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UNIVERSITY OF CALIFORNIA

Santa Barbara

Exploring Pathways to Posttraumatic Growth

A dissertation submitted in partial satisfaction of the  
requirements for the degree Doctor of Philosophy  
in Counseling, Clinical and School Psychology

by

Kathryn Z. Spaventa-Vancil

Committee in charge:

Professor Collie W. Conoley, Chair

Professor Melissa Morgan-Consoli

Professor Maryam Kia-Keating

September 2015

The dissertation of Kathryn Z. Spaventa-Vancil is approved.

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Collie W. Conoley, Committee Chair

June 2014

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by

Kathryn Z. Spaventa-Vancil

## ACKNOWLEDGEMENTS

Thank you first and foremost to my wonderful parents. They instilled a love of learning and a curiosity about the world in me at a young age, and have each inspired me with their educational paths. They have always encouraged me to pursue my dreams and find my passion in life. Thank you to my loving husband who patiently and selflessly has supported me throughout graduate school, and believes in me when I forget to do so for myself. A very big thank you to my wonderful and brilliant advisor, Collie, whose kindness, humor, and wisdom has enabled me to grow and flourish as both a researcher and a clinician. I could not have dreamt of a better fit with an advisor. Thank you to my committee as a whole, Collie, Maryam and Melissa, for your guidance and expertise throughout this process. I have learned so much from each of you. Thank you to Professor Joseph Fracchia, my undergraduate advisor and forever mentor. He taught me that fears should not be obstacles to success. Thank you to my loving brother, sister, grandparents, mother/father-in-law and friends for their endless support. Thank you to my faithful dog, Bailey, for reminding me to laugh and play. Lastly, thank you to UCSB's Social Science Survey Center and to Dr. Paolo Gardinalli for the financial support and implementation of my survey, without which this dissertation would not have been possible.

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JUNE 2014

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Doctor of Philosophy, Counseling, Clinical & School Psychology, *APA Accredited*
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Master of Arts, Counseling Psychology
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  - Work within an interdisciplinary office comprised of mental health professionals and medical health professionals.
  - Maintain one hour a week on schedule for crisis and drop-in appointments.
  - Utilize community resources to find referral or additional services for clients, many of whom are low-income or international students.
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- Conduct phone screens for prospective clients while managing distress over the phone and providing appropriate referrals if client is deemed inappropriate for clinic services.
- Review trainees' progress and intake notes.
- Work with Clinic Administrator to ensure that clinic technology is fully operational; trouble-shooting when necessary.
- Guide implementation of Point and Click (PnC), electronic counseling application, by training and assisting clinic users, creating policies, procedures and documentation.
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- Conducted classroom and playground student observations.
- Worked collaboratively with teachers, school staff and parents to best meet the students' needs.
- Administered, scored and discussed the BASC-2 Adaptability subscale, ORS/CORS, and SRS, to track progress on goals and assess the family's satisfaction with counseling. Team created assessments (Family Functioning Scale - Adapted, Child Outcome Scale, Parent Outcome Scale) were also administered, scored and discussed to track outcome and progress.
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*Sept 2011-June 2012*

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- Utilized assessment and conceptual skills to formulate appropriate goals and a time frame for counseling.
- Conducted intakes. Wrote intake reports and presented cases at weekly Case Assignment Team Meetings.
- Utilized campus resources to connect students to additional support.
- Process-observer for undergraduate therapy group *Coping with Life*. Took session notes, summarized and reported notes to group participants and two group leaders each week.

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- Co-facilitated one workshop and solely lead another workshop on developing career readiness skills.
- Administered and reported career assessment results (Strong Interest Inventory, Myers-Briggs Type Indicator) to clients.

*Sept 2010-June 2011*

***Student Clinician***

**Hosford Counseling & Psychological Services, UCSB**

Santa Barbara, California

Supervised by: Collie W. Conoley, Ph.D.

- Provided weekly psychotherapy for individuals, couples and families.
- Conducted intakes and administered the Mini-Mental Status Exam, Brief Symptom Inventory, Quality of Life Inventory, Beck Depression Inventory, Beck Anxiety Inventory, Multigroup Ethnic Identity Measure.
- Co-led a 6-week Positive Psychology psycho-educational group for undergraduates.
- Gained experienced with insurance billing.

*Aug 2009-June 2010*

***Student Clinician***

**MDS Counseling Center (Most Precious Blood Elementary)**

Denver, Colorado

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*School Therapist:*

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- Incorporated play therapy/sand-play therapy into treatment.
- Worked collaboratively with parents and teachers.
- Provided referrals when necessary.

*Intern Therapist:*

- Carried a caseload of 5-7 adult low-income clients.
- Completed treatment plans and routine evaluations for each client.
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***Student Clinician***

**Alternatives to Family Violence**

Denver, Colorado

Supervised by: Velma Howard, M.A., LPC

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- Served as an advocate to find appropriate and needed services for clients.
- Coordinated care for clients with other health care professionals.

*Jan 2009-June 2009*

***Student Clinician***

**Counseling and Educational Services Clinic, Morgridge College of Education at the University of Denver**

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- Explore the variables of positive affect, rumination, social support, and trauma in relation to posttraumatic growth; based on gaps in literature on posttraumatic growth.
- Design assessment battery based on literature review.
- Coordinate implementation of research study with on-campus Social Science Survey Center and co-create a budget for project.
- Apply for research grant through Social Science Survey Center.

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- Worked as part of research team to gather and analyze data.
- Helped in the preparation of a written report with statistical results.

*Sept 2009-June 2010* ***Research Assistant***

**Dr. Patrick Sherry, University of Denver**

Denver, Colorado

- Communicated directly with fire chief to coordinate data collection and meetings.

- Supervised data collection and was responsible for training in data collection for a group of 3 doctoral and master's students.
- Helped to analyze data and turn into an oral presentation at a state psychological conference and for the fire chief and associates.

*March 2009-Dec 2009*

***Research Assistant***

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- Reviewed and edited manuscripts for publication.
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*Jan 2009-Dec 2009*

***Research Assistant***

**Dr. Michael Faragher, University of Denver**

Denver, Colorado

- Archival data analysis to study gender trends in a sample of problem gambling clients.
- Coded and analyzed data as part of a research team.
- Prepared and co-presented a presentation on problem gambling on college campuses for a college health conference.

*March 2009-Aug 2009*

***Research Coordinator***

**National Center for Intermodal Transportation (NCIT),  
University of Denver**  
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- Organized and completed data collection.
- Provided administrative assistance to director of NCIT, Dr. Patrick Sherry.

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***Undergraduate Student Researcher***

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**TEACHING EXPERIENCE**

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- Examined department curriculum to make appropriate changes based on student request and credentialing/licensing requirements.
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### ***Education Committee Member***

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- Helped to facilitate communication among family psychology educators, supervisors, researchers, and practitioners at the 120<sup>th</sup> Annual APA convention in Orlando in August, 2012.

