THESIS

THE MODERATING ROLE OF POSTTRAUMATIC GROWTH ON SUICIDE RISK

AMONG TRAUMA EXPOSED UNDERGRADUATE STUDENTS

Submitted by

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ABSTRACT

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Research has suggested that exposure to traumatic life events is one of the major risk factors for suicide. With suicide ranking as the second leading cause of death among college students, this study assessed the role that posttraumatic growth played in moderating the relationship between traumatic life events and suicidal ideation and behavior, suicide risk, and college adjustment in a sample of 557 undergraduate students. The results from multiple linear regression analyses showed that posttraumatic growth moderated the relationship between severity of traumatic life events and suicide risk such that individuals with the most severe traumatic life events were less likely to have high suicide risk in college if they had experienced posttraumatic growth following their trauma. In addition, posttraumatic growth moderated the relationship between severity of traumatic life events and college adjustment such that individuals with the most severe traumatic life events were more likely to have better college adjustment if they had experienced posttraumatic growth following their trauma. The role of posttraumatic growth in ameliorating the effects of trauma-inducing suicide and facilitating college adjustment has significant implications which are explored in the discussion.

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CHAPTER I

Introduction

Suicide is the third leading cause of death for youth in the United States between the ages of 15 and 24 years, following accidental injury and homicide (Centers for Disease Control and Prevention, 2010). Suicide is also the second leading cause of death among college students, with an estimated 1,088 suicides occurring on campuses each year (Suicide Prevention Resource Center, 2004; Schwartz, 2006). In the United States, only accidental injuries claim more lives. Data from the National College Health Assessment (NCHA) indicates that approximately 9% of the 80,121 college students surveyed reported seriously considering suicide, and 1.3% reported attempting suicide within the past 12 months (American College Health Association [ACHA], 2008). One of the major risk factors associated with suicide is a history of physical or psychological trauma (such as sexual abuse, physical abuse, neglect, accidental disasters, etc.), with more frequent trauma leading to increased risk of suicide attempt (Nock & Kessler, 2006). Undergraduate students are in an age group at high risk for trauma exposure, with studies of community samples suggesting that the peak age for trauma exposure is 16 to 20 years of age (Breslau et al., 1998).

Some victims of trauma emerge from their experiences severely psychologically distressed for a considerable period of time. These individuals are generally diagnosed with posttraumatic stress disorder (PTSD) and may suffer from recurrent and intrusive distressing recollections of events, avoid the stimuli associated with the trauma, or react with increased arousal of symptoms (American Psychiatric Association, 2000). Other victims of trauma have considerably less difficulty. Coinciding with the rise of the positive psychology framework, recent studies of traumatic experiences have found that humans are often more resilient than

once thought. The term posttraumatic growth (PTG) was coined by Tedeschi and Calhoun (1995, 2004) and refers to the positive changes sometimes experienced as a result of the struggle with trauma. Growth occurs when one develops a more resistant attitude and approach to dealing with negative events in the future after having experienced a threatening and stressful event that severely challenged one's worldview (Zoellner & Maercker, 2006). A wide range of traumatic events can act as a catalyst for positive change and posttraumatic growth emphasizes the process of transformation that can occur as a result of the struggle with trauma (Cryder, Kilmer, Tedeschi, & Calhoun, 2006).

While the severe and chronic problems that often follow traumatic events have been well documented in the literature, it is becoming increasingly recognized that trauma may provide a springboard to higher levels of psychological functioning, despite, or even because of posttraumatic stress (Calhoun & Tedeschi, 2006; Joseph & Linley, 2008). Various terms have been used to describe this phenomenon, such as 'benefit finding," "stress-related growth," and "thriving," but it is the term "posttraumatic growth" (PTG) that has become most widely used to denote these higher levels of functioning. Posttraumatic growth is the positive psychological change experienced as a result of a struggle with challenging life circumstances that represent significant challenges to the adaptive resources of the individual and/or an individual's way of understanding the world and one's place in it. It is an experience of improvement that for some is deeply profound (Joseph, 2008). The current study examined personal growth after traumatic experiences as a moderator of the relationship between early trauma and suicide risk.

Suicide Among College Students

Suicidal behavior among college students is a major public health concern in the United States and is the second leading cause of death in this population (American Foundation for Suicide Prevention, 2010). Suicide has been described as a continuum that begins with suicidal thoughts, progresses to planning and preparing for suicide, and ends with threatening, attempting, and completing suicide (Kachur, Potter, Powell, & Rosenberg, 1995). The National Research Consortium Survey of College Student Suicidality examined college students' experiences with the suicidal continuum, with results indicating that suicidal ideation is often a recurrent, brief, and intense event. Students with one episode of suicidal ideation or urge are likely to have more. In addition, among students who seriously contemplated suicide in the past 12 months, 92% of undergraduates and 90% of graduate students either considered some actual methods of ending their life or had a specific plan (Drum, Brownson, Burton Denmark, & Smith, 2009). Given the clinical and public health significance of suicidal thoughts and behaviors among college students, there is considerable interest in identifying factors that are associated with increased risk of suicidality in this population.

College students may be exposed to a unique set of transitional risk factors that predispose them to increased risk for suicide. Negative life events, hopelessness, and depression are associated with a significant increase in suicide risk for college students (Konick & Gutierrez, 2005). Elements of the college "experience" itself also have the potential to become risk factors, including changes in role responsibilities, academic demands, career indecision, financial pressures, and loneliness and separation from traditional support networks (Hirsch & Ellis, 1996; Larose & Boivin, 1998; Richardson et al., 2005). Negative social interactions in particular may have a damaging effect on well-being and potential suicide risk of college

students (Davis & Swan, 1999; Finch & Granziano, 2001; Finch, Okun, Pool, & Ruehlman, 1999). Deficits in peer and parental support are also associated with increased suicide ideation in college students (Bertera, 2007). In addition, young adults transitioning from high school to college often engage in health-compromising behaviors such as drug, alcohol, and tobacco use and approximately 45% of college students in the United States report engaging in heavy episodic drinking (typically defined as at least five or more drinks in one sitting for men and four or more drinks in one sitting for women) at least once in the preceding two weeks (Hingson, Heeren, Winter, & Wechsler, 2005). Several studies have indicated an association between alcohol use and suicidal behaviors in college students (e.g., Arria et al., 2009, Lamis & Malone, 2011).

Although less attention has been given to protective factors, it is important to consider the adaptive characteristics that may inhibit suicidal behavior in college students. Feelings of responsibility toward family, fear of social disapproval, moral objections to suicide, survival and coping skills, college- and future-related concerns, and a fear of suicide have all been identified as "reasons to live" and considered protective factors for college students (Westefeld et al., 1992). Social support is one of the most important protective factors for college students. Hirsch and Barton (2011) found that emotional, informational, and tangible support were associated with lower levels of suicidal thoughts and behaviors, whereas negative social exchanges were associated with increased suicidal thoughts and behaviors. Research demonstrates that when college students possess adaptive characteristics, they tend to cite suicide as an option less often than students with fewer adaptive characteristics (Hirsch & Ellis, 1998).

Trauma as a Risk Factor for Suicide

Among older youth and adults, exposure to potentially traumatic experiences (PTEs), such as serious injury, loss, natural disasters, and violence has been linked to increased risk for an array of mental health problems (Copeland, Keeler, Angold, & Costello, 2007). The prevalence of exposure to at least one potentially traumatic event ranges from 80.8% to 90% of adults (Frans, Rimmö, Åberg, & Fredrikson, 2005; Briggs-Gowan et al., 2010). In a study of over 1,500 undergraduate students, Frazier and colleagues (2009) found that 85% of students reported having experienced a traumatic event in their lifetime and 21% reported experiencing an event over a 2-month period during college. The most common event reported at both time points was the unexpected death of a loved one (47%), followed by a loved one surviving a life-threatening event (30%), witnessing family violence (23%), unwanted sexual attention (21%), and motor vehicle or other accidents (19%). Lifetime exposures to family violence, unwanted sexual attention, and sexual assault were associated with higher current distress levels. When nominated as a worst event, sexual assault was associated with the most posttraumatic stress disorder symptoms. Additionally, events that caused intense fear, helplessness, or horror and those that were intentionally caused were associated with higher distress levels in this sample of undergraduate students.

Due to the widespread prevalence of traumatic events in the general population, a great deal of research has been devoted to understanding the relationship between posttraumatic stress disorder (PTSD) and suicide. There is general agreement in the literature that there is a strong association between PTSD and suicidal behavior (Panagioti, Gooding, Tarrier, 2009; Sarreen, Houlahan, Cox, & Asmundson, 2005; Tarrier & Gregg, 2004). For example, 82% of a sample of undergraduate student war veterans who reported a previous suicide attempt also reported

significant symptoms of PTSD (Rudd, Goulding, & Bryan, 2011). Past research has investigated

pathways to suicide in participants with chronic PTSD and found two avenues to suicidal

behavior (Panagioti et al., 2011). In the first, suicidal behavior was directly associated with

greater life impairment, which in turn was associated with poorer occupational and social

functioning. In the second path, suicidal behavior was directly associated with depressive

symptoms, which in turn were associated with more severe PTSD symptoms. Both data-based

models support the notion that negative perceptions of functional impairment and depression are

strongly associated with suicidal behavior in individuals with PTSD.

Posttraumatic Growth Research

Positive changes following adversity have long been recognized in philosophy, literature,

and religion (Tedeschi & Calhoun, 1995). Historically, psychological well-being has been

defined as the absence of dysfunction, but positive psychology has shown that well-being is

often more than this. Although psychology has specialized in the study and treatment of mental

illness, many researchers and clinicians now agree that it is necessary to shift the attention to

include the study of both negative and positive states of functioning. The positive psychology

movement has coincided with the shift away from an exclusive focus on the negative outcomes

following traumatic events. There is now a substantial body of literature that documents that

people with cancer, parents of children with severe health problems, people who have suffered a

heart attack, and people who have served in war, to name a few, identify positive ways in which

their lives have changed as a result of the traumatic event (See Helgeson, Reynolds, & Tomich,

2006 for a review). The names that have been assigned to these positive changes vary, but are

most frequently referred to as "posttraumatic growth," "stress-related growth," "thriving," or

"benefit finding." As mentioned previously, posttraumatic growth has emerged as the most predominant term in the literature.

Conceptually, one of the first tasks is to differentiate posttraumatic growth from resilience. Resilience is a term that refers to the ability to continue to function normally in spite of adversity (Scales, Benson, Leffert, & Blyth, 2000). Thus, resilience is not about going beyond previous levels of functioning but about maintaining or returning to current adaptive functioning despite adversity. This is distinctly different than posttraumatic growth, which involves positive changes in the person beyond their previous levels of functioning. Resilience and posttraumatic growth are distinct constructs, although they may be conceptually and empirically related. Calhoun and Tedeschi (2006) suggest that those who are resilient are more likely to experience posttraumatic growth.

It is important to note that posttraumatic growth does not ignore the distress associated with trauma and adversity. Rather than ignoring this stress, it is thought that posttraumatic growth can only occur when a person is experiencing some level of posttraumatic stress, as it is hypothesized that it is the process of trying to cope with the stress that results in new positive beliefs about self-efficacy, values, and so on (Barakat, Alderfer, & Kazak, 2006). In fact, the original developers of the posttraumatic growth concept, Tedeschi and Calhoun (1995), believed more posttraumatic stress would result in more capacity for growth. In other words, posttraumatic growth is not thought to be mutually exclusive from posttraumatic stress, but often to stem from it, and coexist alongside it for some time. Research demonstrates that reports of posttraumatic growth are often positively correlated with reports of posttraumatic stress, although there are some mixed findings which show the opposite pattern (Linley & Joseph, 2004). The relationship between growth and distress may vary in relation to the stages of

emotional processing of the traumatic event such that early reports of growth may be positively correlated with concurrent distress, but negatively correlated with later reports of stress (Clay, Knibbs, & Joseph, 2009). Recent research has shown that following sexual assault, women who reported positive changes that were maintained over time were the least distressed at one year follow-up (Frazier, Conlon, & Glaser, 2001). In addition, positive psychological changes are associated with fewer symptoms of posttraumatic stress, depression, and anxiety six months after a variety of traumatic experiences (Linley, Joseph, & Goodfellow, 2008). In short, posttraumatic stress is often the engine for posttraumatic growth because as individuals find new meanings, they are able to overcome the cognitive disruption and confusion that is characterized by posttraumatic stress (Joseph, 2011).

