantly different from zero at low self-esteem. This means that with lower levels of self-esteem, college students who reportedly experience depression are more vulnerable to suicide behavior. However, with higher

72

levels of self-esteem, college students who experience depression did not report

significantly lower scores on their suicide behavior. The results suggest that high self-

esteem buffers the impact of depression on suicide behavior.
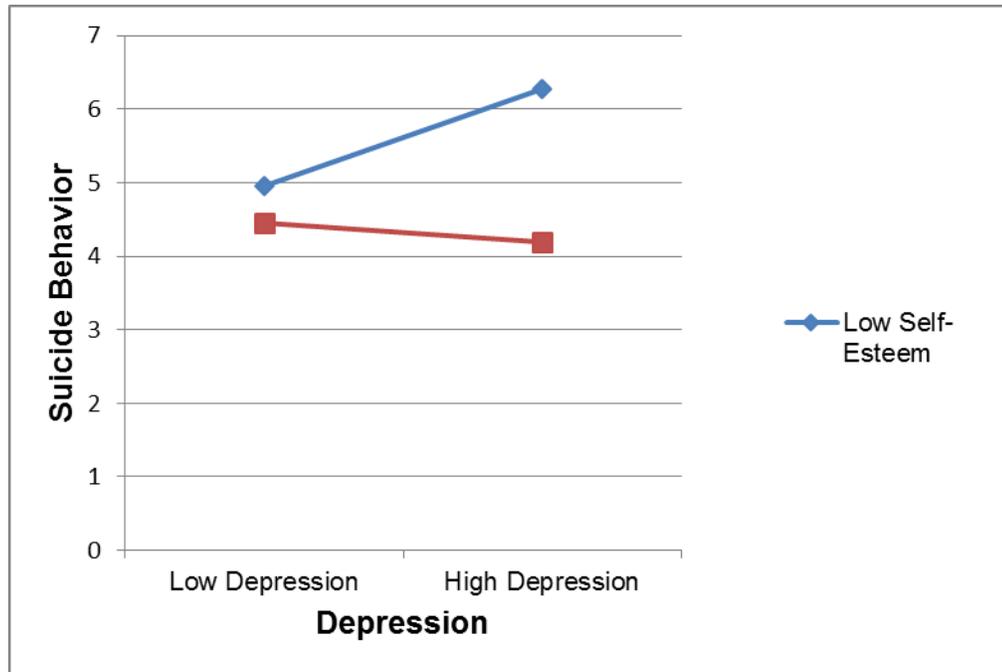
Figure 1

Two-Way Interaction of Depression and Self-Esteem on Suicide Behavior

Suicide Resilience as a Moderator on the Association between Depression and Suicidal

Behavior

The examination of Hypothesis 3, the moderator effect of suicide resilience,

followed 3 steps that were similar to the examination of Hypothesis 2. In Step 1,

covariate (sexual orientation) was tested. In Step 2, depression and suicide resilience

were entered as predictors, and their correlations with suicide behavior were examined. In

Step 3, the effect of a two-way interaction of depression $\times$ suicide resilience in predicting

suicide behavior was investigated. Table 4 showed that, after controlling for the covariate

(Step 1), depression and suicide resilience in Step 2 accounted for 43% of the variance in suicidal ideation and behavior ($\Delta R^2 = 0.43$, $p < .001$). Depression significantly predicted suicidal ideation and behavior ($b = 0.46$, $p < .001$) and suicide resilience significantly predicted suicidal ideation and behavior ($b = -0.99$, $p < .001$). In Step 3, the two-way interaction of depression and self-esteem accounted for an additional 3% of the variance in suicidal ideation and behavior ($\Delta R^2 = .03$, $p < .001$). Additionally, the effect of depression on suicidal ideation and behavior was moderated by the interaction between depression and suicide resilience ($b = -0.40$, $p < .001$).

Table 4

A Two-way Interaction of Depression × Suicide Resilience on Suicidal Ideation and Behavior

Step	B	SE B	Beta	ΔR^2	ΔF
Step 1 (covariate)				0.02	11.34**
Sexual Orientation	0.18	0.25	0.02		
Step 2 (predictor)				0.43	186.89***
Depression (DEP)	0.46	0.09	0.22***		
Suicide Resilience (SR)	-0.99	0.11	-0.42***		
Step 3 (two-way interaction)				0.03	29.64***
DEP × SR	-0.40	0.07	-0.20***		

*Note. N = 490. * p < .05. ** p < .01. *** p < .001.*

Since the regression coefficient for the two-way interaction of depression × suicide resilience was statistically significant, I tested the moderator effect of suicide resilience at two levels (i.e., lower levels of suicide resilience and higher levels of suicide