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Jan-March 2006/7 Dean's List, University of Oregon

## PROFESSIONAL PRESENTATIONS

**Spaventa-Vancil, K. Z.** & Conoley, C. W. (August 2<sup>nd</sup>, 2012). Catching Children Being Virtuous: A Positive Psychology Family Study. Poster presentation for Division 17's Positive Psychology Poster Session at the 120<sup>th</sup> Annual Convention of the American Psychological Association.

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Faragher, J.M., Soberay, A., Meyer, R.J., Rudersdorf, A.A., Wang, C., **Spaventa, K.Z.**, Cannon, C., & Reeder, S. (April 18, 2010). Gender Differences: At a university problem gambling treatment center. Poster presentation for 2010 *Rocky Mountain Psychological Association Annual Conference*; Denver, Colorado.

Faragher, J.M., Meyer, R.J., Rudersdorf, A.A., Wang, C., **Spaventa, K.Z.**, & Soberay, A. (October 3, 2009). No Problem with College Student Gambling?: Don't Bet on It. Oral presentation for *Rocky Mountain College Health Association 2009 Conference*; Denver, Colorado.

**Spaventa, K.Z.** & Sherry, P.S. (April 18, 2009). The contribution of workgroup cohesion and support to the occurrence of post-traumatic stress symptoms in firefighters. Oral presentation for *2009 Rocky Mountain Psychological Association Annual Conference*; Albuquerque, New Mexico.

**Spaventa, K.Z.**, Tang, S.S., & Freyd, J.J. (September 2, 2007). Why don't kids tell? Gender and the disclosure of abuse. Poster presentation for *12<sup>th</sup> International Conference on Violence, Abuse, and Trauma*; San Diego, California.

## PRESENTATIONS - OTHER

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With Study Habits/Como Ayudar a Su Hijo/a con los Hábitos de Estudio. Bilingual parent presentation given at Harding Elementary Partnership School.

**Spaventa-Vancil, K. Z.** (April 10<sup>th</sup>, 2013). Helping your child develop the virtues that lead to happiness and success! PTA meeting presentation given for Hope School District at Monte Vista Elementary School.

**Spaventa-Vancil, K. Z.** (March 15<sup>th</sup>, 2013). How to Help Your Child Against Bullying/Cómo Ayudar a Su Hijo/a Contra El Acoso Escolar. Parent presentation given at Harding Elementary Partnership School.

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Conoley, C. W., Conoley, J. C., **Spaventa-Vancil, K. Z.**, Lee, A. N. (2014). Positive Psychology in schools: Good ideas are never enough. In R. Gilman, E. S. Huebner, & M. J. Furlong (Eds.). *Handbook of positive psychology in the schools*, 2<sup>nd</sup> edition. Oxford, UK: Taylor & Francis.

Chao, R. C., Olson, A. N., **Spaventa, K.Z.**, & Smith, C.E. (2010). Service learning: A catalyst to social justice. *VISTAS 2010*.

Chao, R. C., Olson, A. N., **Spaventa, K.Z.**, & Smith, C.E. (2010). Multiculturally sensitive mental health scale (MSMHS): Development, factor analysis, reliability, and validity. *VISTAS 2010*.

## **PUBLICATIONS – OTHER**

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## ABSTRACT

### Exploring Pathways to Posttraumatic Growth

by

Kathryn Z. Spaventa-Vancil

This study explored the following question: How do experiences of positive affect and social support influence an individual's posttraumatic growth? The following variables were measured: positive affect (pre- and post-PTE), perceived social support (pre- and post-PTE), rumination, and posttraumatic growth. Utilizing a descriptive field design, all participants were contacted through email to complete an online web-based survey. One hundred and twenty-seven individuals participated in this study. Seventy-four percent were female, the average age was 20.27 years ( $SD = 2.53$ ), and participants were predominantly Caucasian (32.3%), Latino/a/Chicano/a (21.3%), and Asian (20.5%). Regression analyses revealed that perceived social support after a potentially traumatic event was significantly predictive of an individual's posttraumatic growth. Results of path analyses before and after a potentially traumatic event show significant indirect and direct effects for the variables of positive affect and perceived social support. These results suggest the usefulness of focusing on increasing positive affect and perceived social support when designing interventions for survivors of potentially traumatic events. A model of influence was tested that examined the direct and indirect role of rumination in the hypothesized influence of positive affect upon posttraumatic growth, revealing that rumination, as well as the subscales of brooding and

depression, significantly increased posttraumatic growth. These results suggest a need for future research to examine the varied role rumination has in relation to posttraumatic growth.

*Keywords:* posttraumatic growth, potentially traumatic event, positive affect, social support, rumination



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## Dissertation:

### Exploring Pathways to Posttraumatic Growth

#### **Introduction**

While trauma research has a long and active history in psychology (Reyes, Elhai, & Ford, 2008), the study of posttraumatic growth (PTG) is a newer area of investigation. Richard Tedeschi and Lawrence Calhoun named posttraumatic growth in the mid-1990s (Tedeschi & Calhoun, 2004). Although posttraumatic growth has received increasing attention in the empirical literature, there have been numerous calls for more research to explore this variable more fully (Joseph & Linley, 2008; Tedeschi & Calhoun, 2006). The following literature review explores the variables of potentially traumatic events, posttraumatic growth, rumination, social support and positive affect in order to lay a foundation for the following research question: How do experiences of positive affect and social support influence an individual's posttraumatic growth? Subsequently, a problem statement, methods and data analysis section will allow for a comprehensive overview of the suggested research study.

#### **Literature Review**

The purpose of this literature review is to explore the question: How do positive emotions and social support relate to posttraumatic growth? Before reviewing how positive emotions can influence growth after potentially traumatic events, it is important to first examine what is meant by psychological trauma. What is it and what is posttraumatic stress disorder? From here, some major theories of how people are able to “grow,” or move

forward in a positive direction after a traumatic life event (known as posttraumatic growth), will be reviewed. A review of how growth can be hindered or stopped by ruminative thinking, leading to psychopathology, will also be detailed. And lastly, the literature review will focus on the current literature on positive emotions and social support, and their usefulness or applicability in moving toward growth versus psychopathology during and after a potentially traumatic life event.

## **Trauma**

A definition encompassing most conceptualizations of psychological trauma is that “it represents events that are emotionally shocking or horrifying, which threaten or actually involve death(s) or a violation of bodily integrity...or that render the affected person(s) helpless to prevent or stop the resultant psychological and physical harm” (Reyes et al., 2008, p. x). An important component of the trauma is the meaning of the psychological experience of the event, aside from the real or anticipated physical harm that one experienced (Reyes et al., 2008). The concept of traumatic stress dates back to inscriptions on clay tablets from 5,000 years ago, to Greek and Roman storytellers, to the late-nineteenth century when a disorder referred to as “hysteria” began to be studied by the French neurologist Jean-Martin Charcot (Reyes et al., 2008; Herman, 1997). Hysteria was thought to originate in women with symptoms resembling that of neurological damage; such as amnesia (Herman, 1997). In their desires to rival Charcot’s work, Pierre Janet and Sigmund Freud concluded that “hysteria was a condition caused by psychological trauma” and due to “one or more occurrences of premature sexual experience” (Herman, 1997, pp. 12-13).