Individuals that experience posttraumatic growth following adversity report a myriad of positive changes. Examples of positive psychological change are an increased appreciation of life, setting of new priorities, a sense of increased personal strength, identification of new possibilities, improved closeness of intimate relationships, or positive spiritual change (Tedeschi, Park, & Calhoun, 1998).

Scientific interest in the topic of growth following adversity began in the early 1990s. In one of the earliest studies to document such growth, Lehman, Davis, Delongis, et al. (1993) interviewed individuals who had lost a spouse or a child in a motor vehicle accident four to seven years previously and most cited at least one positive change in their life: increased self-confidence (35%), a focus on enjoying the present (26%), an increased acceptance of mortality (23%), a greater appreciation of life (23%), an increased emphasis on family (19%), increased religiosity (15%), and increased openness and concern for others (7%). Since this study, hundreds more have asked individuals to report whether they have experienced posttraumatic

growth, ranging from breast cancer survivors to widows in Iraq (Helgeson, Reynolds, & Tomich, 2006; Joseph, 2011).

Posttraumatic growth tends to emerge gradually over time. For instance, a sample of breast cancer patients were asked to complete the Posttraumatic Growth Inventory (PTGI) 4.5 months, 9 months, and 18 months after diagnosis. Their scores on the PTGI increased on average over the 18-month period (Manne et al., 2004). Interestingly, posttraumatic growth also increased for the spouses of the breast cancer patients during this period. Individuals may not need to experience a life-threatening trauma themselves in order to experience posttraumatic growth.

Unfortunately, measures like the Posttraumatic Growth Inventory rely on people's self-report of how much and in what ways they have changed following a traumatic event. Before-and-after studies are difficult to conduct because it is often impossible to know who will experience a traumatic event in order to obtain a measure of their well-being beforehand. However, Frazier, Tennen, Gavian, Park, Tomich, and Tashiro (2009) conducted an online survey of 1,500 undergraduate students about their psychological well-being. Eight weeks later, 10% of the sample reported that they had experienced a traumatic event (e.g., a life-threatening accident, an assault, or an illness contracted by themselves or a close friend or loved one) that they rated as causing intense fear, helplessness, or horror. Findings demonstrated that many students who had experienced a traumatic event scored higher on psychological well-being than before: 5% reported an increase in the strength of their relationships, 12% found life more meaningful, 25% were more satisfied with life, 8% were more grateful, and 7% were more religiously committed than eight weeks prior. While limited in number, before-and-after studies like this confirm that actual positive changes take place after adversity.

Very few studies have examined the relationship between posttraumatic growth and suicidal ideation and behavior. Posttraumatic growth was related to lower levels of depression and suicidality in adults affected by hurricane Katrina (Kessler et al., 2006). While the estimated prevalence of serious mental illness and mild-moderate mental illness doubled after hurricane Katrina, the suicidality often associated with mental illness was much lower among people in the post-Katrina sample who were able to develop a belief in their ability to rebuild their life and a perception of inner strength in the aftermath of the natural disaster (Kessler et al., 2006). In addition, researchers surveyed over 3,000 Chinese adolescents one month after the occurrence of the Sichuan earthquake in 2008 (Yu et al., 2010). Among those who self-reported pre-earthquake suicidal ideation (n=357), 57.4% showed post-earthquake reduced suicidal ideation. Posttraumatic growth and reduced suicidal ideation were significantly associated with each other, tentatively supporting the idea that the positive personal changes, philosophical changes, and relationship changes associated with posttraumatic growth are also associated with lower suicidal ideation (Yu et al., 2010).

Current Study

Considering the association between traumatic life events and subsequent risk of suicidal ideation and behavior, this study assessed the moderating role of posttraumatic growth on the relationship between trauma and suicide risk, ideation, and behavior in college students. This study addressed the following questions:

Research Question 1: Does posttraumatic growth moderate the relationship between number of traumatic life events and a) suicide risk, b) suicidal ideation and behavior, and c) college adjustment?

Research Question 2: Does posttraumatic growth moderate the relationship between the severity of traumatic life events and a) suicide risk, b) suicidal ideation and behavior, and c) college adjustment?

Research Question 3: Does posttraumatic growth moderate the relationship between abuse and neglect occurring during childhood and a) suicide risk, b) suicidal ideation and behavior, and c) college adjustment?

CHAPTER II

Method

Participants

Six hundred forty-eight students participated in data collection during October and
November of 2012. Eighty-one cases were removed from data analysis due to reporting no
trauma. (Trauma is a prerequisite for posttraumatic growth, thus their data could not be used to
answer the research questions of this study.) An additional 10 cases were removed from the
sample due to missing over 75% of data. These participants likely started the survey and left the
website before completing the subsequent questionnaires, thus the total number of participants is
557. The data collection occurred at a large western United States university, and students from
Introductory Psychology classes were recruited. In return for participating in this study,
participants received credit toward Introductory Psychology course requirements.

Participants identified as 398 (71.5%) females, 157 (28.2%) males, and 2 transgenders
(<1%). Additionally, 9 (1.6%) participants reported their ethnicity as African American/Black, 1
(<1%) as American Indian/Native American, 16 (2.9%) as Asian American/Asian, 39 (7.0%) as
Hispanic/Latino, 3 (<1%) as Native Hawaiian or Pacific Islander, 470 (84.4%) as White non-
Hispanic, 4 (<1%) as Middle Eastern American, and 15 (2.7%) self-reported as Other. The
average age was 18.80 years ($SD = 1.35$).

Measures

Trauma History Survey. Presence of trauma was defined for the purpose of this study
as having experienced at least one of the following ten incidents: 1) Death of a close loved one,
2) Very serious medical problem, 3) Close friend, significant other, or family member
experienced a serious medical condition, 4) Accident that led to serious injury to themselves or

someone close to them, 5) Place of residence being damaged by fire or other natural causes, 6) Endured a divorce, 7) Physically assaulted, 8) Sexually assaulted, 9) Victim of a crime such as robbery or mugging, and 10) Being stalked. This definition of trauma was taken directly from Triplett et al.'s (2012) research on trauma history and meaning in life in samples of college students. As a part of this Trauma History Survey, participants were asked to indicate frequencies pertaining to each traumatic life event (#TLE), rate the perceived severity of each traumatic event (SevTLE) ranging from 1 *(not at all)* to 5 *(extreme)*, and note when the traumatic event occurred (See Appendix A).

For the purpose of this study, traumas are considered to be events which are likely to have negative consequences such as causing persons to fear for their lives or the lives of loved ones, causing physical or emotional distress, and/or causing major disruption in their lives (Triplett et al., 2012). Four-hundred two participants reported they experienced the death of a close loved one (72.2%), 90 reported a very serious medical problem (16.2%), 324 had a close friend, significant other, or family member experience a serious medical condition (58.2%), 110 experienced an accident that led to serious injury to themselves or someone close to them (19.7%), 24 experienced their place of residence being damaged by fire or other natural causes (4.3%), 118 endured a divorce (21.2%), 43 were physically assaulted (7.7%), 57 were sexually assaulted (10.2%), 23 were victims of a crime such as a robbery or mugging (4.1%), and 28 reported being stalked (5.0%). A #TLE score was created for each participant by summing the number of reported events in each of the ten traumatic life domains (*M* = 2.19, *SD = 1.18*). The participants were also asked to rate the perceived severity of each traumatic event ranging from 1 (not at all) to 5 (extreme). Prior to data analysis, scores were recoded to reflect "not at all" =0 and "extreme"=4. The reported severity for the events the participant experienced was summed

to create the SevTLE variable (*M* = 6.22, *SD* = 3.78). Scores on SevTLE could range from 0 to 40.

  Posttraumatic Growth. The level of posttraumatic growth was measured with the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996). The PTGI consists of 21 items that measure positive outcomes following traumatic experiences within five sub-scales: Relating to Others, New Possibilities, Personal Strength, Spiritual Change, and Appreciation of Life. Each item contains a 6-point Likert-type scale which ranges from 0 (I did not experience this change as a result of my crisis) to 5 (I experienced this change to a very great degree as a result of my crisis), with higher scores suggesting more growth from the experience (Tedeschi & Calhoun, 1996). Participants were also asked to describe how they felt their life changed as a result of the traumatic event(s) they experienced in their own words. In addition, Tedeschi and Calhoun (1996) reported that the PTGI has an internal consistency of .90 and a test–retest reliability of .71 in a sample of undergraduate students. In the current study, the Cronbach alpha coefficient was .94. They examined concurrent and discriminant validity by comparing the relation between the PTGI and other measures including the NEO Personality Inventory and the Life Orientation Test. They found that optimism, religiosity, and the major dimensions of personality, except for neuroticism, correlated positively with PTGI scores (Tedeschi & Calhoun, 1996). The PTGI has now been validated on groups with exposure to various types of adversity and extreme stress. These validation studies have been composed of college students (Calhoun, Cann, Tedeschi, & McMillan, 2000), adolescents (Ickovics et al., 2006; Milam, Ritt-Olson, & Unger, 2004), holocaust child survivors (Lev-Wiesel & Amir, 2003), adults with a history of cardiovascular disease (Sheikh & Marotta, 2005), and adults recovering from a diagnosis of cancer (Ho, Chan, & Ho, 2004). (See Appendix B).

Past Suicidal Ideation and Behavior. Four items from Linehan and Nielsen's Suicidal

Behaviors Questionnaire (SBQ; 1981) 34-item suicidal behaviors self-report instrument were

used to assess suicidal ideation and behavior. This 4-item SBQ-Revised (SBQ-R) has

satisfactory reliability and validity in clinical and nonclinical populations (Osman et al., 2001).

The SBQ–R Item 1 (current level of lifetime suicide ideation and/or suicide attempt; "Have you

ever thought about or attempted to commit suicide?") is rated on a 4-point scale (1 = *never, 4 = I*

have attempted to kill myself, and really hoped to die). The SBQ–R Item 2 (frequency of suicidal

ideation over the past year; "How often have you thought about killing yourself in the past

year?" is rated on a 5-point scale (1 = *never,* 5 = *very often*). The SBQ– R Item 3 (threat of

suicide attempt; "Have you ever told someone that you were going to commit suicide, or that you

might do it?") is rated on a 3-point scale (1 = *no,* 2 = *at one time,* 3 = *more than once*). The

SBQ– R Item 4 (self-reported likelihood of suicidal behavior in the future; "How likely is it that

you will commit suicide someday?") is rated on a 7-point scale (0 = *never,* 6 = *very*

likely). Results from all four items are summed to create a composite score of suicidal ideation

and behavior. Scores range from 3 to 18. As in previous studies (e.g., Cole, 1988; Knott &

Range, 1998), the obtained alpha coefficient in the present study for the four SBQ items was

acceptable (.78). (See Appendix C).

Suicide Risk. The Life Attitudes Schedule-Short Form (LAS-SF; Rohde, Lewinsohn,

Langhinrichsen-Rohling, & Langford, 2004) is a 24-item self-report measure designed to assess

current suicidal and health-related behaviors. Participants reported whether each item was true

or mostly true for them, or false or mostly false for them during the past 7 days. To score the

LAS-SF, one reverses negative responses to positive items so that higher scores indicate greater

engagement in suicide-prone behavior. Moreover, the total score on the LAS-SF has been found

to be correlated with both current suicide ideation and a history of past suicide attempts (Rohde et al., 2003). This scale has shown good reliability and validity estimates in clinical and nonclinical samples (Ellis & Rutherford, 2008; Langhinrichsen-Rohling & Lamis, 2008) and has been used successfully with college students in previous studies (Langhinrichsen-Rohling, Arata, Bowers, O'Brien, & Morgan, 2004). In a study measuring suicide risk among college students, Lamis and Malone (2011) found that the coefficient alpha for the LAS-SF items was .75. In the current study, the Cronbach alpha coefficient was .69. (See Appendix D).

College Adjustment. The College Adjustment Questionnaire (CAQ) was developed for use on undergraduate students and was created by Shirley and Rosén (2010). This 14-item questionnaire asks college students to rate "how true" statements about college experiences are for them, "at this point in time." Items were designed to cover the three major domains of academic, social and emotional functioning (see Appendix E).