resilience) by plotting suicide resilience scores for depression scores of one standard deviation above and below the mean (Aiken & West, 1991). Simple regression analyses were conducted to check whether the slopes of simple regression lines at high and low self-esteem differed significantly from zero. Figure 2 indicated that, the slope was significantly different from zero at low suicide resilience, which means that with lower levels of suicide resilience, college students who experience depression are more vulnerable to suicide behavior; with higher levels of suicide resilience, college students who experience depression did not report significantly lower scores on their suicide behavior. The results suggest that suicide resilience buffers the impact of depression on suicide behavior.
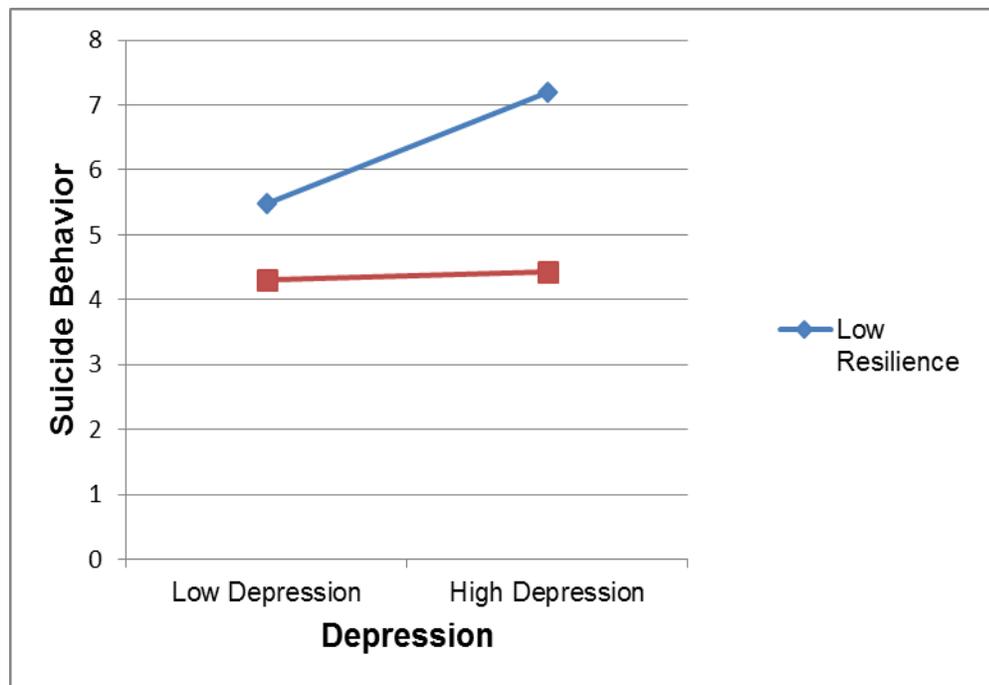

Figure 2

Two-Way Interaction of Depression and Suicide Resilience on Suicide Behavior

Three-way Interaction of Depression, Self-Esteem, and Suicide Resilience

The test of Hypothesis 4, the three-way interaction among depression, self-esteem, and suicide resilience, involved four steps. In Step 1, the same as the previous three hypotheses, the covariate (sexual orientation) was first tested. In Step 2, three predictors (i.e., depression, self-esteem, and suicide resilience) were entered. In Step 3, all two-way interaction terms (i.e., depression $\times$ self-esteem, depression $\times$ suicide resilience, and self-esteem $\times$ suicide resilience) were entered. In the Step 4, a three-way interaction term (depression $\times$ self-esteem $\times$ suicide resilience) was entered. Table 5 shows that, after controlling for the covariate (Step 1), depression, self-esteem, and suicide resilience in Step 2 accounted for 43% of the variance in suicidal ideation and behavior ($\Delta R^2 = .43$, $p < .001$). In Step 3, the two-way interactions (depression $\times$ self-esteem, depression $\times$ suicide resilience, and self-esteem $\times$ suicide resilience) accounted for an additional 4.0% of the variance in suicidal ideation and behavior ($\Delta R^2 = .04$, $p < .001$). In Step 4, the three-way interaction of depression, self-esteem, and suicide resilience accounted for 1% of variance of suicidal ideation and behavior ($\Delta R^2 = .01$, $p < .05$). The effect of three-way interaction was significant ($b = -0.14$, $p < .05$).

Table 5

A Three-way Interaction of Depression × Self-Esteem × Suicide Resilience on Suicidal Ideation and Behavior

Step	B	SE B	Beta	ΔR^2	ΔF
Step 1 (covariate)				0.02	11.34**
Sexual Orientation	0.28	0.25	0.04		
Step 2 (predictor)				0.43	124.70***
Depression (DEP)	0.38	0.12	.19**		
Self-Esteem (SE)	-0.26	0.13	-0.13*		
Suicide Resilience (SR)	-0.96	0.13	-0.41***		
Step 3 (two-way interaction)				0.04	11.98***
DEP × SE	0.22	0.10	0.11*		
SE × SR	0.31	0.14	0.16*		
DEP × SR	-0.43	0.15	-0.22**		
Step 4 (three-way interaction)				0.01	4.60*
DEP × SE × SR	-0.14	0.07	-0.14*		

Note. $N = 490$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Since the three-way interaction was statistically significant, I then used the same procedure described earlier to plot the three-way interaction by using the value of one standard deviation above (i.e., high) and below (i.e., low) the mean for depression, self-esteem, and suicide resilience (see Figure 3-1, 3-2, 3-3, 3-4). Figure 3-1 indicates that for those with high self-esteem, the association between depression and suicidal thoughts and behavior was significant when suicide resilience was weaker. This association was not

statistically significant when suicide resilience was stronger. This result suggests that depression did not have a significant impact on suicide behavior when students have high self-esteem and high suicide resilience. When students had high self-esteem but low suicide resilience, they still experienced significant vulnerability to suicide behavior when they are depressed. When students experienced high depression, high self-esteem did not buffer the negative impact on suicide behavior with low suicide resilience. High self-esteem was unable to buffer the negative impact of depression on suicide behavior when students experienced depression when they had weaker suicide resilience. Figure 3-2 suggested that depressed students with low self-esteem scored higher on suicide behavior when they had low suicide resilience than those who had high suicide resilience. Figure 3-3 showed at high suicide resilience, depression was not significantly related to suicide behavior when self-esteem was either high or low. It also indicated that depressed students who had high suicide resilience and high self-esteem had lower scores on suicide behavior than those who had high suicide resilience but low self-esteem. This result suggests when students experienced depression, high suicide resilience greatly buffered the impact on suicide behavior when they had high or low self-esteem. Figure 3-4 indicated at low suicide resilience, depression was positively correlated to suicide behavior with either high or low self-esteem. It showed that with low suicide resilience, depressed students who had high self-esteem scored lower on suicide behavior than those who had low self-esteem. Figure 3-2 and figure 3-4 both suggest that students who had low self-esteem and low suicide resilience reported higher scores on suicide behavior when they experienced depression.