Later, during World War I, many soldiers returning from war began to display symptoms resembling this “disease” that hysterical women were previously thought to have;

these symptoms came to be known as “shell shock” when referring to soldiers (Herman, 1997; Reyes et al., 2008). Starting from WWI and after subsequent wars, combat stress was studied more and more frequently by researchers until finally, in 1980, psychological trauma was acknowledged as a legitimate diagnosis in the *Diagnostic and Statistical Manual of Mental Disorders-III* (Herman, 1997). What was previously labeled shell shock became referred to as posttraumatic stress disorder.

Posttraumatic stress disorder (PTSD) is currently defined as a trauma and stressor related disorder in which an individual is “exposed to actual or threatened death, serious injury, or sexual violence” due to direct exposure, witnessing the event happen to others, learning that the event happened to a close friend or family member, or “extreme exposure to aversive details of the traumatic event(s)” (American Psychology Association, 2013, p. 271). The individual subsequently experiences “intrusion symptoms” associated with the event(s), “persistent avoidance of stimuli” associated with the event(s), “negative alterations in cognitions and mood” associated with the event(s) and “marked alterations in arousal and reactivity” associated with the traumatic event(s) (American Psychology Association, 2013, pp. 271-72).

However, the definition of what constitutes a traumatic event has changed over time and what remains is “considerable debate” around the definition, specifically around Criterion A, the stressor criterion (Anders, Frazier, & Shallcross, 2013, p. 1; Weathers & Keane, 2007). When PTSD was first included in the *DSM-III*, Criterion A referred to a “recognizable stressor that would evoke significant symptoms of distress in almost everyone” (Weathers & Keane, 2007, p. 108). In *DSM-III-TR*, Criterion A referred to experiencing an event “outside the range of usual human experience that would be markedly distressing to

almost everyone” and included a serious threat to self, others or witnessing such a serious event (Weathers & Keane, 2007, p. 109).

In 1990, Bonnie Green discussed the confusing terminology associated with the study of traumatic events. Green (1990) stated that this is due partly to the fact that *DSM-III-TR* uses the word “trauma” as well as the words “stressor”, “event” and “traumatic event” (p. 1632). Green distinguishes between (1) an environmental event (the stimulus) (2) perception and appraisal of the event, and (3) psychological reactions to the event (the response). The environmental event (1) can only be considered a traumatic event (2) if the individual is exposed to actual or threatened death, serious injury, or sexual violence. The subsequent psychological response (3) might then be PTSD or PTG.

DSM-IV categorized PTSD as an anxiety disorder in which an individual is exposed to a traumatic event through which he/she experiences actual or threatened death or serious injury to self or others, referred to as Criterion A1 (American Psychological Association, 2000). The response is one of intense fear or helplessness (Criterion A2) and there is frequent re-experiencing of the traumatic event, persistent avoidance of trauma event stimuli, and persistent symptoms of increased arousal; and these criteria have been met for more than one month (American Psychological Association, 2000).

The *DSM-IV* included a shift from “an objective standard to a subjective standard, with the implication that a trauma would thus be defined as any event an individual found intensely distressing” (Weathers & Keane, 2007, p. 116). Due to these changes in the stressor criterion from DSM-III to DSM-IV, “research on traumatic events was extended to a broader spectrum of potentially traumatic events” (Hepp et al., 2006, p. 151). However, there is a safeguard such that Criterion A2 constrains the number of [potentially traumatic events] that



qualify as [traumatic events] (Weathers & Keane, 2007, p. 116). When studying trauma in the psychological literature currently, researchers refer to the occurrence of *potentially traumatic events* (PTE; Hepp et al., 2006; Anders, Frazier & Shallcross, 2013; Nilsson, Gustaffson & Göran-Svedin, 2010; Lalande & Bonanno, 2011). Anders et al. (2013) state that there is “substantial evidence that Criterion A1 and non-Criterion A1 events are associated with similar levels of PTSD and distress in both community and undergraduate samples” and are thus collectively referred to as potentially traumatic events (PTE; p. 1).

Although most individuals in the United States will experience a potentially traumatic event in their lifetime (around 80 percent), only a small percentage (national estimates range from 6 to 7 percent, though generally under 10 percent) will subsequently develop PTSD (Breslau, 2009; Fletcher, 2003; Nickerson, Reeves, Brock, & Jimerson, 2009). PTE is defined here based on the “[broad] definition of stressors in the *DSM-IV*” and a lifetime cumulative exposure based on a national sample of the U.S. population (Breslau, 2009, p. 199). Specific to the college population, Read, Ouimette, White, Colder and Farrow (2011) researched PTEs in over 3,000 students and found that sixty-six percent endorsed experiencing a trauma that fits Criterion A for a PTSD diagnosis according the *DSM-IV-TR*. PTSD can occur at any age, but appears to have a higher lifetime prevalence rate for women (9.7 percent) as opposed to men (3.6 percent); though men are more likely to experience a traumatic event (National Comorbidity Survey, 2005; Breslau, 2009). Other variables that seem to differentially influence the subsequent develop of PTSD include being an ethnic minority, living in a city, and a vulnerability factor such as living in poverty (Nickerson et al., 2009). A family history of psychopathology can also increase the exposure to a traumatic event, thus increasing the risk for developing PTSD (Nickerson et al., 2009). Although

symptoms generally begin to fade within the first three months of the traumatic event, delayed onset of months or years is also possible (American Psychological Association, 2000). Additionally, “approximately 40% of persons diagnosed with PTSD will have a disorder that remains for many years” (Reyes et al., 2008, p. 409). Because of these statistics, clinicians and researchers are interested in the prevention and intervention associated with PTSD. One area of research interest is the possibility for growth after a potentially traumatic event. Posttraumatic growth and the main theories in relation to it will be detailed next.

### **Theories of Growth Following a Potentially Traumatic Event**

The term *posttraumatic growth* refers to “the constellation of positive changes that people may experience following exposure to psychological trauma” (Reyes et al., 2008). Growth is not an inevitable result of trauma and the experience of growth does not imply that personal distress cannot also be experienced by the individual (Tedeschi & Calhoun, 2004). Posttraumatic growth also does not imply that the individual now sees the trauma in a positive light (Ai & Park, 2005). Broadly speaking, growth following a traumatic event consists of the following three dimensions: enhanced relationships, improved views of self, and/or positive changes in life philosophy (Reyes et al., 2008).