The Academic Adjustment subscale focuses on the individual's ability to meet educational demands by asking questions related to motivation for learning, and university scholastic achievement. The Social subscale looks at the social aspects of the undergraduate experience by asking questions about relationship satisfaction and socialization. The Emotional Adjustment subscale is designed to contribute to understanding the individual's emotional/psychological experience by asking questions related to the coping success in adapting to the unique stresses related to college life. In addition, a total score composite can be calculated indicating overall college adjustment. For the present study, the total score composite was used.

Responses to the questions are measured using a 5-point Likert type scale, with response options ranging from *not at all true* to *completely true*. Analysis of the CAQ demonstrated strong

factor loading for the three factors and high rates of validity and reliability for the measure and generated a Cronbach's alpha of .83 (Shirley & Rosén, 2010). In the current study, the Cronbach alpha coefficient was .89 for the total score.

Childhood Maltreatment. The Childhood Maltreatment Questionnaire (CMQ; Shirley and Rosén, 2010a) asks respondents to indicate the type and frequency of abuse and neglect experienced during childhood. These items are measured on a five-point Likert-type scale, with responses ranging from *never* to *very often*. Convergent validity of the CMQ was established by correlating scores with those of the Childhood Trauma Questionnaire-- Short Form (CTQ-SF; Bernstein & Fink; Bernstein et al., 2003). The CMQ was also found to possess excellent reliability, with a Cronbach's alpha of 0.92 (Shirley and Rosén, 2010a). In the current study, the Cronbach alpha coefficient was .90. (See Appendix F).

Demographic Data. Descriptive information about the sample was gathered using a Demographic Information Form developed for this study. Categories of information included age, gender, race/ethnicity, and presence of religious affiliation. (See Appendix G).

Procedure

Participants in the study electronically signed an online informed consent form that described the study, outlined potential risks of participation, and assured confidentiality (See Appendix H). Participants completed a series of online questionnaires, including the Trauma History Survey, PTGI, SBQ-R, LAS-SF, CMQ, CAQ, and Demographic Data form. After completing the questionnaires, participants received web-delivered debriefing forms describing the study's purpose, offering information about available counseling services, and providing contact information for the primary investigator (See Appendix I). Participants' names were not connected to their online survey responses, and all completed questionnaires were stored in a

protected electronic folder. All procedures and methods employed in this study were approved

by the Colorado State University Human Subjects Committee/Institutional Review Board.

CHAPTER III

Results

To properly conduct multiple linear regression analysis, several assumptions about the data must first be tested. To test for violations of normality, each of the predictor variables included in the regression analyses were examined separately. The distribution of scores on the all four of the independent variables (#TLE, SevTLE, CMQ, and PTGI) and the three dependent variables (SBQ-R, LAS-SF, and CAQ) were visually inspected for evidence of skewness and kurtosis. All variables demonstrated suitable normality except for childhood maltreatment (CMQ), which displayed a significant positive skew. In order to correct for this assumptive violation, CMQ was logarithm 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 violations 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 and homoscedasticity were maintained. It is important to note that while heteroscedasticity may have been problematic prior to the logarithm transformation described earlier; the transformation successfully eliminated the heteroscedasticity of the childhood maltreatment (CMQ) variable.

Locating Outliers

Because the multiple regression technique used in this study is particularly sensitive to outliers (very high or very low scores), it is critical to check for the presence of extreme scores that may exert undue influence on the relationship between the independent and dependent

variables. Outliers were located through a variety of methods. First the data was graphically

rendered by using a box-plot graph, which assists in the visual detection of extreme scores.

These visual scanning procedures were also supplemented using statistical analysis of

studentized residuals and Cook's Distance values, which provide a statistical representation of

each case's residual error and resulting influence on the overall model (Cook, 1982). Cases were

identified as potentially problematic when resulting in a Cook's Distance value greater than

$4/n$ (.0072 for this data set; Bolen & Jackman, 1990) or a studentized residual exceeding +/- 2

(Belsey et al., 1980). These cases were then further visually scanned in order to assess whether

they represented valid data or instances of unrealistic/faulty survey response. A total of eighteen

cases were identified as outliers. However, removal of these outliers did not significantly alter

results of the three research questions and therefore all 557 participants were included in

analysis.

Missing Data

In order to avoid listwise (LD) and pairwise (PD) deletion methods, I utilized the full

information maximum likelihood (FIML) estimation approach for missing data. Maximum

likelihood algorithms are based on the assumption that the observed data contains information

that can be used to infer probable values for the missing data. In the FIML algorithm, linear

model parameter estimates are obtained directly from the available raw data without a

preliminary data preparation step (e.g., imputation.) The FIML algorithm is applied to a wide

variety of analyses (e.g., means estimation, regression, SEM) and is computationally less

expensive than the expectation maximation (EM) algorithm because no additional steps are

required to obtain correct standard error estimates (Enders, 2001).

Preliminary Analyses

To assess the direction and strength of the relationship between the predictor variables (#TLE, SevTLE, CMQ, and PTGI) and the outcome variables (SBQ-R, LAS-SF, and CAQ) a number of Pearson's product moment correlation coefficients were computed. Table 1 shows the means, standard deviations and intercorrelations for all predictor and outcome variables. Specifically, small correlations between #TLE and SBQ-R (r=.16, p<.01), LAS-SF (r=.11, p<.05), and CAQ (r= -.11, p<.05) were observed. Small correlations between SevTLE and SBQ-R (r=.17, p<.01), LAS-SF (r=.09, p<.05), and CAQ (r= -.12, p<.05) were observed. Moderate correlations between CMQ and SBQ-R (r=.32, p<.01) and LAS-SF (r=.33, p<.01) were observed and a small correlation between CMQ and CAQ (r= -.16, p<.01) was detected.

Research Question 1

Multiple linear regression was used to assess how posttraumatic growth moderates the strength and/or direction of the observed relationship between number of traumatic life events (#TLE) and 1) suicidal ideation and behavior (SBQ-R), 2) suicide risk (LAS-SF), and 3) college adjustment (CAQ). The first requirement for running a moderated multiple regression involves centering each of the continuous predictor and criterion variables included in the analyses (Aiken & West, 1991). Centering the variables at their mean reduces the potential for multicollinearity and enhances the interpretability of the results (Barron & Kenny, 1986). Centered variables for each of the continuous main effect variables were created by subtracting each variable's mean from each individual observation (Cohen, Cohen, West, & Aiken, 2003).

A multiple linear regression analysis was conducted to determine the effects of the number of traumatic life events (#TLE) and posttraumatic growth (PTGI) on suicidal ideation and behavior (SBQ-R; see Table 2; Baron & Kenny, 1986). The number of traumatic life events

(#TLE; $r = .16$, $p \leq .001$) was significantly correlated with suicidal ideation and behavior (SBQ-R; Table 1). Posttraumatic growth (PTGI; $r = -.03$, $p > .05$) was not significantly correlated with suicidal ideation and behavior (SBQ-R; Table 1), which is not what we would expect based on the positive changes associated with posttraumatic growth (Tedeschi, Park, & Calhoun, 1998). The number of traumatic life events (#TLE) significantly predicted suicidal ideation and behavior (SBQ-R; $b = .35$, $p \leq .001$) and posttraumatic growth (PTGI) did not significantly predict suicidal ideation and behavior (SBQ-R; $b = -.01$, $p > .05$). Additionally, the effect of the number of traumatic life events (#TLE) on suicidal ideation and behavior (SBQ-R) was not moderated by number of traumatic life events and posttraumatic growth (#TLE*PTGI; $b = .00$, $p > .05$). Overall, the three predictors in this model accounted for approximately 3% of the variance in suicidal ideation and behavior (SBQ-R; $R^2 = .03$, $p \leq .05$).

A multiple linear regression analysis was conducted to determine the effects of the number of traumatic life events (#TLE) and posttraumatic growth (PTGI) on suicide risk (LAS-SF; see Table 2; Baron & Kenny, 1986). Number of traumatic life events (#TLE; $r = .11$, $p \leq .05$) was significantly correlated with risk (LAS-SF; Table 1). Posttraumatic growth (PTGI; $r = -.14$, $p \leq .001$) was significantly negatively correlated with suicide risk (LAS-SF; Table 1), which is what we would expect based on the positive changes associated with posttraumatic growth (Tedeschi, Park, & Calhoun, 1998). Both number of traumatic life events (#TLE) and posttraumatic growth (PTGI) significantly predicted suicide risk (LAS-SF; $b = .40$, $p \leq .001$) and ($b = -.02$, $p \leq .001$), respectively. Additionally, the effect of number of traumatic life events (#TLE) on suicide risk (LAS-SF) was not moderated by number of traumatic life events and posttraumatic growth (#TLE*PTGI; $b = -.01$, $p > .05$). Overall, the three predictors in this model accounted for approximately 5% of the variance in suicide risk (LAS-SF; $R^2 = .05$, $p \leq .05$).

A multiple linear regression analysis was conducted to determine the effects of number of traumatic life events (#TLE) and posttraumatic growth (PTGI) on college adjustment (CAQ; see Table 2; Baron & Kenny, 1986). Number of traumatic life events (#TLE; $r = -.11$, $p \leq .05$) was significantly negatively correlated with college adjustment (CAQ; Table 1). Posttraumatic growth (PTGI; $r = .07$, $p > .05$) was not significantly correlated with college adjustment (CAQ; Table 1). Number of traumatic life events (#TLE) and posttraumatic growth (PTGI) significantly predicted college adjustment (CAQ; $b = -1.07$, $p \leq .01$) and ($b = .04$, $p \leq .05$), respectively. Additionally, the effect of number of traumatic life events (#TLE) on college adjustment (CAQ) was not significantly moderated by number of traumatic life events and posttraumatic growth (#TLE*PTGI; $b = .03$, $p = .08$). Overall, the three predictors in this model accounted for approximately 3% of the variance in college adjustment (CAQ; $R^2 = .03$, $p > .05$).

Research Question 2

A multiple linear regression analysis was conducted to determine the effects of severity of traumatic life events (SevTLE) and posttraumatic growth (PTGI) on suicidal ideation and behavior (SBQ-R; see Table 3; Baron & Kenny, 1986). Severity of traumatic life events (SevTLE; $r = .17$, $p \leq .001$) was significantly correlated with suicidal ideation and behavior (SBQ-R; Table 1). Posttraumatic growth (PTGI; $r = -.03$, $p > .05$) was not significantly correlated with suicidal ideation and behavior (SBQ-R; Table 1). Severity of traumatic life events (SevTLE) significantly predicted suicidal ideation and behavior (SBQ-R; $b = .10$, $p \leq$ .001) and posttraumatic growth (PTGI) did not significantly predict suicidal ideation and behavior (SBQ-R; $b = -.01$, $p > .05$). Additionally, the effect of severity of traumatic life events (SevTLE) on suicidal ideation and behavior (SBQ-R) was not moderated by severity of traumatic life events and posttraumatic growth (SevTLE*PTGI; $b = -.002$, $p > .05$). Overall, the three

predictors in this model accounted for approximately 3% of the variance in suicidal ideation and behavior (SBQ-R; $R^2 = .03$, $p > .05$).

A multiple linear regression analysis was conducted to determine the effects of severity of traumatic life events (SevTLE) and posttraumatic growth (PTGI) on suicide risk (LAS-SF; see Table 3; Baron & Kenny, 1986). Severity of traumatic life events (Sev-TLE; $r = .09$, $p \leq .05$) was significantly correlated with risk (LAS-SF; Table 1). Posttraumatic growth (PTGI; $r = -.14$, $p \leq .001$) was significantly negatively correlated with suicide risk (LAS-SF; Table 1), which is what we would expect based on the positive changes associated with posttraumatic growth (Tedeschi, Park, & Calhoun, 1998). Both severity of traumatic life events (SevTLE) and posttraumatic growth (PTGI) significantly predicted suicide risk (LAS-SF; $b = .14$, $p \leq .001$) and ($b = -.02$, $p \leq .001$), respectively. Additionally, the effect of severity of traumatic life events (SevTLE) on suicide risk (LAS-SF) was moderated by severity of traumatic life events and posttraumatic growth (SevTLE*PTGI; $b = -.003$, $p \leq .05$). Figure 1 plots the interaction and shows the simple slopes for the effect of severity of traumatic life events (SevTLE) on suicide risk (LAS-SF) at three values of posttraumatic growth (PTGI). Probing the interaction revealed that at low levels of posttraumatic growth (PTGI), severity of traumatic life events (SevTLE) was positively associated with suicide risk (LAS-SF). However, at high levels of posttraumatic growth (PTGI), severity of traumatic life events (SevTLE) was negatively associated with suicide risk (LAS-SF). Overall, the three predictors in this model accounted for approximately 5% of the variance in suicide risk (LAS-SF; $R^2 = .05$, $p \leq .05$).