Figure 3-1

Three-Way Interaction of Depression, Self-Esteem, and Suicide Resilience on Suicide Behavior: High Self-Esteem
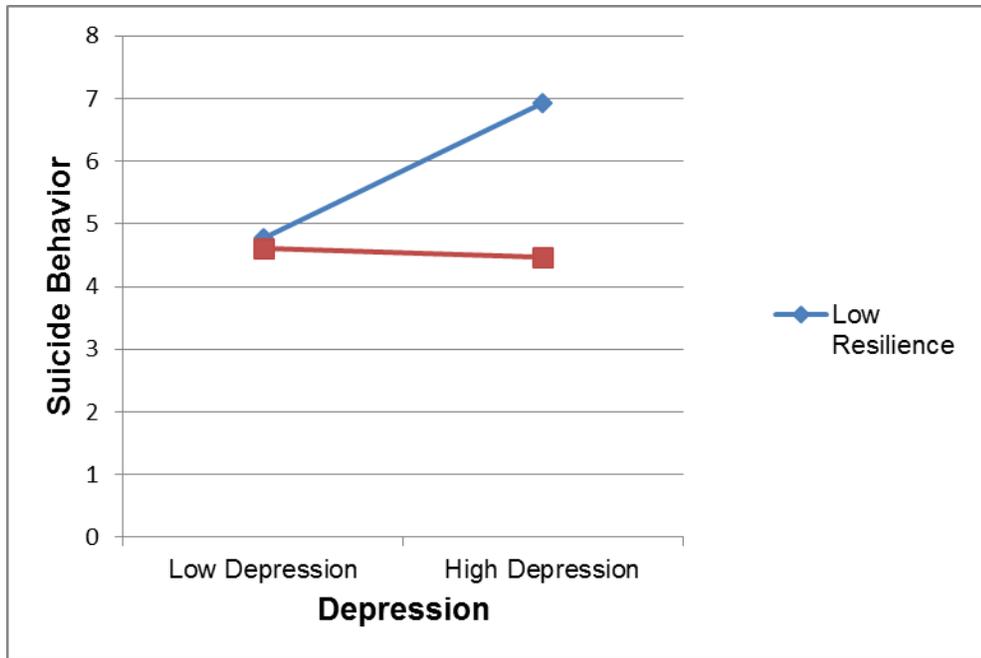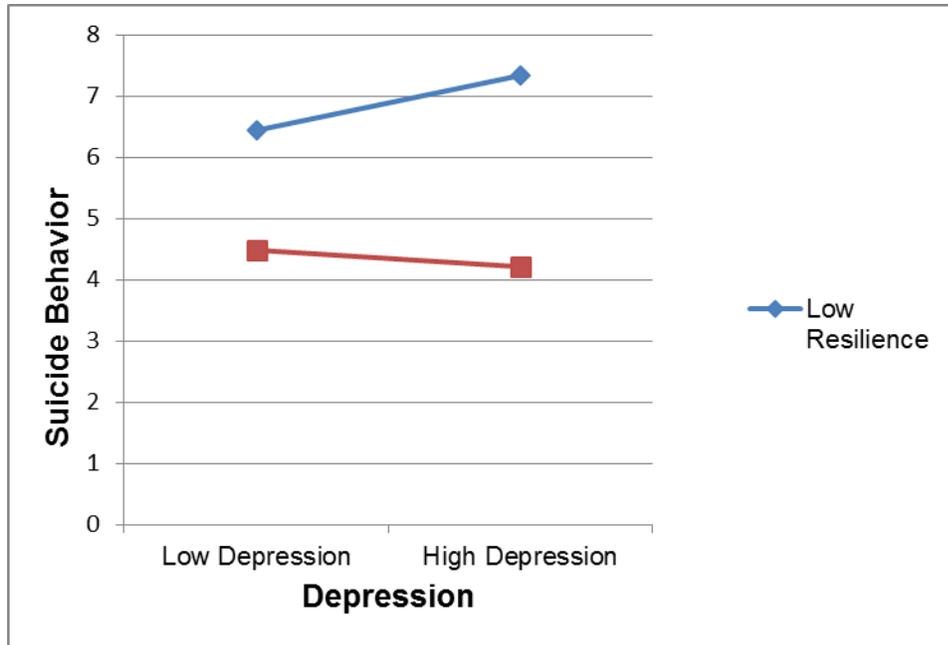
Figure 3-2

Three-Way Interaction of Depression, Self-Esteem, and Suicide Resilience on Suicide Behavior: Low Self-Esteem
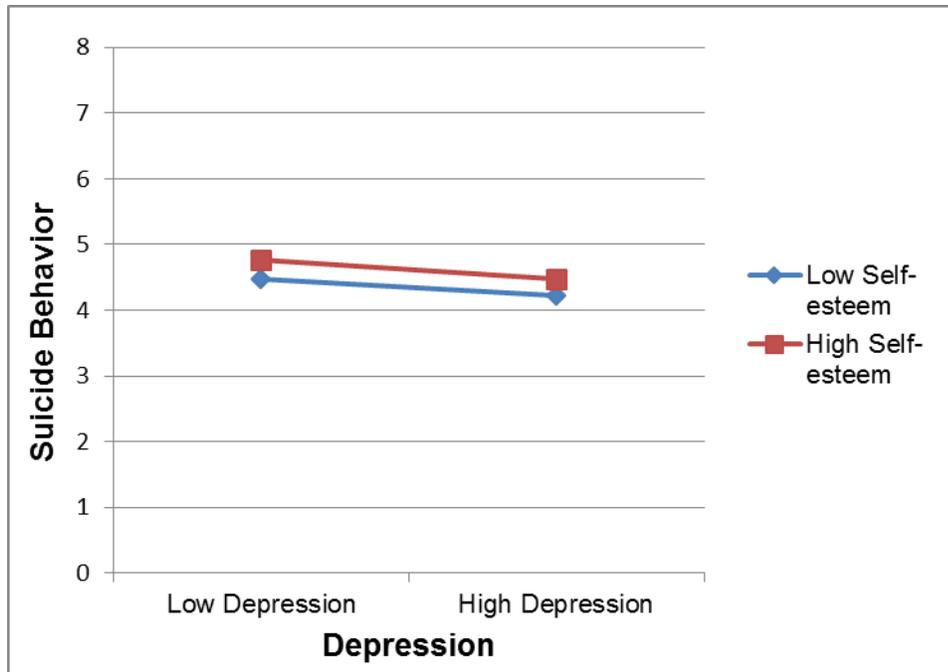
Figure 3-3