In 2006, Joseph and Linley outlined three main theories of growth following a traumatic event. These three theories are: the functional descriptive model, the meta-theoretical person-centered perspective, and the bio-psychosocial evolutionary view (Joseph & Linley, 2006). Many early versions of theories of growth such as O’Leary and Icovics’ views on resilience and thriving drew “heavily on the work of psychosocial theorists and adopt many of the constructs employed in understanding posttraumatic stress in the understanding of growth” (Joseph & Linley, 2006, p. 1044).

Joseph and Linley (2006) refer to Tedeschi and Calhoun's (1995) theory as the functional descriptive model of growth. Tedeschi and Calhoun first used the term posttraumatic growth in 1996; though they previously used the terms: perceived benefits, positive aspects, and transformations of trauma and note that numerous other descriptors, such as flourishing and thriving, are also used to describe the process of growth after a traumatic event (Tedeschi & Calhoun, 2004). Tedeschi and Calhoun (2004) note that some of the differences are merely semantic, but they also assert that posttraumatic growth best conceptualizes the phenomenon because the term posttraumatic growth (a) focuses more on major crises than what they refer to as lower level stressful events, (b) incorporates major life changes not "illusions", (c) refers to an outcome or process instead of a coping mechanism, and (d) "growth may require a significant threat or the shattering of fundamental schemas and may at times coexist with significant psychological distress, something the words *thriving* or *flourishing* do not connote" (Tedeschi and Calhoun, 2004). Tedeschi and Calhoun (2004) differentiate between major life changes and "illusions" because "in contrast to the terms that emphasize the 'illusions' of people who report these changes, there do appear to be veridical transformative life changes that go beyond illusion" (p. 4). Calhoun and Tedeschi (2006) later categorized the three domains of posttraumatic growth previously mentioned into five domains: personal strength, new possibilities, relating to others, appreciation for life, and spiritual change. The term posttraumatic growth is most widely used in the literature (Reyes et al., 2008).

The meta-theoretical person-centered perspective of growth refers to Joseph and Linley's organismic valuing theory (Joseph & Linley, 2006). Organismic valuing theory integrates a person-centered perspective with the literature on positive psychology (Joseph &

Linley, 2006). According to the organismic valuing theory, “people are motivated to pursue positive accommodation following trauma, just as they are throughout life in general” (Joseph & Linley, 2008, p. 15). The trauma related information requires that the individual either assimilate or accommodate the information; accommodation can be made in a positive or negative direction (Joseph & Linley, 2008). The organismic valuing theory posits three cognitive outcomes of traumatic events: 1) someone can assimilate the traumatic event into existing views of the world, thus leaving them more vulnerable to future traumatization and returning them to a pre-trauma baseline; 2) experiences can be accommodated in a negative direction, leading to psychopathology (i.e. feeling hopeless or helpless); or 3) experiences can be accommodated in a positive direction (i.e. appreciating life) and growth will occur (Joseph & Linley, 2008).

Lastly, Joseph and Linley (2006) discuss Christopher’s (2004) bio-psychosocial evolutionary view. The bio-psychosocial evolutionary view “regards growth, rather than pathology, as the normal outcome of the traumatic stress response” (Joseph & Linley, 2006, p. 1046). Christopher’s theory detailed seven theoretical conclusions which integrate evolutionary and biological evidence with psychosocial findings that also define growth as the result of a transformation of cognitive schema; just as Tedeschi and Calhoun, as well as Joseph and Linley have articulated (Joseph & Linley, 2006).

Joseph and Linley (2006; 2008) state that these three perspectives are each validated in the empirical literature and are also consistent with each other. Joseph and Linley (2006) propose that these main theories should not be viewed as competing with one another, but rather as complementing one another. Joseph and Linley (2005) state that an integrated theory of posttraumatic growth must include both psychological wellbeing (PWB) and

subjective wellbeing (SWB). PWB includes character strengths, meaning and purpose, while SWB includes affective states and overall happiness (Joseph & Linley, 2005). Joseph and Linley (2005) argue that research on wellbeing has favored SWB over PWB, but their theory details a) the importance of both SWB and PWB, b) that increases in one's PWB will lead to increases in one's SWB and c) focusing on PWB "can underpin a whole new way of living that embraces the central tenets of positive psychology" (p. 263).

Though Joseph and Linley's 2006 review was not exhaustive of growth theories (stress-related growth theory, for example, is not included) other studies reveal more similarities than differences between theories. A 2004 study (Joseph, Linley, & Harris) compared the five assessments that measured growth and adversity. Joseph et al. (2004) found that though different words are used to describe posttraumatic growth, "the various measure of positive change all appear to be assessing the same broad construct" (p. 94). Joseph et al.'s finding calls for a greater integration of growth theories across the board.

### **Posttraumatic Growth Versus Similar Constructs**

**Resilience.** It is important to conceptualize how growth theorists view the construct of posttraumatic growth as different from the construct of resilience. Resilience refers to "a propensity toward positive (or nonpathological) developmental outcomes under high-risk conditions" (Lepore & Revenson, 2006, p. 27). Luthar, Cicchetti, and Becker (2000) state that resilience is a "dynamic process" that involves both "an exposure to a significant threat or severe adversity" and "achievement of positive adaptation despite major assaults on the developmental process" (p. 543). Luthar et al. (2000) support the idea to retain resilience as a distinct concept from positive adjustment as they state it would be "premature" to view these constructs as "congruent" (p. 14). Resilience is also referred to as a "common phenomena

that results in most cases from the operation of basic human adaptational systems” (Masten, 2001, p. 227). However, there must be “demonstrable risk” or a “significant threat to their development” for individuals to be considered resilient” (Masten, 2001, p. 228). Global factors that are associated with resilience are: relationships with caring adults in either the immediate family or the community, “cognitive and self-regulation skills”, a positive perception of the self, and “motivation to be effective in the environment” (Masten, 2001, p. 234).

Lepore and Revenson (2006) state that much confusion around the term resilience is due to the fact that resilience can describe either a process or an outcome. Additionally, resilience can refer to three different dimensions: recovery, resistance, or reconfiguration (Lepore & Revenson, 2006). The authors argue that reconfiguration, though most similar to posttraumatic growth in that both go beyond a return to normal functioning, may reflect positive and negative transformation whereas posttraumatic growth is strictly referring to positive changes after a traumatic event (Lepore & Revenson, 2006). While others (O’Leary, 1998; Carver, 1998) suggest that resilience is a return to a homeostatic baseline and therefore does *not* go beyond a return to normal functioning. Morland, Butler, and Leskin (2008) view resilience as referring to the initial reaction to the traumatic event and posttraumatic growth as a “postevent adaptation that exceeds pre-event levels of functioning” (p. 57). In sum, posttraumatic growth can be described as post-event gains that exceed that which describe resilience.