A multiple linear regression analysis was conducted to determine the effects of severity of traumatic life events (SevTLE) and posttraumatic growth (PTGI) on college adjustment (CAQ; see Table 3; Baron & Kenny, 1986). Severity of traumatic life events (SevTLE; $r = -.11$,

$p \leq .05$) was significantly negatively correlated with college adjustment (CAQ; Table 1).

Posttraumatic growth (PTGI; $r = .07$, $p > 0.05$) was not significantly correlated with college

adjustment (CAQ; Table 1). Severity of traumatic life events (SevTLE) and posttraumatic

growth (PTGI) significantly predicted college adjustment (CAQ; $b = -.40$, $p \leq .01$) and ($b = .05$,

$p \leq .05$), respectively. Additionally, the effect of severity of traumatic life events (SevTLE) on

college adjustment (CAQ) was significantly moderated by severity of traumatic life events and

posttraumatic growth (SevTLE*PTGI; $b = .01$, $p \leq .01$). Figure 2 plots the interaction and shows

the simple slopes for the effect of severity of traumatic life events (SevTLE) on college

adjustment (CAQ) at three values of posttraumatic growth (PTGI). Probing the interaction

revealed that at low levels of posttraumatic growth (PTGI), severity of traumatic life events

(SevTLE) was negatively associated with college adjustment (CAQ). However, at high levels of

posttraumatic growth (PTGI), severity of traumatic life events (SevTLE) was positively

associated with college adjustment (CAQ). Overall, the three predictors in this model accounted

for approximately 4% of the variance in college adjustment (CAQ; $R^2 = .04$, $p \leq .05$).

Research Question 3

A multiple linear regression analysis was conducted to determine the effects of childhood

maltreatment (CMQ) and posttraumatic growth (PTGI) on suicidal ideation and behavior (SBQ-

R; see Table 4; Baron & Kenny, 1986). Childhood maltreatment (CMQ; $r = .32$, $p \leq .001$) was

significantly correlated with suicidal ideation and behavior (SBQ-R; Table 1). Posttraumatic

growth (PTGI; $r = -.03$, $p > .05$) was not significantly correlated with suicidal ideation and

behavior (SBQ-R; Table 1). Childhood maltreatment (CMQ) significantly predicted suicidal

ideation and behavior (SBQ-R; $b = .63$, $p \leq .001$) and posttraumatic growth did not significantly

predict suicidal ideation and behavior (SBQ-R; $b = -.004$, $p > .05$). Additionally, the effect of

childhood maltreatment (CMQ) on suicidal ideation and behavior (SBQ-R) was not moderated

childhood maltreatment and posttraumatic growth (CMQ*PTGI; $b = -.002, p > .05$). Overall, the

three predictors in this model accounted for approximately 10% of the variance in suicidal

ideation and behavior (SBQ-R; $R^2 = .10, p \leq .001$).

A multiple linear regression analysis was conducted to determine the effects of childhood

maltreatment (CMQ) and posttraumatic growth (PTGI) on suicide risk (LAS-SF; see Table 4;

Baron & Kenny, 1986). Childhood maltreatment (CMQ; $r = .33, p \leq .001$) was significantly

correlated with risk (LAS-SF; Table 1). Posttraumatic growth (PTGI; $r = -.14, p \leq .001$) was

significantly negatively correlated with suicide risk (LAS-SF; Table 1), which is what we would

expect based on the positive changes associated with posttraumatic growth (Tedeschi, Park, &

Calhoun, 1998). Childhood maltreatment (CMQ) and posttraumatic growth (PTGI) significantly

predicted suicide risk (LAS-SF; $b = .87, p \leq .001$) and ($b = -.02, p \leq .001$), respectively.

Additionally, the effect of childhood maltreatment (CMQ) on suicide risk (LAS-SF) was not

moderated by childhood maltreatment and posttraumatic growth (CMQ*PTGI; $b = -.004, p >$

.05). Overall, the three predictors in this model accounted for approximately 13% of the

variance in suicide risk (LAS-SF; $R^2 = .13, p \leq .001$).

A multiple linear regression analysis was conducted to determine the effects of childhood

maltreatment (CMQ) and posttraumatic growth (PTGI) on college adjustment (CAQ; see Table

4; Baron & Kenny, 1986). Childhood maltreatment (CMQ; $r = -.16, p \leq .001$) was significantly

negatively correlated with college adjustment (CAQ; Table 1). Posttraumatic growth (PTGI; $r =$

.07, $p > 0.05$) was not significantly correlated with college adjustment (CAQ; Table 1).

Childhood maltreatment (CMQ) significantly predicted college adjustment (CAQ; $b = -1.33, p \leq$

.001). Posttraumatic growth (PTGI) did not significantly predict college adjustment (CAQ; $b =$

.03, $p > .05$). Additionally, the effect of childhood maltreatment (CMQ) on college adjustment (CAQ) was not moderated by childhood maltreatment and posttraumatic growth (CMQ*PTGI; b = .00, $p > .05$). Overall, the three predictors in this model accounted for approximately 3% of the variance in college adjustment (CAQ; $R^2 = .03$, $p \leq .05$).

CHAPTER IV

Discussion

The struggle with trauma can produce not only psychological distress, but it can also provide the opportunity for the experience of posttraumatic growth (Joseph & Linley, 2008; Tedeschi & Calhoun, 1995). The primary purpose of this research was to assess the moderating role of posttraumatic growth on the relationship between traumatic life events and three different outcomes: suicidal ideation and behavior, suicide risk, and college adjustment. Results add to a growing body of literature indicating that the ability to find meaning in suffering is associated with fewer symptoms of distress after a variety of traumatic experiences (Linley, Joseph, & Goodfellow, 2008).

The data yielded two significant findings with implications for research and clinical methods designed to facilitate posttraumatic growth. First, posttraumatic growth (as measured by the PTGI) moderated the relationship between severity of traumatic life events (as measured by the Trauma History Survey) and suicide risk (as measured by the LAS-SF). At low levels of posttraumatic growth, severity of traumatic life events was positively associated with suicide risk. However, at high levels of posttraumatic growth, severity of traumatic life events was negatively associated with suicide risk. Thus, individuals with the most severe traumatic life events were less likely to have high suicide risk in college if they had experienced posttraumatic growth following their trauma. Second, posttraumatic growth (as measured by the PTGI) moderated the relationship between severity of traumatic life events (as measured by the Trauma History Survey) and college adjustment as measured by the (College Adjustment Questionnaire). At low levels of posttraumatic growth, severity of traumatic life events was negatively associated with college adjustment. However, at high levels of posttraumatic growth, severity of traumatic

life events was positively associated with college adjustment. Thus, individuals with the most severe traumatic life events were more likely to have better college adjustment if they had experienced posttraumatic growth following their trauma.

These results support the importance of assessing perceived severity of trauma in addition to type and number of traumatic life events. The degree to which the traumatic event challenges core beliefs has been shown to be a key element in making the experience of posttraumatic growth possible. The greater the felt need to reexamine the core beliefs, the higher the likelihood of experienced growth (Cann, Calhoun, Tedeschi, Kilmer, et al., 2010).

In effect, the findings reported here support the adaptive significance of posttraumatic growth, as developing new positive beliefs about self-efficacy, values, and so on may limit the likelihood of experiencing suicidal ideation and behavior as a result of severe trauma. When asked how they felt their life changed as a result of the traumatic event(s) they experienced, participants identified several themes of self-acceptance, autonomy, purpose in life, relationships, sense of mastery, and personal growth:

> "I've learned that each day is a gift and it can be taken away and changed. It's ok to break down at times..it's what makes us stronger."

> "I learned that the small things in life are nothing compared to that experience. It gave me a new perspective on my relationships with others."

> "My life changed in the respect that I learned how to accept life one day at a time. I learned how to love myself and love others around me, and have the confidence to figure things out on my own but also to accept help when I need it. I was extremely humbled by the experience and learned the importance of trust, family and a feeling of self worth."

> "My outlook on life changed dramatically. It also happened during a critical time where I was trying to figure out what kind of person I wanted to become so it had a huge impact on who I decided I was going to be. My values have changed greatly and I feel like I have a good idea of what is really important in life and what is worth worrying about it."

While previous research does not support the cross-sectional relationship between posttraumatic growth and depressive symptoms (see Zoellner & Maercker, 2006 for a review), the present study advocates for the moderating role posttraumatic growth might play in affecting the wide range of outcomes associated with traumatic life events. The non-significant cross-sectional relationship between PTG and suicidal ideation and behavior (SBQ-R; See Tables 2-4) could be explained by the notion that the adaptive value of PTG shows its effect in the long run and can only be discovered over a period of time (Zoellner & Maercker, 2006). Although the present study did not consider the time lapsed since trauma as part of the original research questions or multiple regression analyses, past research showed that for people who perceive benefits from traumatic events, psychological distress decreases over time, while for those without benefits, psychological distress increases over time (Zoellner & Maercker, 2006).

Interestingly, two of the three regression models—those involving number of traumatic life events and childhood maltreatment as predictors—failed to produce any evidence to support posttraumatic growth as a moderating variable. However, number of traumatic life events was a significant predictor for suicidal ideation and behavior and suicide risk, mirroring a similarly observed relationship between PTSD and suicidal behavior (Panagioti, Gooding, Tarrier, 2009; Sarreen, Houlahan, Cox, & Asmundson, 2005; Tarrier & Gregg, 2004). Additionally, childhood maltreatment was a significant predictor for suicidal ideation and behavior and suicide risk. This finding supports previous research showing that risk of suicide is elevated among those with a history of childhood physical, sexual, or emotional abuse (Dube et al., 2001). One possible explanation for the model involving childhood maltreatment and posttraumatic growth is the relatively small portion of the sample reporting childhood maltreatment and the variable's positively skewed distribution. There is very limited research on the effect that the type of

traumatic life event experienced in childhood has on the ability to experience posttraumatic growth (See Meyerson, Grant, Carter, & Kilmer, 2011 for a review). It is possible that individuals are more likely to experience resiliency rather than posttraumatic growth as a result of the abuse and neglect assessed by the CMQ. Many individuals who encounter traumatic events may be resilient regardless of whether they report experiencing posttraumatic growth (Westphal & Bonanno, 2007).

Limitations and Directions for Future Research

Several study limitations deserve mentioning. First, due to the cross-sectional design, I am unable to draw conclusions regarding the causal direction of the relationship between my study variables. However, the results do provide support for the positive relationship between trauma and suicidal ideation and behavior and suicide risk as well as the proposed differential experience of individuals that engage in benefit finding after trauma versus individuals that do not try to make sense of traumatic life events and find purpose and meaning in suffering. It would be interesting to replicate this study as a before-and-after study similar to Frazier and colleagues' (2009) study in which they surveyed undergraduate students at one time point and then again eight weeks later. Over 10% of their sample reported that they experienced a traumatic life event over the eight-week time period and researchers were able to measure actual positive changes that took place after adversity. Second, we relied exclusively on self-report data, adding to the subjective nature of our findings. Third, the sample was composed of a disproportionate number of Caucasian (84.4%) and female (71.5%) participants, thus limiting the generalizability of results to all college populations.

A major limitation of the overall sample is that participants were undergraduate students from the western United States reporting largely on the death of loved ones and major illness (of

self or loved ones). However, because participants rated the severity of the events, it is likely that the traumatic events they experienced reflects that of the general population (Vrana & Lauertebach, 1994). Although it would be desirable to replicate these findings with a more diverse age group, and generalizations to other groups must be made with caution, the types of events experienced, and the rated severity of the events, suggest that the sample was dealing with challenging life traumas. Additionally, participants self-selected into the study, which limits generalizability of the study somewhat, given that students may have been attracted to the study because of its particular focus on perceived growth after adversity.