Three-Way Interaction of Depression, Self-Esteem, and Suicide Resilience on Suicide Behavior: High Resilience
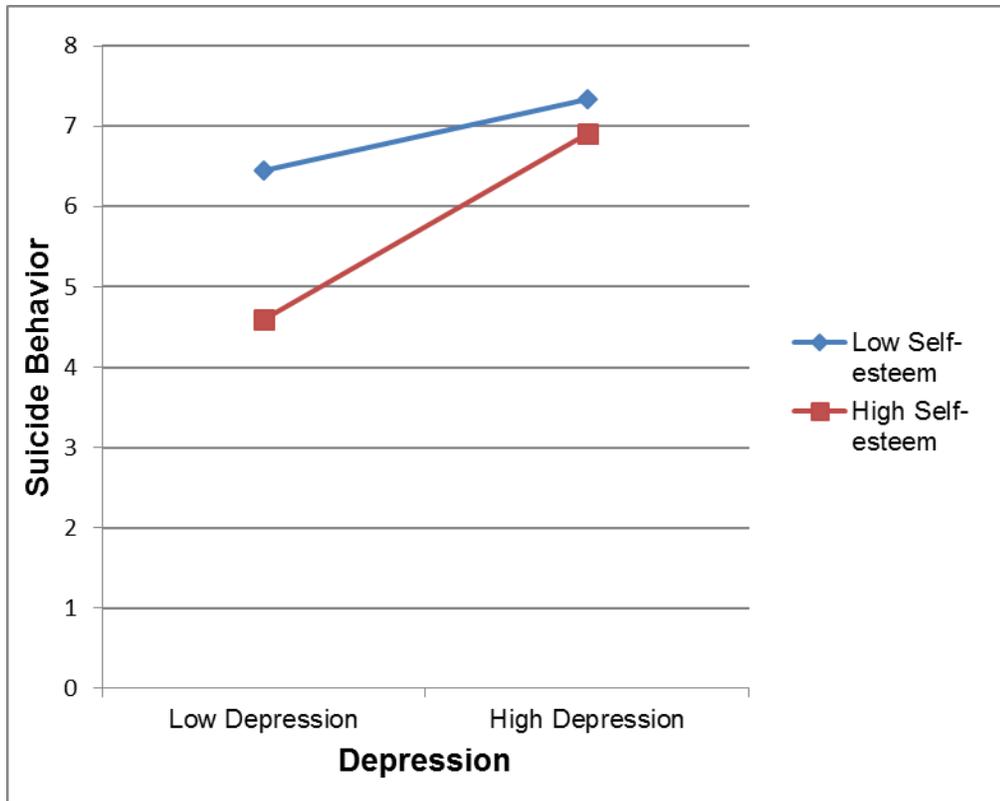
Figure 3-4

Three-Way Interaction of Depression, Self-Esteem, and Suicide Resilience on Suicide Behavior: Low Resilience

CHAPTER FIVE

Discussion

Overall, this study was conducted to examine whether depression would predict

suicidal behavior (ideation and attempt); and whether self-esteem or suicide resilience

would buffer the vulnerability to suicidal behavior for college students who experience

depression. Previous research has established strong support for the significant role that

depression plays in predicting suicidal behavior (De Man, 1999; Garlow et al., 2008;

Knoick & Guiterrez, 2005; Lester, 1999). However, many studies suggested that the well-

established relationship between depression and suicide behavior can be moderated by

various factors like, family cohesion, social self-concept, self-esteem, acculturative stress,

and problem solving and coping. My findings support the need for additional resilience

research that examines the factors buffering against the impact of depression on

suicidality.

The results provide initial support for Hypotheses 1, 2, 3 and 4. As expected, the

results suggest that depression significantly predicted suicide behavior, which is

consistent with previous findings. Results for Hypothesis 2 help clarify the relationship

among self-esteem, depression, and suicide behavior since some researchers believe self-

esteem and depression are independent predictors of suicide behavior whereas others

suggest that self-esteem interacts with depression in predicting suicide behavior. My

findings indicate that self-esteem had a significant and negative association with suicide

behavior, and self-esteem moderated the effect of depression on suicide behavior in college students. When students had lower self-esteem, depression had a significant and positive association with suicidal behavior. Results also showed that depression was not significantly associated with suicide behavior when students had high self-esteem (see Figure 1). It suggests that high self-esteem was a buffer against the negative impact of depression on suicide behavior. These results support previous studies that low self-esteem contributes to vulnerability for suicidality and the negative effects of depression on suicidality reduced as the level of self-esteem increased (Baumeister, 1990; Beck et al., 2001; Chen et al., 2010). Students with high self-esteem are assumed to have higher self-worth, self-confidence, and internal resources and thus protected from experiencing suicide ideation and behavior even when they are depressed. Conversely, students with low self-esteem are assumed to lack sufficient internal coping resources and thus are more vulnerable to suicide behavior when they are depressed. This finding supports the Schematic Appraisals Model of Suicide (Johnson, Gooding, & Tarrier, 2008) that positive self-appraisals may confer resilience to suicidality.