**Thriving.** O’Leary (1998) states that research exploring the construct of thriving developed from research on the construct of resilience. Thriving “represents the ability to go beyond the original level of psychosocial functioning, to grow vigorously, to flourish”

(O’Leary, 1998, p. 429). Unlike resilience, thriving implies a “better-off-afterward experience”, rather than simply returning to a homeostatic baseline (Carver, 1998, p. 247; O’Leary, 1998). Multiple factors are associated with thriving and include: individual resources such as personality factors and cognitive resources, social support, and developmental processes (O’Leary, 1998). Additionally, the outcome of thriving may include: new skills and knowledge, increased self-confidence, and strengthening of social support (Carver, 1998). Thriving can refer to not only individuals, but also to organizations and nations (O’Leary, 1998). Differentiating this construct from posttraumatic growth, Carver (1998) notes that psychological thriving “probably does not depend on the occurrence of a discrete traumatic event or longer term trauma, though such events may elicit it” (p. 245).

**Coping.** Coping can be viewed as a precursor to posttraumatic growth, but growth should not be viewed as a “coping mechanism” (Tedeschi & Calhoun, 2004, p. 15). Tedeschi and Calhoun’s (2006) model suggests that “people who have a moderate degree of coping capability would be most likely to report PTG” (p. 11). Active coping strategies have been found to correlate to certain elements of PTG and will be explored in more detail in its relation to positive emotions in a following section (Butler, et al., 2005; Dekel, Mandl, & Solomon, 2011).

**Construct Confusion.** The terms stress-related growth (Park, Cohen & Murch, 1996), thriving (O’Leary & Ickovics, 1995), flourishing (Ryff & Singer, 1998), adversarial growth (Joseph & Linely, 2008) and transformational coping (Aldwin, 1994) are often used instead of the term posttraumatic growth. Joseph & Linley (2006) state that “the terms have been used interchangeably, and there is not a single agreed collective term for this field of

study” (p. 1042). This creates confusion when a construct such as thriving, which does not necessarily require the occurrence of a traumatic event, is used interchangeably with posttraumatic growth.

### **What is Known About Posttraumatic Growth**

Posttraumatic growth has been reported following the following events: transportation accidents, natural disasters, house fires, sexual assault, sexual abuse, combat, refugee experiences, being taken hostage, medical problems experienced personally or by a close other (i.e. rheumatoid arthritis, HIV infection, cancer, bone marrow transplant, heart attacks, medical problem of a child), loss of relationships, parental divorce, bereavement, and immigration (Reyes et al., 2008; Tedeschi & Calhoun, 2004). Studies have found that women report more growth than men (Joseph, Linley, & Harris, 2006).

There is great need for more studies to explore if posttraumatic growth is possible for children, but current studies do show that positive change is possible (Clay, Knibbs, & Joseph, 2009). Due to the necessity for schema change to create posttraumatic growth, posttraumatic growth might be a construct more relevant for adolescents and adults than for young children (Tedeschi & Calhoun, 2004).

While longitudinal research on posttraumatic growth is lacking, studies show that if such growth is present two-months after the traumatic event, posttraumatic growth will generally be stable at a one year follow-up (Joseph, Linley, & Harris, 2006). The stability of posttraumatic growth may be strongly influenced by social support. If social support is limited, cognitive processing is inhibited, thus reducing the amount of posttraumatic growth reported by survivors (Tedeschi & Calhoun, 2004). Cognitive processing interventions have been found to increase posttraumatic growth (Tedeschi & Calhoun, 2004).



A curvilinear relationship is believed to exist between posttraumatic growth and perceived threat or harm, “such that growth is less likely to occur if the events are perceived as either very low or high in their degree of threat or harm, and most likely to occur if the person views threat or harm as somewhat likely” (Reyes et al., 2008, p. 482). Other correlates of posttraumatic growth from the literature include: optimism, religion, cognitive processing, and positive affect (Reyes et al., 2008). Those reporting stable posttraumatic growth are “likely to report less subsequent psychological distress” in the future (Reyes et al., 2008, p. 482).

### **Rumination and Psychopathology**

The opposite of growth after a potentially traumatic event would be psychopathology, in this case, PTSD. The main predictor of PTSD symptom severity is rumination, accounting for 36 to 50 percent of the variance in PTSD symptom severity (Ehring, Frank, & Ehlers, 2008). How negative outcomes can occur following a potentially traumatic event will be explored before moving to a focus on expanding and increasing positive outcomes after a potentially traumatic event through emotions and affect.

The simplest definition of rumination refers to repetitive thinking, but most often rumination is conceptualized as “...repetitive, cyclical, self-focused, and uncontrollable negative thinking about past negative experiences and/or negative mood that can be cued by an external event or a prior thought” (Taku, Cann, Tedeschi, & Calhoun, 2009; Birrer & Michael, 2011, p. 382). Rumination predicts PTSD symptoms as well as depression, anxiety, substance abuse, and eating disorders, as rumination impairs thinking, problem solving, instrumental behavior and social relationships (Nolen-Hoeksema, Wisco, Lyubomirsky, 2008). Rumination impairs functional emotional processing (Ehring, Fuchs, & Klasener,

2009). Results of a cross-sectional clinical study comparing traumatized and non-traumatized depressed patients showed that though all participants ruminated after either traumatic or critical life events, those with both PTSD and depression ruminated significantly more than the depressed participants without PTSD symptoms (Birrer & Michael, 2011). For both groups in Birrer and Michael's (2011) study, rumination reduced positive emotions and increased feelings of helplessness, anger and guilt. Though these researchers found that ruminations did not "worsen an already established dysphoric mood" (Birrer & Michael, 2011, p. 390), inducing rumination has been found elsewhere to prolong the experience of negative mood (Nolen-Hoeksema et al., 2008). And chronic ruminators may have reduced social support as they "appear to behave in ways that are counterproductive to their relationships with family, friends, and even strangers" (Nolen-Hoeksema et al., 2008, p. 403).

Generally thought of with a negative connotation, rumination should instead be conceptualized as a complex process in which not all types of repetitive thinking are dysfunctional (Birrer & Michael, 2011; Santa Maria, Reichert, Hummel, & Ehring, 2012; Ehring, et al., 2008). Repetitive thinking may be adaptive in situations in which repetitive thinking allows one to both think about their problem, anticipate future events and work toward solutions to one's problem (Ehring, et al., 2008). Ehring et al. (2009) refer to trauma-related rumination as repetitive, recurrent, negative thoughts about the past, present or future related to the trauma and consequences of the trauma. Trauma-related rumination includes "why" and "what if" types of questions in response to the event (Ehring, et al., 2009). Additionally, though often thought of as the same phenomenon, it is important to view trauma-related rumination as a different phenomenon from simply remembering the trauma

or re-experiencing symptoms; also known as intrusive versus deliberate rumination (Ehring, et al., 2008; Taku et al., 2009; Stockton, Hunt, & Joseph, 2011). Deliberate rumination was found to strongly predict posttraumatic growth in a US and Japanese comparison sample study (Taku et al., 2009). Stockton et al. (2011) also found deliberate rumination to be significantly positively associated with posttraumatic growth.