Implications

Despite these limitations, these results support the benefit of facilitating posttraumatic growth among college students who have experienced trauma they rate as significantly distressing. With suicide ranking as the second leading cause of death among United States college students, much remains for researchers to investigate in this complex public health problem. However, with over 85% of students reporting experiencing a traumatic event their lifetime and 21% reporting experiencing an event over a 2-month period in college, this study supports the function of assessing perceived severity of trauma as well as promoting therapeutic techniques designed to facilitate posttraumatic growth (Frazier et al., 2009).

Suicide research strongly suggests that people who feel that they are connected to others and personally effective have a stronger will to live (Joiner, 2005). These two dimensions map onto the Relating to Others and Personal Strength factors of posttraumatic growth (Tedeschi & Calhoun, 1995; 1996). If the promising relationships in this study are confirmed by future research to be robust over time and of clinical significance in wider samples of college students, it may empower clinicians to integrate positive as well as negative factors into their suicide risk

assessments and to incorporate posttraumatic growth into their therapeutic strategies for suicide prevention. Because the literature on the facilitation of growth following adversity is only now beginning to develop, it is too early to be certain what the exact therapeutic implications of growth will be and how best to facilitate growth. Joseph and Linley (2006) emphasize that personal growth after trauma should be viewed as originating not from the event but from within the person themselves and propose that the meta-theoretical perspective of person-centered theory is well-suited for this task because of the importance it places on the client's inner resources for healing and for growth.

The struggle with adversity is one pathway to discovering new strengths within ourselves, renewing our relationships, and enhancing our sense of purpose and meaning. Experiencing a trauma often reminds us that the dialectical forces of positive and negative, cost and benefit, and suffering and growth, go hand in hand. The current study provides a good examination of the moderating role that posttraumatic growth can play in the well-established relationship between traumatic life events and suicide risk and college adjustment among undergraduate students.

Tables

Table 1.
Variable Means, Standard Deviations, and Intercorrelations

Variables	1	2	3	4	5	6	7
1. #TLE	1						
2. SevTLE	.92**	1					
3. CMQ	.22**	.19**	1				
4. PTGI	.19**	.25**	.03	1			
5. SBQ-R	.16**	.17**	.32**	-.03	1		
6. LAS-SF	.11*	.09*	.33**	-.14**	.43**	1	.07
7. CAQ	-.11*	-.12*	-.16**	.07	-.29**	-.33**	1
M	2.19	6.22	6.07	74.29	4.66	28.59	38.71
SD	1.18	3.78	9.24	23.64	2.33	3.08	9.68

**Correlation is significant at the .01 level (2-tailed)
*Correlation is significant at the .05 level (2-tailed)

Table 2.

Does posttraumatic growth effect the strength and/or direction of the observed relationship between number of traumatic life events and 1) suicidal ideation and behavior, 2) suicide risk, and 3) college adjustment? Multiple Regression Analyses

	B	SE (B)	t	p
Predicting suicidal ideation and behavior				
Number of Traumatic Life Events	.34	.09	3.70	$\leq .001$
Posttraumatic Growth	-.01	.00	-1.52	.13
Traumatic Life Events x Posttraumatic Growth	.000	.00	-.055	.96
Constant	4.66			
Predicting suicide risk				
Number of Traumatic Life Events	.40	.13	3.11	$\leq .001$
Posttraumatic Growth	-.02	.01	-3.88	$\leq .001$
Traumatic Life Events x Posttraumatic Growth	-.01	.01	-1.54	.12
Constant	28.62			
Predicting college adjustment				
Number of Traumatic Life Events	-1.07	.37	-2.89	$\leq .05$
Posttraumatic Growth	.04	.02	2.22	$\leq .05$
Traumatic Life Events x Posttraumatic Growth	.03	.02	1.77	.08
Constant	38.55			

Note. $R^2 = .03$ in predicting suicidal ideation and behavior; .05 in predicting suicide risk; .03 in predicting college adjustment, *n* =557.

Table 3.
Does posttraumatic growth effect the strength and/or direction of the observed relationship between severity of traumatic life events and 1) suicidal ideation and behavior, 2) suicide risk, and 3) college adjustment? Multiple Regression Analyses

	B	SE (B)	t	p
Predicting suicidal ideation and behavior				
Severity of Traumatic Life Events	.10	.03	3.26	≤ .001
Posttraumatic Growth	-.01	.00	-1.62	.11
Severity x Posttraumatic Growth	.00	.00	-1.37	.17
Constant	4.69			
Predicting suicide risk				
Severity of Traumatic Life Events	.14	.04	3.32	≤ .001
Posttraumatic Growth	-.02	.01	-4.01	≤ .001
Severity x Posttraumatic Growth	-.003	.00	-2.14	≤ .05
Constant	28.65			
Predicting college adjustment				
Severity of Traumatic Life Events	-.40	.13	-3.19	≤ .001
Posttraumatic Growth	.05	.02	2.54	≤ .05
Severity x Posttraumatic Growth	.01	.01	2.84	≤ .01
Constant	38.43			

Note. R^2 = .03 in predicting suicidal ideation and behavior; .05 in predicting suicide risk; .04 in predicting college adjustment, *n* =557.

Table 4.

Does posttraumatic growth effect the strength and/or direction of the observed relationship between childhood maltreatment and 1) suicidal ideation and behavior, 2) suicide risk, and 3) college adjustment? Multiple Regression Analyses

	B	SE (B)	t	p
Predicting suicidal ideation and behavior				
Childhood Maltreatment	.63	.09	7.16	≤ .001
Posttraumatic Growth	-.004	.004	-1.02	.31
Childhood Maltreatment x Posttraumatic Growth	-.002	.004	-0.43	.67
Constant	4.66			
Predicting suicide risk				
Childhood Maltreatment	.87	.12	7.26	≤ .001
Posttraumatic Growth	-.02	.01	-3.54	≤ .001
Childhood Maltreatment x Posttraumatic Growth	-.004	.01	-0.81	0.42
Constant	28.58			
Predicting college adjustment				
Childhood Maltreatment	-1.33	.36	-3.69	≤ .001
Posttraumatic Growth	.03	.02	1.64	.10
Childhood Maltreatment x Posttraumatic Growth	.00	.02	0.03	.98
Constant	38.69			

Note. R^2 = .10 in predicting suicidal ideation and behavior; .13 in predicting suicide risk; .03 in predicting college adjustment, *n* =557.

Differential Effect of Severity on Suicide Risk by Posttraumatic Growth

Severity of Traumatic Life Events

LAS-SF
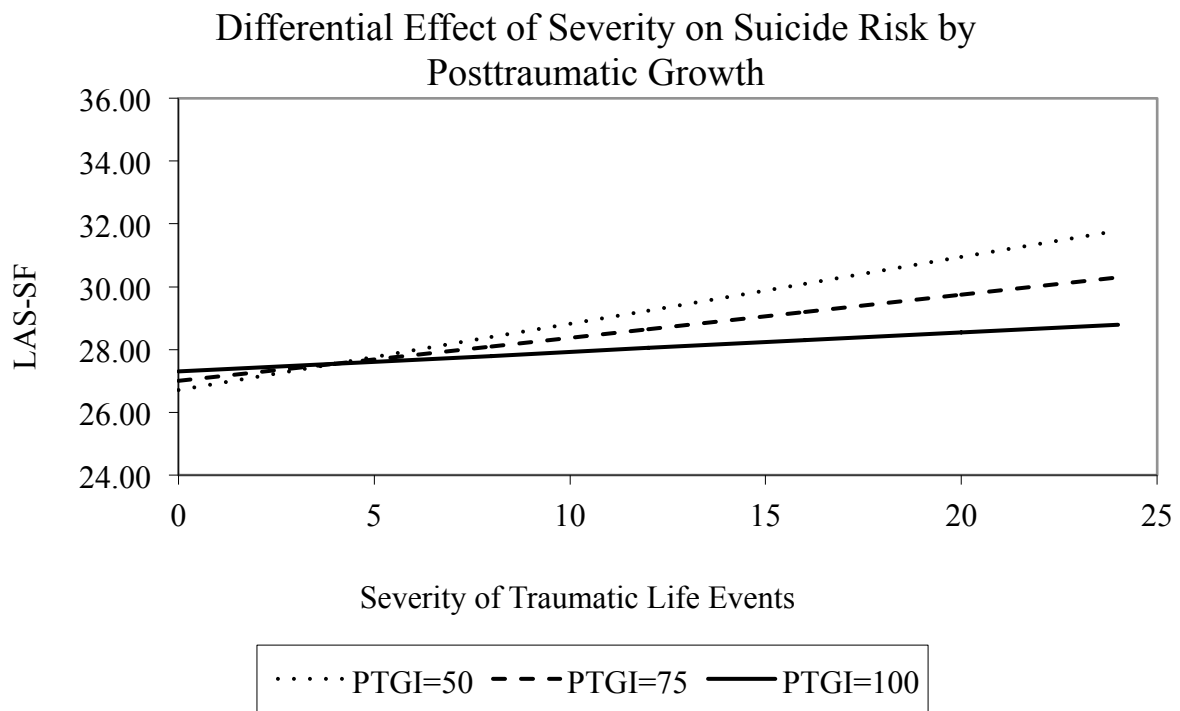
PTGI=50 — — —PTGI=75 —— PTGI=100

Figure 1.

Posttraumatic Growth moderates the relationship between Severity of Traumatic Life Events and Suicide Risk, df = 553, p<.05.

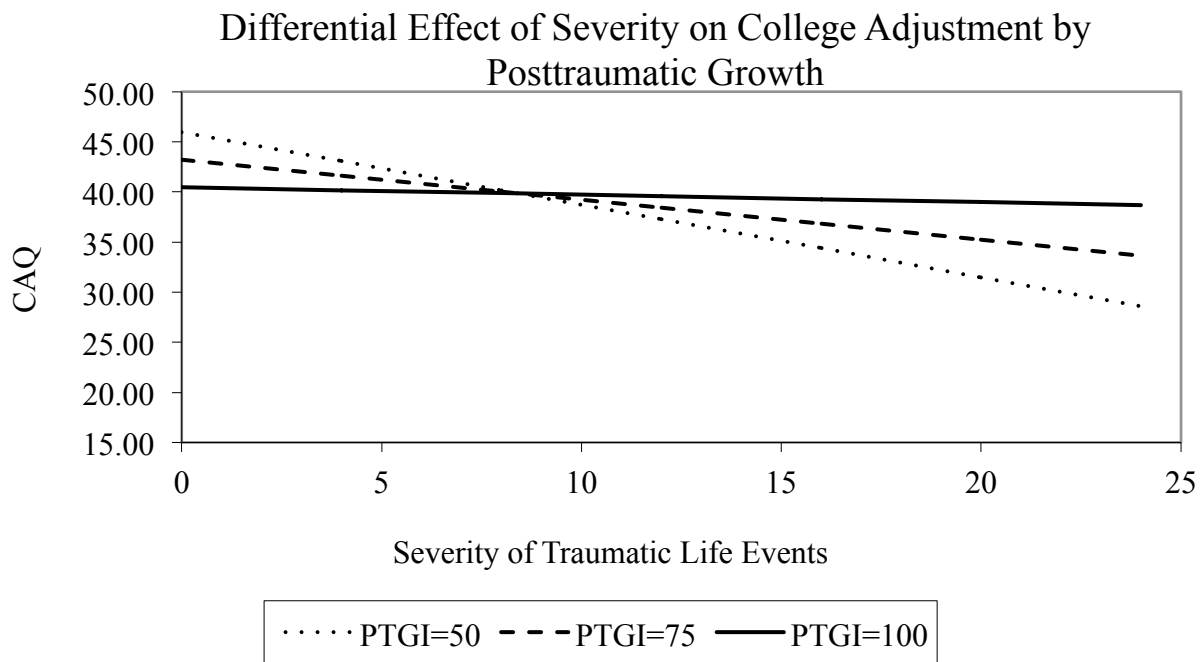Differential Effect of Severity on College Adjustment by Posttraumatic Growth

Figure 2.

Posttraumatic Growth moderates the relationship between Severity of Traumatic Life Events and College Adjustment, df =553, p<.01.

References

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage Publications.

American College Health Association. (2008). *American college health association-national college health assessment: Reference group data report fall 2007*. Baltimore: Author.