Regarding Hypothesis 3, results suggest suicide resilience had a significant and negative association with depression and suicide behavior, and the effect of depression on suicide behavior was moderated by the interaction of depression and suicide resilience. When students had lower suicide resilience, depression had a significant and positive association with suicidal behavior (see Figure 2). Results also show that depression was not significantly associated with suicide behavior when students had high suicide resilience. It suggests that low suicide resilience was a risk factor for negative effects of

84

depression on suicide behavior whereas high suicide resilience was a buffer against the negative impact of depression on suicide behavior. It is postulated that students with high suicide resilience have positive beliefs about self and satisfaction with life as well as the ability to seek external resources and maintain emotional stability, and thus protected from experiencing suicide ideation and behavior when they are depressed. Conversely, students with low suicide resilience are assumed to lack sufficient positive self-concept and the ability to seek external resources or regulate suicide ideation and behavior when confronting depressive symptoms. My findings not only support previous studies that there is a significant negative correlation between resilience and depression and low resilience may be a risk factor for suicide behavior (Nrugham et al., 2010; Roy et al., 2007), they also add to emerging resilience research by supporting the buffering effects of suicide resilience on suicidality.

More importantly, this study contributes to resilience and suicide research by examining the three-way interaction of depression, self-esteem, and suicide resilience in predicting suicide behavior. Rather than assuming that depression is always positively associated with suicide behavior, I examined the conditions under which depression would be more and less likely to predict suicide behavior. In doing so, my findings provide novel insights into a significant three-way interaction of depression, self-esteem, and suicide resilience, Results for Hypothesis 4 suggest with low suicide resilience, depressed students who had lower self-esteem were more vulnerable to suicide behavior (Figure 3-2, 3-4). High self-esteem and high suicide resilience appeared to be most protective of students from developing suicide behavior when they experience depression

(Figure 3-1). That is to say, when depressed college students have high self-worth and satisfaction with self and possess high confidence in their abilities to solve problems, reach out for resources and support, and regulate emotional distress, they are most protected from experiencing suicide behavior. Conversely, when depressed college students have low self-worth and dislike themselves and lack confidence in seeking internal or external resources as well as managing their emotional distress, they are most vulnerable to suicide behavior (Figure 3-2, 3-4). Figure 3-3 indicated that depression did not have a significant impact on suicide behavior when students had high suicide resilience despite the level of their self-esteem. It suggests that high suicide resilience served a critical role in buffering the impact of depression on suicide behavior when college students had high or low self-esteem. These findings suggest that despite college students' positive or negative self-perception or self-worth, they are protected against the negative effects of depression on suicide behavior when they have the ability to seek internal or external resources and support to regulate suicidal thoughts and behavior.

Implication for Counseling

This study offers important contributions to counseling college students in the U.S. First of all, it is important to directly assess for suicide behavior and risk when students report clinically significant depressive symptoms as this study and previous studies find a statistically significant positive correlation between depression and suicide behavior. Second, my findings suggest that the buffering effects of self-esteem and suicide resilience should be considered when assessing clients for suicide risk. For clinicians, evaluating and responding to suicide risk can be very stressful and intimidating. There is

86

evidence that mental health providers are trained to assess for suicide risk by directly asking about clients' suicide ideation, intent, or plan. However, accurate prediction of individuals at risk from suicide is extremely difficult, especially when limited information regarding risk factors as well as protective factors were gathered in the session. Other researchers have suggested that a high rate of false positives in prediction of suicide may be due to low overall rates of suicide and low predictive variance of any single risk factor (Hawton & van Heeringen, 2009). Johnson et al. (2011) suggested that the presence of moderating variables partly explains this difficulty in the prediction of suicide. The results of this study support this idea by finding the moderating effects of self-esteem and suicide resilience. As results showed, when students have low levels of self-esteem or suicide resilience, they may be more vulnerable to suicide behavior when confronting depression. Conversely, high levels of self-esteem and suicide resilience were suggested to buffer students against the negative effects of depression on suicide behavior. Therefore, counselors should not only assess for risk factors (i.e. low self-esteem, low suicide resilience) but also recognize protective factors (i.e. high self-esteem, high suicide resilience) while conducting risk assessment. The scales used in this study to measure participants' self-esteem and suicide resilience (RSES and SRI-25) have been found to be reliable and valid. It is possible that these self-esteem and suicide resilience scales can be used as clinical tools in counseling to help quantify clients' levels of self-esteem and suicide resilience. For example, it can be helpful to administer SRI-25 to clients at intake as a part of initial paperwork as well as when suicide risk is concerned. This would help counselors more accurately assess for risk and protective factors of

87

suicide, and hence, assure ethical and quality clinical practice. Third, my findings also yield important implications for effective interventions for treating depression and suicidality. Counselors often focus on the stressors (e.g. stressful or traumatic life events, symptoms of mental health disorders) that clients are struggling with or current suicide ideation, plan, or intent, which may increase suicide risk. However, my findings suggest the key importance of developing psychological resilience (i.e. positive beliefs about self, positive beliefs about one's own ability to seek resources and regulate emotional distress) to buffer the association between depression and suicidality. It is crucial for counselors to note that high levels of suicide resilience and high self-esteem together had the most buffering effects against suicide behavior. Also, when students suffer from depression, a high level of suicide resilience has a stronger buffering effect than a high level of self-esteem. Hence, counselors can help students explore and build positive views of themselves and their abilities to use internal and external resources to regulate emotional distress, suicide-related thoughts, feelings, and attitudes. When counselors conduct crisis interventions or work with high risk clients, it may be helpful to include scales that measure self-esteem and suicide resilience to facilitate awareness of clients' own psychological resilience. Last but not least, my findings provide implications for university counseling centers' outreach services as well as health education and prevention on campus. Literature shows that fewer than 20% of college students reporting suicide ideation were receiving counseling services and approximately 80% of college students who died by suicide never participated in counseling services (Kisch, Leino, & Silverman, 2005; Schwartz, 2006). Hence, it is crucial to make mental health

88

resources more available for college students. It is suggested that scales of self-esteem and suicide resilience can be made available online or obtained from Residence Life or other offices on campus as self-assessment tools. Students can access these online resources easily and voluntarily. A brief description about the protective effects of their psychological resilience as well as risk factors of low suicide resilience and low self-esteem can help instill hope in college students who struggle with depression and suicide behaviors as well as prompt them to seek help through counseling services. Additionally, it would also be beneficial for university counseling centers and health education and prevention programs to implement workshops and online courses focusing on building self-esteem and suicide resilience.