Lyubormirsky, Boehm, Kasri, and Zehm (2011) examined the outcomes of dwelling in regards to academic achievement tasks in a sample of psychology university students. They conducted three studies comparing happy peers to unhappy peers on achievement related tasks and found that dwelling in relation to the unhappy participants was associated with greater declines in mood, interfering thoughts, and impaired concentration. Compared to their happier peers, the authors posit that failure in achievement tasks does not effect the happy peers in the same way as the unhappy peers because of differences in habits and negative semantic networks (Lyubormirsky, et al., 2011). Lyubormirsky et al. (2011) state, "...the key mechanism underlying the link between unhappiness and dwelling is not just negative mood, but that unhappy individuals are distinguished by habitual patterns of thinking and behavior and have developed over time an extensive semantic network of multiple negative memories and cognitions" (p. 1161). Lyubormirsky et al. (2011) concluded that dwelling leads to a range of adverse outcomes, including negative moods for the unhappy participants that persisted at the end of the study. Dwelling leads to a negative cycle that is difficult to break. Importantly, the researchers noted that the adverse symptoms of dwelling following failure can be avoided by having participants distract their attention outside of their selves.

## **Positive Emotion, Positive Affect, and Growth**

Thus far the origin, defining features and correlates of both trauma and posttraumatic growth have been defined. Additionally, the pathway to psychopathology following a potentially traumatic event, rumination, has been explored. A separate pathway after a potentially traumatic event will now be explored, focusing on the possible positive outcomes following trauma. Namely, how positive emotions and positive affect can influence positive outcomes post-trauma.

Though not neglected entirely, positive affect has been largely underrepresented in models of stress and coping, with a greater focus on the “downward spirals into negative emotion and distress” following traumatic events (Folkman & Moskowitz, 2000a; Joseph & Linley, 2008, p. 347; Fredrickson, 1998). Evolutionarily speaking, negative emotions have had adaptive significance for us in times of crises, enabling us to focus on the problem and to act with a fight or flight mentality (Folkman & Moskowitz, 2000a). However, “theoretical and empirical work indicate that positive affect can have significant adaptive functions, both under normal conditions and under conditions of stress” (Folkman & Moskowitz, 2000, p. 649). Barbara Fredrickson’s *broaden-and-build theory* (1998) helps to explain the adaptive significance of positive emotions and the usefulness of positive emotions in dealing with life stressors and traumatic events.

Fredrickson’s (1998) *broaden-and-build theory* posits that positive emotions broaden an individual’s thought-action repertoire. The *broaden-and-build theory* focuses on the positive emotions of joy, interest, contentment, and love. Joy might initiate the action of play. Interest might initiate the action of exploring. Contentment might initiate the action of savoring and integrating. And love might enable a “recurring cycle of these urges”

(Fredrickson, 2004, p. 1367). These broadened thought-action repertoires build enduring personal resources physically, intellectually and socially. The *broaden-and-build theory* implies that positive and negative emotions are distinct, positive emotions can co-occur with distress, and positive emotions have an undoing effect on negative emotions (Fredrickson, 2000; Folkman & Moskowitz, 2000a). The undoing effect occurs because "...experiences of positive affect in the midst of stressful circumstances may interrupt and thereby short-circuit [the] rumination spiral and prevent the decline into clinical depression" (Folkman & Moskowitz, 2000a, p. 649). Numerous experiences of positive emotions can help people build up the trait of resilience before crises (Fredrickson, Tugade, Waugh, & Larkin, 2003). Over two decades of research has shown that positive emotions broaden the scope of one's cognition (as cited in Fredrickson, 2004). Isen and colleagues have shown that positive affect enhances problem solving, decision making, and leads to flexible, creative, and thorough cognitive processing (Isen, 2001). Positive emotions have also been found to broaden the breadth of attention (Derryberry & Tucker, 1994).

Positive emotions have important physiological effects during time of stress and crisis. Fredrickson and Levenson (1998) conducted two studies to examine how positive emotions can help recovery from negative emotions. In their first study, they elicited the emotion of fear and then experimentally induced positive emotions; heart period and pulse transmission times were recorded by a computer to examine their cardiovascular recovery. Their data supports the undoing hypothesis by showing that participants who viewed a positive film after the negative film had faster cardiovascular recovery than those watching a subsequent neutral or negative film (Fredrickson & Levenson, 1998). In their second study, Fredrickson and Levenson (1998) elicited the emotion of sadness and subsequently observed

naturally occurring positive emotions. Participants who spontaneously smiled during a sad film had the fastest cardiovascular recovery from viewing the film. Both studies showed that "...participants who experienced or expressed positive affect showed quickest recovery from whatever pattern of cardiovascular activation they had exhibited" (Fredrickson & Levenson, 1998, p. 15). Though, based on these results the researchers cannot definitively conclude that positive emotions correlate to positive health outcomes, it is apparent that "...negative emotions have health-damaging consequences" (Fredrickson & Levenson, 1998, p. 16). Additionally, another study (Epel, McEwen, and Icovics, 1998) looked at cortisol habituation in a sample of women exposed to stressful events; such as solving a difficult math problem or giving a speech. The Posttraumatic Growth Inventory (PTGI) was administered and cortisol levels were measured. The results showed that cortisol adaptation (referring to those who showed better coping skills with the lab stressors after three days of experimentation) was correlated to appreciation for life and religiosity/spirituality on the PTGI. Epel et al. (1998) suggested that these women, who experienced growth after trauma, not only had psychological benefits, but also physiological adaptive benefits; quicker returns to baseline after stressful situations.

Experiencing positive emotions during crises has positive psychological effects. Fredrickson et al. (2003) studied a sample of 46 college students before and after the World Trade Center terrorist attack on September 11<sup>th</sup>, 2001. They found that their sample experienced distress and sympathy, but also positive emotions such as gratitude, interest and love after the attack. They found these positive emotions were the critical elements that enabled these participants to grow after the attacks and not be overwhelmed by the devastation and strong negative emotions they also felt; positive emotions mediated the

relationship between trait resilience and depressive symptoms. Fredrickson et al. (2003) thus found that positive emotions did not disappear for these participants in a time of crisis and that finding positive meaning was one of the most successful outcomes during the period of crisis. They concluded that their results show that cultivating positive emotions after “crises pay off both in the short-term, by improving subjective experiences, undoing physiological arousal, and enhancing broad-minded coping, and in the long-term, by minimizing depression and building enduring personal resources” (Fredrickson et al., 2003, p. 15).

Folkman (1997) similarly found that positive psychological states co-occurred with negative psychological states during times of crises. Folkman conducted a longitudinal study of 314 caregivers whose male partners had AIDS. Although Folkman found that depressive symptoms were one standard deviation above the norm throughout caregiving, there were also unexpectedly high levels of positive psychological states reported throughout caregiving and bereavement periods. Four types of coping processes were associated with these positive psychological states: positive reappraisal, goal-directed problem-focused coping, spiritual beliefs, and infusing ordinary events with positive meaning. Positive reappraisal refers to a type of reframing such that events are seen in a positive light (Folkman, 1997; Folkman & Moskowitz, 2000). Goal-directed problem-focused coping refers to taking steps to manage a distressing problem and could include gathering information, planning and acquiring the necessary skills and knowledge to deal with the problem (Folkman & Moskowitz, 2000a). Spiritual beliefs helped to “facilitate positive reappraisals of the difficult situation” (Folkman, 1997, p. 1214) and the vast majority of the sample reported an ordinary daily life event as a positive event amidst the distress associated with caregiving for their partner with AIDS.