American Foundation for Suicide Prevention. (2010). *The truth about suicide.* New York: American Foundation for Suicide Prevention. Retrieved from http://www.afsp.org/files/College_Film//factsheets.pdf.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.

Arria, A. M., O'Grady, K. E., Caldeira, K. M., Vincent, K. B., Wilcox, H. C., & Wish, E. D. (2009). Suicide ideation among college students: A multivariate analysis. *Archives Of Suicide Research*, *13*(3), 230-246.

Barakat, L.P., Alderfer, M.A., & Kazak, A.E. (2006). Posttraumatic growth in adolescent survivors of cancer and their mothers and fathers. *Journal of Pediatric Psychology, 31*(4), 413–419.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173-1182.

Belsley, D. A., Kuh, E., & Welsch, R. (1980). *Regression diagnostics: Identifying influential data and sources of collinearity.* New York: Wiley.

Bertera, E. M. (2007). The role of positive and negative social exchanges between adolescents, their peers and family as predictors of suicide ideation. *Child & Adolescent Social Work Journal*, *24*(6), 523-538.

Bollen, Kenneth A.; and Jackman, Robert W. (1990). *Regression diagnostics: An expository treatment of outliers and influential cases*, in Fox, J. and Long, J.S. (eds.); *Modern Methods of Data Analysis* (pp. 257-91). Newbury Park, CA: Sage.

Breslau, N., Kessler, R. C., Chilcoat, H. D., Schultz, L. R., Davis, G. C., & Andreski, P. (1998). Trauma and posttraumatic stress disorder in the community: The 1996 Detroit area survey of trauma. *Archives of General Psychiatry, 55*, 626–632.

Briggs-Gowan, M. J., Ford, J. D., Fraleigh, L., McCarthy, K., & Carter, A. S. (2010). Prevalence of exposure to potentially traumatic events in a healthy birth cohort of very young children in the northeastern United States. *Journal Of Traumatic Stress*, *23*(6), 725-733.

Calhoun, L.G., & Tedeschi, R.G. (Eds.). (2006). *The handbook of posttraumatic growth: Research and practice*. London: Lawrence Erlbaum.

Calhoun, L. G., Cann, A., Tedeschi, R. G., & McMillan, J. (2000). A correlational test of the relationship between posttraumatic growth, religion, and cognitive processing. *Journal of Traumatic Stress, 12*, 521–527.

Cann, A., Calhoun, L. G., Tedeschi, R. G., Kilmer, R. P., Gil-Rivas, V., Vishnevsky, T., & Danhauer, S. C. (2010). The Core Beliefs Inventory: A brief measure of disruption in the assumptive world. *Anxiety, Stress, & Coping, 23*, 19– 34.

Centers for Disease Control and Prevention. (2010). *Injury prevention and control: Data and statistics (WISQARS)*. Retrieved April 14, 2012 from http://www.cdc.gov/injury/wisqars/index.html

Clay, R., Knibbs, J., & Joseph, S. (2009). Measurement of posttraumatic growth in young people: A review. *Clinical Child Psychology And Psychiatry*, *14*(3), 411-422.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Erlbaum.

Cole, D. A. (1988). Hopelessness, social desirability, depression, and parasuicide in two college student samples. *Journal of Consulting and Clinical Psychology, 56,* 131-136.

Cook, R. D. and Weisberg, S. (1982). *Residuals and influence in regression.* New York: Chapman & Hall.

Copeland, W. E., Keeler, G., Angold, A., & Costello, E. J. (2007). Traumatic events and posttraumatic stress in childhood. *Archives of General Psychiatry, 64,* 577–584.

Cryder, C. H., Kilmer, R. P., Tedeschi, R. G., & Calhoun, L. G. (2006). An exploratory study of posttraumatic growth in children following a natural disaster. *The American Journal of Orthopsychiatry, 76*, 65–69.

Cull, J. G., & Gill, W. S. (1982). *Suicide Probability Scale.* Los Angeles: Western Psychological Services.

Davis, M. C., & Swan, P. D. (1999). Association of negative and positive social ties with fibrinogen levels in young women. *Health Psychology*, *18*(2), 131-139.

Drum, D. J., Brownson, C., Burton Denmark, A., Smith, S. E. (2009). New data on the nature of suicidal crises in college students: Shifting the paradigm. *Professional Psychology: Research and Practice, 40*(3), 213-222.

Dube, S. R., Anda, R. F., Felitti, V. J., Chapman, D. P., Williamson, D. F., & Giles, W. H. (2001). Childhood abuse, household dysfunction, and the risk of attempted suicide

throughout the life span: Findings from the adverse childhood experiences study. *JAMA: Journal Of The American Medical Association*, *286*(24), 3089-3096.

Ellis, T. E., & Rutherford, B. (2008). Cognition and suicide: Two decades of progress. *International Journal of Cognitive Therapy, 1,* 47-68.

Enders, C. K. (2001). A primer on maximum likelihood algorithms available for use with missing data. *Structural Equation Modeling*, *8*(1), 128-141.

Finch, J. F., Okun, M. A., Pool, G. J., & Ruehlman, L. S. (1999). A comparison of the influence of conflictual and supportive social interactions on psychological distress. *Journal Of Personality*, *67*(4), 581-622.

Finch, J. F., & Graziano, W. G. (2001). Predicting depression from temperament, personality, and patterns of social relations. *Journal Of Personality*, *69*(1), 27-55.

Fleiss, J. L. (1981). *Statistical methods for rates and proportions* (2nd ed.). New York: John Wiley.

Frans, Ö., Rimmö, P. A., Åberg, L. L., & Fredrikson, M. M. (2005). Trauma exposure and post-traumatic stress disorder in the general population. *Acta Psychiatrica Scandinavica*, *111*(4), 291-299.

Frazier, P., Anders, S., Perera, S., Tomich, P., Tennen, H., Park, C., & Tashiro, T. (2009). Traumatic events among undergraduate students: Prevalence and associated symptoms. *Journal Of Counseling Psychology*, *56*(3), 450-460.

Frazier, P., Conlon, A., & Glaser, T. (2001). Positive and negative life changes following sexual assault. *Journal of Consulting and Clinical Psychology, 69*, 1048–1055.

Frazier, P., Tennen, H., Gavian, M., Park, C., Tomich, P., and Tashiro, T. (2009). Does self-reported posttraumatic growth reflect genuine positive change? *Psychological Science: Research, Theory, and Application in Psychology and Related Sciences, 20,* 912-919.

Gray, M. J., Litz, B. T., Hsu, J. L., & Lombardo, T. W. (2004). Psychometric properties of the Life Events Checklist. *Assessment, 11*, 330 –341.

Gutierrez, P. M., Osman, A., Kopper, B. A., Barrios, F. X., & Bagge, C. L. (2000). Suicide risk assessment in a college student population. *Journal Of Counseling Psychology*, *47*(4), 403-413.

Helgeson, V. S., Reynolds, K. A., & Tomich, P. L. (2006). A meta-analytic review of benefit finding and growth. *Journal Of Consulting And Clinical Psychology*, *74*(5), 797-816.

Hingson, R., Heeren, T., Winter, M., & Wechsler, H. (2005). Magnitude of alcohol-related mortality and morbidity among U.S. college students ages 18-24: Changes from 1998 to 2001. *Annual Review Of Public Health*, *26,* 259-279.

Hirsch, J. K., & Barton, A. L. (2011). Positive social support, negative social exchanges, and suicidal behavior in college students. *Journal Of American College Health*, *59*(5), 393-398.

Hirsch, J. K., & Ellis, J. B. (1996). Differences in life stress and reasons for living among college suicide ideators and non-ideators. *College Student Journal*, *30*(3), 377-386.

Hirsch, J. K. & Ellis, J. B. (1998). Reasons for living in homosexual and heterosexual young adults. *Archives of Suicide Research, 4*, 243–248.

Ho, S. M. Y., Chan, C. L. W., & Ho, R. T. H. (2004). Posttraumatic growth in Chinese cancer survivors. *Psycho-Oncology, 13,* 377–389.

Ickovics, J. R., Meade, C. S., Kershaw, T. S., Milan, S., Lewis, J. B., & Ethier, K. A. (2006). Urban teens: trauma, posttraumatic growth, and emotional distress among female adolescents. *Journal of Consulting Clinical Psychology, 74*, 841–850.

Joiner, T. E. (2005). Why people die by suicide. Cambridge, MA: Harvard University Press.

Joseph, S. (2008). Positive psychological perspective on posttraumatic stress; an integrative psychosocial framework. In S. Joseph & P. Linley (Eds.),*Trauma, Recovery, and Growth: Positive Psychological Perspectives on Posttraumatic Stress* (pp. 3-20). Hoboken, NJ: John Wiley & Sons.

Joseph, S. (2011). *What doesn't kill us: The new psychology of posttraumatic growth*. New York, NY: Basic Books.

Joseph, S., & Linley, P. (2006). Growth following adversity: Theoretical perspectives and implications for clinical practice. *Clinical Psychology Review*, *26*(8), 1041-1053.

Joseph, S., & Linley, P.A. (Eds.). (2008). *Trauma, recovery, and growth: Positive psychological perspectives on posttraumatic stress*. Hoboken, NJ: John Wiley & Sons.

Joseph, S., & Williams, R. (2005). Understanding posttraumatic stress: Theory, reflections, context, and future. *Behavioral and Cognitive Psychotherapy, 33,* 423-441.

Kachur, S., Potter, L., Powell, K., & Rosenberg, M. (1995). Suicide: Epidemiology, prevention, treatment. *Adolescent Medicine: State of the Art Review*, *6*(2), 171-182.

Kessler, R. C., Galea, S., Jones, R. T., and Parker, H. A. (2006). Mental illness and suicidality after Hurricane Katrina. *Bulletin of the World Health Organization, 84,* 930-939.

Knott, E. C, & Range, L. M. (1998). Content analysis of previously suicidal college students' experiences. *Death Studies, 22,* 171-180.

Konick, L. C., & Gutierrez, P. M. (2005). Testing a Model of Suicide Ideation in College Students. *Suicide And Life-Threatening Behavior*, *35*(2), 181-192.

Kubany, E. (2004). *Traumatic Life Events Questionnaire and PTSD Screening and Diagnostic Scale.* Los Angeles, CA: Western Psychological Services.

Kubany, E., Haynes, S., Leisen, M., Owens, J., Kaplan, A., Watson, S., et al. (2000). Development and preliminary validation of a brief broad-spectrum measure of trauma exposure: The Traumatic Life Events Questionnaire. *Psychological Assessment, 12*, 210-224.

Lamis, D. A., & Malone, P. S. (2011). Alcohol-related problems and risk of suicide among college students: The mediating roles of belongingness and burdensomeness. *Suicide And Life-Threatening Behavior*, *41*(5), 543-553.

Langhinrichsen-Rohling, J., Arata, C., Bowers, D., O'Brien, N., & Morgan, A. (2004). Suicidal behavior, negative affect, gender, and self-reported delinquency in college students. *Suicide and Life-Threatening Behavior, 34,* 255-266.

Langhinrichsen-Rohling, J., & Lamis, D. A. (2008). Current suicide proneness and past suicidal behavior in adjudicated adolescents. *Suicide and Life-Threatening Behavior,38,* 415-426.

Larose, S., & Boivin, M. (1998). Attachment to parents, social support expectations, and socioemotional adjustment during the high school-college transition. *Journal Of Research On Adolescence*, *8*(1), 1-27.

Lehman, D. R., Davis, C. G., Delongis, A., Wortman, C. B., Bluck, S., Mandel, D. R., & Ellard, J. H. (1993). Positive and negative life changes following bereavement and their relations to adjustment. *Journal of Social and Clinical Psychology, 12,* 90-112.

Lev-Wiesel, R., & Amir, M. (2003). Posttraumatic growth among Holocaust child survivors. *Journal of Loss and Trauma, 8*, 229–237.

Linehan, M. M., & Nielsen, S. L. (1981). *Suicidal Behaviors Questionnaire (SBQ).* Unpublished manuscript.

Linley, P.A., & Joseph, S. (2004). Positive change following trauma and adversity: A review. *Journal of Traumatic Stress, 17*, 11–21.

Linley, P.A., Joseph, S., & Goodfellow, B. (2008). Positive changes in outlook following trauma and their relationship to subsequent posttraumatic stress, depression and anxiety. *Journal of Social and Clinical Psychology, 27*, 877–891.