Limitations

Despite the fact that the present study may contribute to the existing literature, this study has several limitations. First, the implications of present study's results are limited by its reliance on self-report data. For example, self-reported answers may be exaggerated or minimized due to various biases such as social desirability. Self-reported answers may also be influenced by the participant's feelings at the time they filled out the questionnaire. For instance, their answers will likely be more negative if they feel bad when they fill out the questionnaire, and their answers will likely be more positive if they are in a good mood when they fill out the questionnaire.

Another limitation of this study has to do with the restricted population from which the sample was drawn. Given that majority of participants were drawn from an Introductory Psychology student research pool at a Midwestern university in the U.S.,

this sample is considered to be one of convenience. Also, the demographic characteristics of the sample exhibited differences from those of target population. For instance, the percentage of 18- to 24-year old students in the sample was much higher than the national college student population. In terms of ethnicity, the sample was less diverse than the national college population because White students consisted of 81% of the sample, and the percentages of Black students and Hispanic students were much lower compared to the target population. Additionally, participants self-selected into the study, which makes the generalizability of the study somewhat suspect, given that students may have been attracted to the study because its particular focus on depression, self-esteem, suicide resilience, and suicide behavior.

Directions for Future Research

In future studies, we encourage researchers to use other approaches, measures (e.g. clinician administered scales), and methodologies (e.g. qualitative study, longitudinal study) to validate our findings and reduce biases in results. Clinician-administered scales or interviews are likely to gather more objective and accurate clinical symptoms related to depression and suicide behavior. Qualitative methods may further explore what factors and experiences contribute to increased self-esteem and suicide resilience. Because only a minimal number of studies have used a longitudinal approach, it is recommended that future studies focus on longitudinal research. Self-esteem and suicide resilience as moderators measured at baseline can predict the association between subsequently experienced suicidality.

It is recommended that future studies should strive to include a more diverse and populous sample. Researchers can also apply our methodology to other campuses in different regions (e.g., East Coast, Southern States, and West Coast) as well as junior or community college campuses. The results from different campuses may increase the generalizability of my findings.

Finally, this study only focused on investigating the moderating effects of overall suicide resilience, and it did not examine how each domain of suicide resilience (i.e., internal protective domain, external protective domain, and emotional stability domain) interacts with depression and/or self-esteem in predicting suicide behavior. Hence, future studies should further examine and compare the moderating effects of each domain of suicide resilience.

Conclusion

The current study aimed to investigate the relationships amongst depression, self-esteem, and suicide resilience in predicting suicide behavior. My findings supported the hypotheses and suggested that depression is a statistically significant predictor of suicide behavior. However, the results further suggested that the relationship between depression and suicide behavior could be moderated by levels of self-esteem and levels of suicide resilience. High self-esteem and high suicide resilience served as buffers against suicide behavior respectively, especially when college students experienced high depression. On the other hand, low self-esteem and low suicide resilience increased depressed college students' vulnerability to suicide behavior. Furthermore, the results suggested that depression had least impact on suicide behavior when self-esteem was high and suicide

91

resilience was high. On the contrary, students who experienced depression were most vulnerable to suicide behavior when self-esteem was low and suicide resilience was low. When students had high suicide resilience, their depressive symptoms did not have a significant impact on suicide behavior despite the level of their self-esteem.

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93

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APPENDIX A

The Moderation Model of This Study
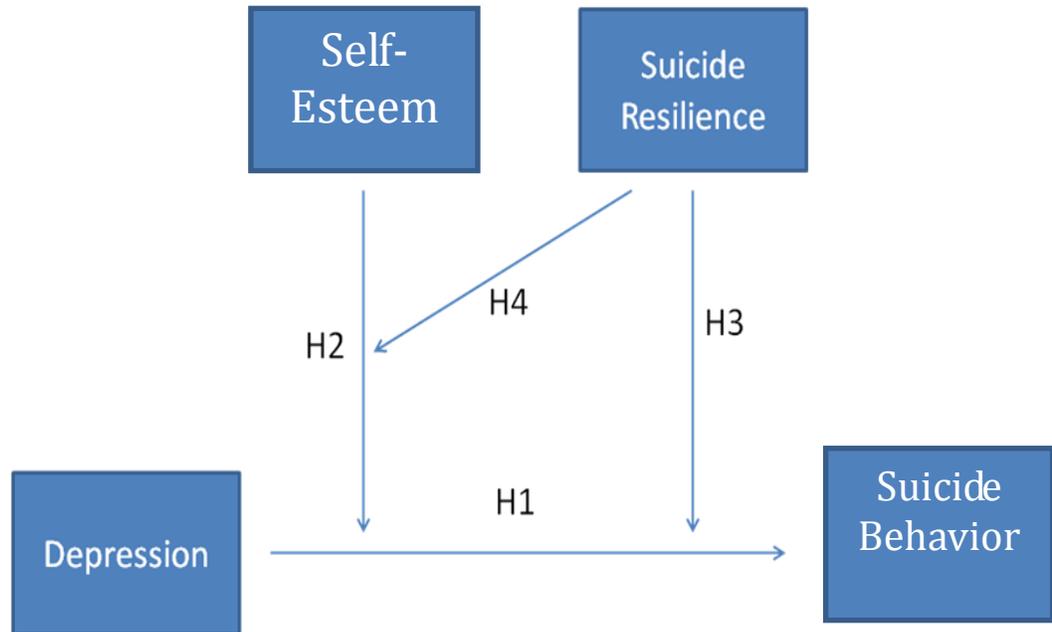
Hypothesis 1: Depression predicts the suicide behavior among sample college students.