Folkman (1997) concluded that the underlying theme amongst these four coping process was creating meaning.

Similar to the 2003 Fredrickson study, a 2008 (Park, Aldwin, Fenster, & Snyder) study also examined the potential for positive outcomes following the September 11<sup>th</sup> terrorist attacks. The researchers found that positive coping and anger best predicted growth following the terrorist attacks, whereas negative coping and depression best predicted symptoms of posttraumatic stress (Park et al., 2008). Anger makes sense in light of their idea that “actively engaging with the stressor and being aroused by anger” is more likely to lead to growth than the alternative avoidance patterns associated with the depressive symptoms (Park et al., 2008, p. 307). Thus, coping is conceptualized as the pathway that leads to either the outcome of growth or the outcome of higher levels of PTSD.

Vazquez et al. (2005) also reported the importance of positive emotions for posttraumatic growth. The researchers conducted semi-structured interviews for 115 randomly selected survivors of the 2001 earthquakes in El Salvador that killed 1,100 people. Interviews were conducted in shelters three months after the first earthquake. Over half the sample (72.5%) reported moments of happiness after the traumatic event; leading the researchers to hypothesize about the importance of positive emotions, along with the negative emotions they were experiencing, for growth. Over half the sample (66%) also reported dimensions of posttraumatic growth (i.e. valuing relationships, existential reflections). Almost everyone (94%) reported that positive activities at the shelter (i.e. parties) “were an important aid in the difficult circumstances they were undergoing” (Vazquez et al., 2005, p. 322). Vazquez et al. (2005) suggested that future studies explore “maintaining or creating positive mood” in trauma survivors (p. 323).



Positive affect has been found to mediate the relationship between rumination and both posttraumatic growth and meaning (Boyraz & Efstathiou, 2011). Boyraz and Efstathiou (2011) conceptualized rumination and reflection as two distinct components of self-focusing tendencies; self-focusing tendencies referring to a tendency to focus on one's internal thoughts, feelings and sensations. In a convenience sample of 187 bereaved women, participants who ruminated reported lower levels of positive affect, higher levels of negative affect and lower levels of meaning in life. For their data analysis, the authors created a measurement model including six variables: reflection, rumination, positive affect, negative affect, posttraumatic growth, and meaning. After a confirmatory factor analysis determined that the model was a good fit for the data, a structural model was tested to find any mediating effects. Positive affect partially mediated the relationship between reflection and meaning, and positive affect fully mediated the relationship between reflection and posttraumatic growth. Additionally, "rumination had significant negative indirect effects on both meaning...[and posttraumatic growth] through positive affect" (p. 26). Boyraz and Efstathiou (2011) found that positive affect mediated the relationship of reflection and rumination on posttraumatic growth and meaning, supporting Nolen-Hoeksema's theory that "rumination increases negative affect and maladjustment by heightening an individual's awareness of negative cognitions and emotions" (p. 27). Boyraz and Efstathiou (2011) concluded that their results "...underlined the importance of positive affect in PTG process for women" as positive affect is related to personal growth and adjustment (Boyraz & Efstathiou, 2011, p. 27).

Other studies have addressed the moderating effects of positive emotion on posttraumatic growth. Moskowitz and Epel (2006) studied potential moderating variables for

benefit finding and daily (salivary) cortisol levels in a sample of 71 maternal caregivers who most often reported their main traumatic life event as taking care of a chronically ill child (though a portion of the sample had a healthy child and reported other traumatic life events). Positive emotion was found to moderate the association between benefit finding and cortisol slope (cortisol slope was measured and defined as the difference between the first and last day of sampling of salivary cortisol), such that higher scores on three of the Posttraumatic Growth Inventory subscales (personal strength, appreciation of life, and spiritual change) predicted more adaptive daily cortisol slopes only for the women who reported experiencing more daily positive emotion.

### **Social Support and Growth**

Social support is the “most frequently studied psychosocial resource”(Thoits, 1995, p 64) Social support can be categorized into the perception of available support, amount of support received, and satisfaction with amount of support received (Schroevers, Helgeson, Sanderman, & Ranchor, 2010). Perceived emotional support has been found to be a better predictor of mental health following a stressor, such that it leads to better mental and physical health and generally buffers against the impact of stressors on mental and physical health (Thoits, 1995). Thoits (1995) suggests that the “simplest and most powerful measure of social support appears to be whether a person has an intimate, confiding relationship or not” (p. 64).

Unlike positive affect, more research has assessed the relationship between social support and PTG. Though initially Tedeschi and Calhoun’s (1995) model only hypothesized as to the relationship between PTG and social support, their later conceptualization “about the relationship of growth to social factors is more specific, suggesting that certain type of

responses, including supportive ones, to certain kinds of behavior on the part of the person in crisis, will have a relationship with the degree of growth reported” (Calhoun & Tedeschi, 2006, p. 14). However, similar to their conceptualization of positive affect, Calhoun and Tedeschi believe social support to be a variable relevant for an individual’s growth after and not before a trauma (Calhoun & Tedeschi, 2006; Prati & Pietrantonio, 2009).

A meta-analysis of 103 studies examined the relationships between posttraumatic growth and optimism, social support, and coping strategies (Prati & Pietrantonio, 2009). Prati and Peitrantonio distinguished between seeking social support and either receiving or perceiving social support, due to the hypothesis that seeking social support “improves social resources by providing empathy or reduces the individual’s feelings of isolation and loneliness” (p. 365). Through their meta-analysis, the researchers found moderate effect sizes for the variables of social support and social support seeking coping in relation to posttraumatic growth.

However, findings are mixed. In a review of 39 empirical studies, Linley and Joseph (2004) found that social support “generally tended not to be associated with growth” (p. 16). In their study of 54 cancer survivors, Schmidt, Blank, Bellizzi, and Park (2011) assessed the availability and use of four types of social support for participants: emotional/informational, tangible, affectionate, and positive social interaction. The researchers did not find either perceived support or use of support to be associated with PTG and concluded that the “influence of social support is less clearly defined and requires more research” (p. 1039). But a previous study by Schroevers et al. (2010) looked particularly at emotional support, a type of social support found to be especially important for cancer survivors, and found that those who received more emotional support immediately following their cancer diagnosis,

subsequently reported more PTG eight years later. Perceiving emotional support or satisfaction with social support was not found to be associated with the subsequent development of PTG.