Manne, S., Ostroff, J., Winkel, G., Goldstein, L., Fox, K., and Grana, G. (2004). Posttraumatic growth after breast cancer: Patient, partner, and couple perspectives. *Psychosomatic Medicine, 66,* 442-452.

Meyerson, D. A., Grant, K. E., Carter, J., & Kilmer, R. P. (2011). Posttraumatic growth among children and adolescents: A systematic review. *Clinical Psychology Review*, *31*(6), 949-964.

Milam, J. E., Ritt-Olson, A., & Unger, J. B. (2004). Posttraumatic growth among adolescents. *Journal of Adolescent Research, 19*, 192–204.

Nock, M. K., & Kessler, R. C. (2006). Prevalence of and risk factors for suicide attempts versus suicide gestures: Analysis of the National Comorbidity Survey. *Journal of Abnormal Psychology, 115*(3), 616-623.

Osman, A., Bagge, C. L., Gutierrez, P. M., Konick, L. C., Kopper, B. A., & Barrios, F. X. (2001). The Suicidal Behaviors Questionnaire--Revised (SBQ-R): Validation with clinical and nonclinical samples. *Assessment*, *8*(4), 443-454.

Panagioti, M., Gooding, P. A., Dunn, G., & Tarrier, N. (2011). Pathways to suicidal behavior in posttraumatic stress disorder. *Journal Of Traumatic Stress*, *24*(2), 137-145.

Panagioti, M., Goodig, P., & Tarrier, N. (2009). Post-traumatic stress disorder and suicidal behavior: A narrative review. *Clinical Psychology Review, 29*, 471–482.

Range, L. M., & Antonelli, K. (1990). A factor analysis of six commonly used instruments associated with suicide using college students. *Journal of Personality Assessment, 55*, 804 - 811.

Richardson, A. S., Bergen, H. A., Martin, G., Roeger, L., & Allison, S. (2005). Perceived Academic Performance as an Indicator of Risk of Attempted Suicide in Young Adolescents. *Archives Of Suicide Research*, *9*(2), 163-176.

Rohde, P., Lewinsohn, P. M., Langhinrichsen-Rohling, J., & Langford, R. (2004). *Life Attitudes Schedule: Short Form (LAS-SF): A risk assessment for suicidal and life-threatening behaviors* [Technical Manual]. Toronto, ON: Multi-Health Systems.

Rohde, P., Seeley, J., Langhinrichsen-Rohling, J., & Rohling, M. (2003). The Life Attitudes Schedule-Short Form: Psychometric properties and correlates of adolescent suicide proneness. *Suicide and Life-Threatening Behavior, 33,* 249-260.

Rudd, M., Goulding, J., & Bryan, C. J. (2011). Student veterans: A national survey exploring psychological symptoms and suicide risk. *Professional Psychology: Research And Practice*, *42*(5), 354-360.

Sareen, J., Houlahan, T., Cox, B. J., & Asmundson, G. J. G. (2005). Anxiety disorders associated with suicidal ideation and suicide attempts in the national comorbidity survey. Journal of Nervous and Mental Disease, 193, 450–454.

Schwartz, A. J. (2006). College student suicide in the United States: 1990-1991 through 2003-2004. *Journal of American College Health, 54,* 341-352.

Scales, P.C., Benson, P.L., Leffert, N., & Blyth,D.A. (2000). Contribution of developmental assets to the prediction of thriving among adolescents. *Applied Developmental Science, 4*(1), 27–46.

Sheikh, A. I., & Marotta, S. A. (2005). A cross validation study of the Post Traumatic Growth Inventory. *Measurement and Evaluation in Counseling and Development, 38*, 66–77.

Shirley, L. & Rosén, L. A. (2010). *The college adjustment questionnaire: A measure of student's academic, social, and emotional adjustment to the college environment.* Unpublished master's thesis, Colorado State University, Fort Collins.

Shirley, L. & Rosén, L. A. (2010a). *The childhood maltreatment questionnaire: A measure of abuse and neglect.* Unpublished master's thesis, Colorado State University, Fort Collins.

Suicide Prevention Resource Center. (2004). *Promoting mental health and preventing suicide in college and university settings.* Newton, MA: Education Development Center.

Tabachnick, B., & Fidell, L. (2007). *Using multivariate statistics (5th ed.).* Boston, MA: Allyn & Bacon/Pearson Education.

Tarrier, N., & Gregg, L. (2004). Suicide risk in civilian PTSD patients. Predictors of suicide ideation, planning and attempts. *Social Psychiatry and Psychiatric Epidemiology, 39*, 655–661.

Tedeschi, R. G., & Calhoun, L. G. (1995). *Trauma and transformation: Growing in the aftermath of suffering.* Thousand Oaks, CA: Sage.

Tedeschi, R. G., & Calhoun, L. G. (1996). The posttraumatic growth inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress, 9,* 455–471.

Tedeschi, R. G., & Calhoun, L. G. (2004). Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychological Inquiry, 15*, 1–18.

Tedeschi, R. G., Park, C. L., & Calhoun, L. G. (1998). Posttraumatic growth: Conceptual issues. In R. G. Tedeschi, C. L. Park, & L. G. Calhoun (Eds.), *Posttraumatic growth: Positive changes in the aftermath of crisis* (pp. 1−22). Mahwah, NJ: Erlbaum.

Triplett, K. N., Tedeschi, R. G., Cann, A., Calhoun, L. G., & Reeve, C. L. (2012). Posttraumatic growth, meaning in life, and life satisfaction in response to trauma. *Psychological Trauma: Theory, Research, Practice, And Policy*, *4*(4), 400-410.

Von-Cieve, E., Jemelka, R., & Trupin, E. (1991). Reliability of psychological test scores for offenders entering a state prison system. *Criminal Justice and Behavior. 18,* 159-165.

Vrana, S., & Lauertebach, D. (1994). Prevalence of traumatic events and post-traumatic psychological symptoms in a nonclinical sample of college students. *Journal of Traumatic Stress*, *7*, 289– 302.

Weathers, F. W., & Keane, T. M. (2007). The Criterion A problem revisited: Controversies and challenges in defining and measuring psychological trauma. *Journal of Traumatic Stress, 20*, 107–121.

Westefeld, J. S., Cardin, D., & Deaton, W. C. (1992). Development of the college student reasons for living inventory. *Suicide and Life Threatening Behavior, 22*, 442–452.

Westphal, M., & Bonanno, G. A (2007). Posttraumatic growth and resilience to trauma: Different sides of the same coin or different coins? *Applied Psychology: An International Review*, 56, 417-427.

Yu, X., Lau, J. F., Zhang, J., Mak, W. S., Choi, K., Lui, W. S., & ... Chan, E. Y. (2010). Posttraumatic growth and reduced suicidal ideation among adolescents at month 1 after the Sichuan Earthquake. *Journal Of Affective Disorders*, *123*(1-3), 327-331.

Zoellner, T., & Maercker, A. (2006). Posttraumatic growth in clinical psychology--A critical review and introduction of a two component model. *Clinical Psychology Review*, *26*(5), 626-653.

Appendix A

Trauma History Survey

Have you ever experienced any of the following events? (Check all that apply)

1) Death of a close loved one _____

- If yes, rate the severity of this event in terms of personal distress (circle number).

    1 – *Not at all*   **2**– *Very small*   **3** – *Small*   **4** – *Moderate*   **5**- *Extreme*

- If yes, how many times have you experienced this? _____

- When was your most recent experience of this event (month/year)? _____

2) Very serious medical problem _____

- If yes, rate the severity of this event in terms of levels of distress (circle number).

    1 – *Not at all*   **2**– *Very small*   **3** – *Small*   **4** – *Moderate*   **5**- *Extreme*

- If yes, how many times have you experienced this? _____

- When was the most recent experience of this event (month/year)? _____

3) Close friend, significant other, or family member experienced a serious medical condition ___

- If yes, rate the severity of this event in terms of levels of distress (circle number).

    1 – *Not at all*   **2**– *Very small*   **3** – *Small*   **4** – *Moderate*   **5**- *Extreme*

- If yes, how many times have you experienced this? _____

- When was your most recent experience of this event (month/year)? _____

4) Accident that led to serious injury to yourself or someone close to you _____

- If yes, rate the severity of this event in terms of levels of distress (circle number).

    1 – *Not at all*   **2**– *Very small*   **3** – *Small*   **4** – *Moderate*   **5**- *Extreme*

- If yes, how many times have you experienced this? _____

- When was your most recent experience of this event (month/year)? _____

5) Place of residence being damaged by fire or other natural causes _____

- If yes, rate the severity of this event in terms of levels of distress (circle number).

    1 – *Not at all*   **2**– *Very small*   **3** – *Small*   **4** – *Moderate*   **5**- *Extreme*

- If yes, how many times have you experienced this? _____

- When was your most recent experience of this event (month/year)? _____

6) Endured a divorce _____

- If yes, rate the severity of this event in terms of levels of distress (circle number).

  1 – *Not at all*   **2**– *Very small*   **3** – *Small*   **4** – *Moderate*   **5**- *Extreme*

- If yes, how many times have you experienced this? _____

- When was your most recent experience of this event (month/year)? _____

7) Physically assaulted _____

- If yes, rate the severity of this event in terms of levels of distress (circle number).

  1 – *Not at all*   **2**– *Very small*   **3** – *Small*   **4** – *Moderate*   **5**- *Extreme*

- If yes, how many times have you experienced this? _____

- When was your most recent experience of this event (month/year)? _____

8) Sexually assaulted _____

- If yes, rate the severity of this event in terms of levels of distress (circle number).

  1 – *Not at all*   **2**– *Very small*   **3** – *Small*   **4** – *Moderate*   **5**- *Extreme*

- If yes, how many times have you experienced this? _____

- When was your most recent experience of this event (month/year)? _____

9) Victim of a crime such as robbery or mugging _____

- If yes, rate the severity of this event in terms of levels of distress (circle number).

  1 – *Not at all*   **2**– *Very small*   **3** – *Small*   **4** – *Moderate*   **5**- *Extreme*

- If yes, how many times have you experienced this? _____

- When was your most recent experience of this event (month/year)? _____

10) Being stalked _____

- If yes, rate the severity of this event in terms of levels of distress (circle number).

  1 – *Not at all*   **2**– *Very small*   **3** – *Small*   **4** – *Moderate*   **5**- *Extreme*

- If yes, how many times have you experienced this? _____

- When was your most recent experience of this event (month/year)? _____

Appendix B

Posttraumatic Growth Inventory

Before answering the following questions, focus on traumatic events that have occurred in your life.

Please indicate the general experience you are thinking of:
___ Loss of a loved one
___ Chronic or acute illness
___ Violent or abusive crime
___ Accident or injury
___ Disaster
___ Job loss
___ Financial hardship
___ Career or location change/move
___ Change in family responsibility
___ Divorce
___ Retirement
___ Combat
___ Other

Time lapsed since last event occurred:
___ 6 months - 1 year
___ 1 - 2 years
___ 2 - 5 years
___ More than 5 years

Indicate for the statement below the degree to which the change reflected in the question is true in your life as a result of your crisis, using the following scale.

0 = I did not experience this change as a result of my crisis.
1 = I experienced this change to a very small degree as a result of my crisis.
2 = I experienced this change to a small degree as a result of my crisis.
3 = I experienced this change to a moderate degree as a result of my crisis.
4 = I experienced this change to a great degree as a result of my crisis.
5 = I experienced this change to a very great degree as a result of my crisis.

1. I changed my priorities about what is important in life.
2. I have a greater appreciation for the value of my own life.
3. I developed new interests.
4. I have a greater feeling of self-reliance.
5. I have a better understanding of spiritual matters.
6. I more clearly see that I can count on people in times of trouble.
7. I established a new path for my life.
8. I have a greater sense of closeness with others.
9. I am more willing to express my emotions.
10. I know better that I can handle difficulties.

11. I am able to do better things with my life.
12. I am better able to accept the way things work out.
13. I can better appreciate each day.
14. New opportunities are available which wouldn't have been otherwise.
15. I have more compassion for others.
16. I put more effort into my relationships.
17. I am more likely to try to change things which need changing.
18. I have a stronger religious faith.
19. I discovered that I'm stronger than I thought I was.
20. I learned a great deal about how wonderful people are.
21. I better accept needing others.