Hypothesis 2: The level of self-esteem moderates the relationship between depression
and   suicide behavior, meaning high self-esteem buffers the effect of
depression on suicide behavior and low self-esteem increases such effect.

Hypothesis 3: Suicide resilience moderates the relationship between depression and
suicide behavior, meaning high level of suicide resilience buffers the effect
of depression on suicide behavior and low suicide resilience increases such
effect.

Hypothesis 4: There will be a three-way interaction of depression, self-esteem, and

suicide resilience in predicting suicide behavior, such that the association

will be weakest when the self-esteem is low and suicide resilience is low.

University of Denver IRB Approval

November 6, 2012

To,

Canzi Wang, MA

Subject **Human Subject Review**

> **TITLE:** Depression and Suicide Ideation among College Students:
> Understanding the Moderator Effects of Self-Esteem and
> Resilience
>
> **IRB# :** 2012-2303

Dear Wang,

The Institutional Review Board for the Protection of Human Subjects has reviewed the above named project.
The project has been approved for the procedures and subjects described in the protocol at the 10/09/2012 meeting. This approval is effective for twelve months. We will send you a courtesy continuation reminder for this project. However, it is the responsibility of the Principal Investigator to keep track of the expiration date of each protocol. This form must be submitted to the Office of Research and Sponsored Programs if the project continues. This information must be updated on a yearly basis, upon continuation of your IRB approval for as long as the research continues. No human subjects-related work can take place place during an expiration period.

NOTE: Please add the following information to any consent forms, surveys, questionnaires, invitation letters, etc you will use in your research as follows: This survey (consent, study, etc.) was approved by the University of Denver's Institutional Review Board for the Protection of Human Subjects in Research on 10/09/2012. This information must be updated on a yearly basis, upon continuation of your IRB approval for as long as the research continues. This information will be added by the Research Compliance Office if it does not already appear in the form(s)upon continuation approval.

The Institutional Review Board appreciates your cooperation in protecting subjects and ensuring that each subject gives a meaningful consent to participate in research projects. If you have any questions regarding your obligations under the Assurance, please do not

hesitate to contact us.

Sincerely yours,

Paul Olk, PhD
Chair, Institutional Review Board for the Protection of Human Subjects

Approved Period: 10/09/2012 through 10/08/2013
Review Type: Full Board-NEW

APPENDIX C

Target College's IRB Approval

From: (Name and email withheld)
Sent: Tuesday, November 27, 2012 10:48AM
To: 'Canzi Wang'
Subject: RE: Email of cooperation- Canzi Wang's dissertation study

Hi Canzi,

Thank you for sending the email from (name withheld), DU protocol files, and approval.
You have the green light to recruit here at (university name withheld). Good luck with
your study!

(Name Withheld)

APPENDIX D

Project Information Sheet

Dear Student,

I would like to invite you to participate in my doctoral dissertation research, which is supervised by my advisor, Dr. Ruth Chao. I am investigating the presence of depression, level of self-esteem, level of suicide resilience, and feelings and thoughts of suicide among college students. The purpose of the study is to gain a better understanding of the factors that buffer the impact of depression on suicide ideation. If you are an undergraduate student of 18 years of age or older, please consider participating in this study.

Participation in this study should take about 15 minutes of your time. Survey questions are regarding depression, self-esteem, suicide resilience, and thoughts of suicide. Participation in this study is completely voluntary. It is possible that you may experience some psychological discomfort in answering some of the questions about your mood and past suicidal thoughts and behaviors. If you experience any discomfort, you may refuse to participate or discontinue at any time without penalty. I respect your right to choose not to answer any questions that may make you feel uncomfortable. If you are feeling depressed or are having thoughts of suicide or self-harm, it is important to seek out support. Local services include the health and counseling center at xxx-xxx-xxxx. A more detailed list of resources is provided at the end of the survey.

There is no cost from participating in this study. Also, to show my appreciation of your participation, you will be eligible to be entered into a raffle to win one of five $50 gift cards.

Your responses will be completely anonymous. You may choose to provide an email to be entered into a lottery for gift cards, and this is entirely optional, and that your email address will be moved to a separate file prior to any data analysis so that it is not associated with your information. To further ensure confidentiality, the research data will be stored on my personal computer with password protected, and only I have access to those data files. If you are at least 18 years old and you choose to participate, please answer each survey item truthfully. If you would like a summary of the result of the study, please send me an email at canzi.wang@du.edu requesting the study results and I will send you a summary by email when they are available.

You are encouraged to ask questions or provide comments about the study by contacting me at 732-986-6432 or canzi.wang@du.edu. You can also contact my dissertation

advisor, Ruth Chao, PhD, Assistant Professor for the graduate program in Counseling Psychology at the Morgridge College of Education, University of Denver, at 303-871-2556. If you have any concerns or complaints about this study, please contact Sylk Sotto-Santiago, Office of Research and Sponsored Programs at 303-871-4531, or Paul Olk, Chair, Institutional Review Board for the Protection of Human Subjects, at 303-871-4050, or write to the University of Denver, Office of Research and Sponsored Programs, 2199 S. University Blvd., Denver, CO 80208-4820. You may also contact the Chairperson of your college's Human Subjects Review Committee. The guidelines for protecting the rights of human subjects that are in operation in this study may be found on your college's website.

Your completion of the online questionnaire will serve as your consent to participate in this study. Thank you very much for considering participating! You may print this page for your records.

Canzi Wang, MA
Ph.D. Candidate in Counseling Psychology
University of Denver

APPENDIX E

Center for Epidemiologic Studies Depression Scale

INSTRUCTIONS: Below is a list of the ways you might have felt or behaved. Please indicate how often you have felt this way in the past week by writing the correct number on the line in front of each statement.

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

1. I was bothered by things that usually don't bother me.

2. I did not feel like eating; my appetite was poor.

3. I felt that I could not shake off the blues even with help from my family or friends.

4. I felt I was just as good as other people.

5. I had trouble keeping my mind on what I was doing.

6. I felt depressed.

7. I felt that everything I did was an effort.

8. I felt hopeful about the future.

9. I thought my life had been a failure.

10. I felt fearful.

11. My sleep was restless.

12. I was happy.

13. I talked less than usual.

14. I felt lonely.

15. People were unfriendly.

16. I enjoyed life.

17. I had crying spells.

18. I felt sad.

19. I felt that people dislike me.

20. I could not get "going."

APPENDIX F

Rosenberg Self-Esteem Scale

INSTRUCTIONS: Please read each statement, and then write the number to the left of each statement to indicate how much it describes your attitudes, beliefs, or feelings.

1	2	3	4
Strongly Agree	Agree	Disagree	Strongly Disagree

1. I feel that I am a person of worth, at least on an equal plane with others.

2. I feel that I have a number of good qualities.

3. All in all, I am inclined to feel that I am a failure.

4. I am able to do things as well as most other people.

5. I feel I do not have much to be proud of.

6. I take a positive attitude toward myself.

7. On the whole, I am satisfied with myself.

8. I wish I could have more respect for myself.

9. I certainly feel useless at times.

10. At times I think I am no good at all.

APPENDIX G

Suicide Resilience Inventory-25

Osman, Gutierrez et al. (2001)
(Reprinted with permission from the authors)

INSTRUCTIONS: Please read each statement, and then write the number to the left of each statement to indicate how much it describes your attitudes, beliefs, or feelings.

1	2	3	4	5	6
Strongly Disagree	Moderately Disagree	Somewhat Disagree	Somewhat Agree	Moderately Agree	Strongly Agree

1. There are many things that I like about myself.

2. Most of the time, I see myself as a happy person.

3. People close to me would find the time to listen if I were to talk seriously about killing myself.

4. I can deal with the emotional pain of rejection without thinking of killing myself. 5. I like myself.

6. I could openly discuss thoughts of killing myself with people who are close to me, when it is necessary.

7. I can find someone close to me to give me support (e.g., financial, shelter) if I find myself in a jam.

8. I can resist thoughts of killing myself when I feel emotionally hurt.

9. Most of the time I set goals that are reasonable for me to meet.

10. I can resist the urge to kill myself when I feel depressed or sad.

11. I am satisfied with most things in my life.

115

12. I can resist thoughts of killing myself when faced with a difficult or life-threatening situation.

13. I am proud of many good things about myself.

14. I can control the urge to harm or hurt myself when I am criticized by someone.

15. I can ask for emotional support from people close to me if I were to think about killing myself.

16. Even if people close to me are angry with me, I can approach them if I want to talk about my personal problems.

17. I can find someone (parent, friend, spouse, or relative) who can help me cope if I should think about killing myself.

18. I can handle thoughts of killing myself when I feel lonely or isolated from other people.

19. I feel that I am an emotionally strong person.

20. Regardless of the problem situation I face, I can be happy with myself.

21. If I am in trouble, I can ask for help from people close to me rather than attempt to kill myself.

22. I have close friends or family members that I could turn to for emotional support if I were to think of killing myself.

23. I can resist thoughts of killing myself when faced with humiliating or embarrassing situations.

24. I can resist thoughts of killing myself when I feel hopeless about the future.

25. I feel cheerful about myself.

116

APPENDIX H

The Suicide Behaviors Questionnaire-Revised

INSTRUCTIONS: Please check the number beside the statement or phrase that best applies to you:

1. Have you ever thought about or attempted to kill yourself?

     1=Never
     2=It was just a brief passing thought
     3a=I have had a plan at least once to kill myself but did not try to do it
     3b=I have had a plan at least once to kill myself and really wanted to die
     4a=I have attempted to kill myself, but did not want to die
     4b=I have attempted to kill myself, and really hoped to die

2. How often have you thought about killing yourself in the past year?

     1=Never
     2=Rarely (1 time)
     3=Sometimes (2 times)
     4=Often (3-4 times)
     5=Very Often (5 or more times)

3. Have you ever told someone that you were going to commit suicide or that you might do it?

     1=No
     2a=Yes, at one time, but did not really want to die
     2b=Yes, at one time, and really wanted to do it
     3a=Yes, more than once, but did not want to do it
     3b=Yes, more than once, and really wanted to do it

4. How likely is it that you will attempt suicide in the future?

     0=Never
     1=No chance at all
     2=Rather Unlikely
     3=Unlikely
     4=Likely
     5=Rather Likely
     6=Very Likely

APPENDIX I

Demographic Questionnaire

1. What is your age?

   a. 18-25
   b. 25-35
   c. 36-45
   d. 45-55
   e. 56-65
   f. 65 and older

2. What is your gender?

   a. Male
   b. Female
   c. Transgender

3. How would you describe your race/ethnicity?

   a. American Indian or Alaska Native
   b. Asian or Asian American
   c. Black or African American
   d. Hispanic or Latino/Latina
   e. Native Hawaiian or other Pacific Islander
   f. White
   g. Biracial/Multiracial

4. What year are you in college?

   a. First year
   b. Second year
   c. Third year
   d. Fourth year

5. What is your relationship status?

   a. Single or not romantically involved in a committed relationship
   b. Currently involved in a committed relationship
   c. Married
   d. Divorced or separated

6. Which of the following best describes you?

   a. Bisexual
   b. Gay or Lesbian
   c. Heterosexual
   d. Not Sure/Questioning
   e. Other

7. Have you had any previous or current counseling experience?

   a. Yes
   b. No

8. Does your family have a history of mental health issues including suicide?

   a. Yes
   b. No

9. What is your parents' relationship status?

   a. Remain married
   b. Divorced or separated
   c. Remarried (one parent or both parents)
   d. Other

10. What is your/your family's socioeconomic status (SES)?

   a. High SES
   b. Middle SES
   c. Low SES