In your own words, please describe how you feel your life changed as a result of the traumatic event(s) you experienced:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Appendix C

Suicidal Behaviors Questionnaire-Revised (SBQ-R)

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? (check one only)
___Never
___It was just a brief passing thought
___I have had a plan at least once to kill myself but did not try to do it.
___I have had a plan at least once to kill myself and really wanted to die
___I have attempted to kill myself, but did not want to die
___I have attempted to kill myself, and really hoped to die

2) How often have you thought about killing yourself in the past year? (check one only)
___Never
___Rarely (1 time)
___Sometimes (2 times)
___Often (3-4 times)
___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?
(check one only)
___No
___Yes, at one time, but did not really want to die
___Yes, at one time, and really wanted to die
___Yes, more than once, but did not want to do it
___Yes, more than once, and really wanted to do it

4) How likely is it that you will attempt suicide someday? (check one only)
___Never
___No chance at all
___Rather unlikely
___Unlikely
___Likely
___Rather likely
___Very Likely

Appendix D

Life Attitudes Schedule-Short Form (LAS-SF)

1) I take care of my possessions so that they will last as long as possible. (True or False)
2) I choose to listen to music that has a death related theme. (e.g., some Heavy Metal music like Ozzy Osbourne's "Suicide Solution.") (True or False)
3) I try to eat foods that are good for me. (True or False)
4) I have gone on occasional drinking sprees. (True or False)
5) I avoid unnecessary risks. (True or False)
6) At least once a month I have driven or have been driven more than 20 miles per hour over the speed limit. (True or False)
7) I rarely do things that violate my standards. (True or False)
8) I spend a lot of time doing things that are unproductive or unfulfilling. (True or False)
9) I look forward to a long life. (True or False)
10) I enjoy thinking about death. (True or False)
11) I enjoy eating "right". (True or False)
12) I don't really care much about what I eat (e.g., fried foods, sugar, etc.) (True or False)
13) I enjoy spending time with people who are cautious and avoid unnecessary risks. (True or False)
14) Sometimes I feel so frustrated that I would like to hit my fist against the wall (or do something that could hurt me). (True or False)
15) I feel good because my activities are meaningful and have purpose. (True or False)
16) I wish that I was someone else. (True or False)
17) I expect to have a long and interesting life. (True or False)
18) Killing myself would solve many of my problems. (True or False)
19) It is important to brush one's teeth after every meal. (True or False)
20) The danger of smoking cigarettes has been exaggerated. (True or False)
21) The chance of my being injured in an accident in the next year is very low (less than 10%). (True or False)
22) Sometimes I think about injuring myself (e.g., smashing my fist into a window). (True or False)
23) I believe that I am a good person. (True or False)
24) I think that I am worthless. (True or False)

Appendix E

College Adjustment Questionnaire (CAQ)

Listed below are some statements that describe how college students might be feeling about their experience with college. **Please use the rating scale below to indicate how accurately each statement describes you** *at this point in time.* Please read each statement carefully, and then circle the number that corresponds to how accurately the statement describes you.

Response Options
1: Very Inaccurate
2: Moderately Inaccurate
3: Neither Inaccurate nor Accurate
4: Moderately Accurate
5: Very Accurate

	Very Inaccurate				Very Accurate
Right now:					
1. I am succeeding academically	1	2	3	4	5
2. I don't have as much of a social life as I would like	1	2	3	4	5
3. I feel that I am doing well emotionally since coming to college	1	2	3	4	5
4. I am happy with my social life at college	1	2	3	4	5
5. I am doing well in my classes	1	2	3	4	5
6. I am happy with how things have been going in college	1	2	3	4	5
7. I am happy with the grades I am earning in my classes	1	2	3	4	5
8. I feel that I am emotionally falling apart in college	1	2	3	4	5
9. I have had a hard time making friends since coming to college	1	2	3	4	5
10. I am as socially engaged as I would like to be	1	2	3	4	5
11. I have felt the need to seek emotional counseling since coming to college	1	2	3	4	5
12. I am meeting my academic goals	1	2	3	4	5
13. I have performed poorly in my classes since starting college	1	2	3	4	5
14. I am satisfied with my social relationships	1	2	3	4	5

Appendix F

Childhood Maltreatment Questionnaire (CMQ)

Listed below are statements that describe experiences with maltreatment that people may have had when they were growing up. Some of the experiences can be very common and others not as common. **Please indicate how often each of the following occurred while you were a child**. So that you can describe your experiences in an honest manner, your responses will be kept in absolute confidence. Please read each statement carefully, and then circle the number that best describes your experience.

Response Options
1: Never
2: Rarely
3: Sometimes
4: Often
5: Very Often

When I was a child:	Never				Very Often
1. I was touched in a sexual way by a person older than me	1	2	3	4	5
2. One of my caregivers said degrading things to me	1	2	3	4	5
3. I was physically hurt by a parent/guardian	1	2	3	4	5
4. A parent/guardian refused or failed to provide the affection I needed	1	2	3	4	5
5. I felt safe with all of my caregivers	1	2	3	4	5
6. I was emotionally maltreated by a parent/guardian	1	2	3	4	5
7. I was hit hard enough by a parent/guardian to leave marks on my skin	1	2	3	4	5
8. I was sexually molested by a person older than me	1	2	3	4	5
9. My emotional needs were not met by a parent/guardian	1	2	3	4	5
10. I could trust that none of my caregivers would intentionally hurt me	1	2	3	4	5
11. I was sexually abused as a child	1	2	3	4	5
12. One of my caregivers physically abused me	1	2	3	4	5
13. I went hungry because a parent/guardian did not feed me	1	2	3	4	5
14. A parent/guardian left me by myself even though there should have been someone watching me	1	2	3	4	5
15. A parent/guardian emotionally abused me	1	2	3	4	5
16. I experienced non-accidental physical injury from a parent/guardian	1	2	3	4	5
17. I was coerced to touch a person older than me in an inappropriate sexual way	1	2	3	4	5
18. One of my caregivers failed to provide adequate emotional care for me	1	2	3	4	5
19. All of my caregivers were "there for me" when I was growing up	1	2	3	4	5
20. I was emotionally neglected by a parent/guardian	1	2	3	4	5
21. I was coerced into unwanted sexual behavior	1	2	3	4	5
22. One of my caregivers did not bathe me, even when I was clearly dirty	1	2	3	4	5
23. A caregiver did not dress me appropriately for the weather	1	2	3	4	5

Appendix G

Demographic Data Form

1) What is your age? ___ years old

2) What is your gender? (please choose one)
   ___ Male
   ___ Female
   ___ Transgender
   ___ I prefer not to asnwer

3) What race/ethnicity do you identify with the most? (please choose one)
   ___ African American/Black
   ___ Alaska Native
   ___ American Indian/Native American
   ___ Asian American
   ___ Caucasian/White
   ___ Hawaiian/Pacific Islander
   ___ Latino or Hispanic
   ___ Middle Eastern American
   ___ Other (Please specify: _____)

4) Are you religiously affiliated?
   ___ No
   ___ Yes

Appendix H

Consent to Participate in a Research Study
Colorado State University

TITLE OF STUDY
Perceived Changes Following Adversity

PRINCIPAL INVESTIGATOR
Lee A. Rosen, Ph.D., Psychology Department
207 Behavioral Sciences Building, (970) 491-5925
Lee.Rosen@colostate.edu

CO-PRINCIPAL INVESTIGATOR
Kelly Sheline, Doctoral Student, Psychology Department
338 Behavioral Sciences Building, (970) 658-0949
kellysheline@gmail.com

WHY AM I BEING INVITED TO TAKE PART IN THIS RESEARCH?
We are interested in learning more about how individuals cope after a negative life event. Since we are interested in college students, we would appreciate your help.

WHO IS DOING THE STUDY?
The study is being conducted by doctoral student, Kelly Sheline, under the guidance of her advisor, Lee Rosen, Ph.D.

WHAT IS THE PURPOSE OF THIS STUDY?
The purpose of the study is to better understand the positive changes sometimes experienced as a result of a struggle with challenging life events.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?
You will be asked to complete the study on-line at a time and place that is convenient for you. Participation will take approximately 30 minutes of your time.

WHAT WILL I BE ASKED TO DO?

You will be asked to complete a few questionnaires regarding your experience with negative life events, changes that occurred as a result of these events, suicidal ideation, behavior, and risk factors, adjustment to college, and childhood maltreatment (sexual, physical, and emotional abuse). The surveys include some questions that may seem sensitive or personal. You are free to skip any question or item for any reason.

ARE THERE REASONS WHY I SHOULD NOT TAKE PART IN THIS STUDY?
Participation requires that you are at least 18 years of age and currently enrolled in college courses.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?

Due to the sensitive nature of some of the questionnaires, there is a slight risk of emotional distress associated with this study. If any of the questions cause you emotional distress, please feel free to contact Kelly Sheline, M.Ed. at the CSU Health Network-Counseling Services at (970) 491-3649 or call (970) 491-6053 to speak to a CSU-Health Network counselor.

ARE THERE ANY BENEFITS FROM TAKING PART IN THIS STUDY?
There are no direct benefits from your participation in this study, although it will help us to better understand personal growth after negative life events.

DO I HAVE TO TAKE PART IN THE STUDY?
Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled.

WHO WILL SEE THE INFORMATION THAT I GIVE?
We will keep private all research records that identify you, to the extent allowed by law.

This study is anonymous. We are not obtaining your name or other identifiable data from you, so no one, not even members of the research team, will be able to identify you or your data. Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered.

WILL I RECEIVE ANY COMPENSATION FOR TAKING PART IN THIS STUDY?
You will receive 1/2 experimental credit for your participation today.

WHAT HAPPENS IF I AM INJURED BECAUSE OF THE RESEARCH?
The Colorado Governmental Immunity Act determines and may limit Colorado State University's legal responsibility if an injury happens because of this study. Claims against the University must be filed within 180 days of the injury.

WHAT IF I HAVE QUESTIONS?
Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions about the study, you can contact the investigator, Dr. Lee Rosén at 970-491-5925 or Kelly Sheline at 970-658-0949. If you have any questions about your rights as a volunteer in this research, contact Janell Barker, Human Research Administrator at 970-491-1655. You are free to print out a copy of this consent form to take with you for your records.

This consent form was approved by the CSU Institutional Review Board for the protection of human subjects in research on October 3, 2012.

If you have read and understood the above information and consent to participating in the study, please click the "I consent" button to indicate your consent to participate in the study.

Appendix G

Debriefing Information

Objective of Research

This study is concerned with the interaction between exposure to negative life events, positive benefits sometimes experienced as a result of these events (posttraumatic growth), and current psychological functioning. Previous studies have suggested that perceived growth after traumatic life experiences may prevent the development of suicidal thoughts and behavior. Relevant sections of your PSY 100 textbook include pages 484-485 and 502-503.

General Information

Your participation is greatly appreciated and will help psychologists to better understand the relationship between traumatic experiences, posttraumatic growth, and psychological functioning. If you would like to receive a report of this research when it is completed (or a summary of the findings), please contact Kelly Sheline, M.Ed. at kellysheline@gmail.com or Lee A. Rosén, Ph.D. at Lee.Rosen@Colostate.edu.

Safety

If your participation in this study has contributed to any emotional distress or significant discomfort, you may contact Dr. Susan MacQuiddy, Director of Counseling Services at CSU-Health Network at 970-491-6496. In case of emergency or crisis, on-call counselors are also available 24/7 and can be reached at 970-491-7111. For a nationwide crisis hotline, please call 1-800-273-8255. Finally, please contact the research investigators directly for assistance and additional debriefing if you experience any distress as a result of this study. Kelly Sheline can be reached at (970) 658-0949 or kellysheline@gmail.com. To contact Dr. Lee Rosén, call (970) 491-4925 or send an email to Lee.Rosen@Colostate.edu. If you have any questions about your rights as a volunteer in this research, contact Janell Barker, Human Research Administrator, at 970-491-1655.

Confidentiality

All information collected in today's study will be confidential, and there will be no way of identifying your responses in the data archive. Identifying the responses of individual participants is not important. Instead, this research will be focused on examining general patterns that emerge when the data are aggregated together.

Please do not disclose research procedures and hypotheses to anyone who might participate in this study between now and the end of data collection, as this could affect the results of the study.

Thank you for your participation!