Contradicting findings in the literature regarding the relationship between PTG and social support could be due to inaccurate conceptualizations and operationalizations of the construct (Thoits, 1982). Thoits (1995) points out that most often the literature views social support at an individual level as opposed to the system or community level. Senol-Durak and Ayvasik (2010) suggests that “the relationship between event related variables and PTG may vary from one illness to another based on the nature of the disorder” (p. 155).

### **Problem Statement**

Possibilities for positive outcomes following potentially traumatic events are not rare or uncommon. The experience of posttraumatic growth is increasingly gaining empirical attention and support, especially with the growing positive psychology movement. The *broaden-and-build theory* helps give us a framework to understand the way that positive emotions help facilitate posttraumatic growth, but more studies of posttraumatic growth are needed. For example, how much positive change does one need to experience in order to achieve posttraumatic growth (Tedeschi & Calhoun, 2006)? There are current measurement issues with constructs (Tedeschi & Calhoun, 2006) and a general need for more research to help answer how much positive change defines posttraumatic growth, or rather, come to understand the phenomena of posttraumatic growth more fully. There is also a call for more qualitative research to explore the construct of posttraumatic growth and how positive emotion is related to posttraumatic growth (Joseph & Linley, 2008). Personal accounts of the experience of posttraumatic growth such as that by Weiss (2005) allow us to draw many

important clinical implications. Weiss' personal narrative of posttraumatic growth led him to conclude that facilitating positive emotions for clients may lead to similar cognitive and emotional processing that he believes allowed for his experience of posttraumatic growth. He suggested having clients keep a log of positive emotions to "collect them...amid the grief and uncertainty" (p. 216).

Positive emotions need to be explicitly included in models of posttraumatic growth. Positive emotions are not currently included in Tedeschi and Calhoun's model (Calhoun & Tedeschi, 2006). Calhoun and Tedeschi (2006) acknowledge the evidence that supports positive emotions as important pieces of posttraumatic growth but feel that "the appropriate place to include positive emotions in our model...seems to be within the category of relevant characteristics of the person pretrauma" (p. 18). Conflicting with Tedeschi and Calhoun's stance, the *broaden-and-build theory* states that "positive affect (positive emotion) may have a more central role to play" in posttraumatic growth but more research is needed to fully support the role of positive affect in the context of posttraumatic growth (Joseph & Linley, 2008, p. 344). Additionally, research shows a bi-directionality of emotions to coping, such that emotions can be the outcome for coping as well as the impetus for coping; and positive coping has been found to be strongly related to growth (Park et al., 2008, p. 307). If appropriate interventions are established to increase positive emotions after a traumatic event, the literature shows that the undoing effect could have lasting and profound positive effects (Fredrickson & Levenson, 1998; Fredrickson et al., 2003; Joseph & Linley, 2008). But little is also known about how much positive emotion and for how long is necessary for the adaptive benefits to take place (Folkman & Moskowitz, 2000b). Again, according to the *broaden-and-build theory*, a little positive emotion goes a long way because positive emotion

creates an upward spiral. But positive emotion needs to be empirically tested in relation to posttraumatic growth. Preliminary evidence shows that experimentally inducing positive moods by having participants read a vignette about heroically reuniting a lost child with her parents, can instantly increase one's sense of meaning in life, though follow-up data is missing on any potential long-term effects (King, Hicks, Krull, & Del Gaiso, 2006). As researchers continue to explore the construct of posttraumatic growth, a focus on positive emotions may lead to beneficial interventions useful for survivors of potentially traumatic events.

It was helpful to further explore the relationship between social support and PTG as the current literature has mixed findings. Social support, like positive affect, is not included in most growth models as an important variable for an individual to have pre-trauma. The *broaden-and-build* theory suggests that positive emotions are one way in which an individual can increase social bonds (Fredrickson, 2004). Positive affect has been found to significantly increase social support in a sample of undergraduates (Schiffrin & Falkenstern, 2012). As a result, it is important to look at these variables simultaneously in respect to PTG. Examining these variables in relation to PTG for an individual both pre- and post-trauma will be an important addition to the current literature in helping to understand the experience of PTG more fully and identifying potential treatment or prevention techniques useful in promoting PTG. Additionally, it is important to assess the relationship between rumination and both positive affect and social support as the current literature suggests that rumination and posttraumatic growth are divergent processes for an individual after a traumatic event (Birrer & Michael, 2011; Nolen-Hoeksema, et al., 2008).

## **Research Question and Hypotheses**

Based on inconsistencies and gaps in previous research, the main research question is: How do experiences of positive affect and social support influence an individual's posttraumatic growth? In relation to this question, we have the following hypotheses:

### 1) Social Support and PTG:

- a) The perception of higher levels of social support post-trauma will be related to higher levels of reported PTG.
- b) The perception of higher levels of social support pre-trauma is hypothesized to be related to higher levels of reported PTG.
- c) Explore the non-directional hypothesis of whether perceived social support pre- or post-trauma is most predictive of PTG.

### 2) Positive Affect and PTG:

- a) The perception of higher levels of positive affect post-trauma will be related to higher levels of reported PTG.
- b) The perception of higher levels of positive affect pre-trauma is hypothesized to be related to higher levels of reported PTG.
- c) Explore the non-directional hypothesis of whether positive affect pre- or post-trauma is most predictive of PTG.

3) Explore if rumination effects the relationships between positive affect and posttraumatic growth and perceived social support and posttraumatic growth (see Figure 1).

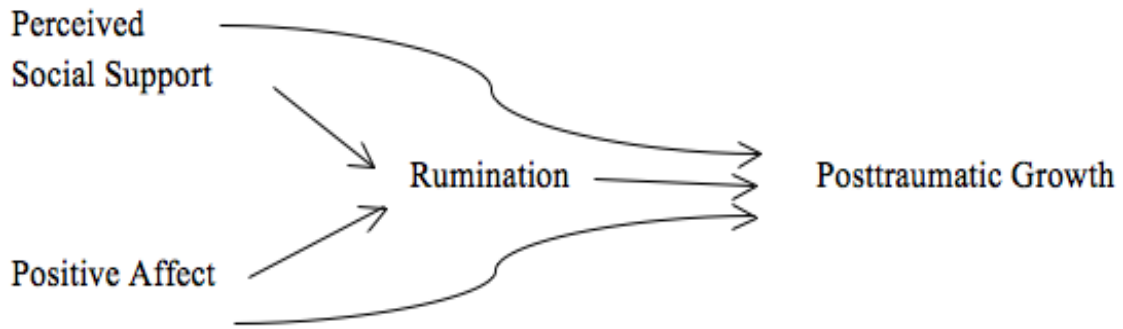


Figure 1. Path analysis model for hypothesis 3.

## Method

### Research Design

This study was conducted using a descriptive field design. As participants were contacted through email to complete an online web-based survey, there was no manipulation of variables within a laboratory setting. This means that there is less control over any potential extraneous variables that may have influenced participants' results at the time of the completion of their assessments, but it allowed for a large sample of the population of interest to be targeted (Heppner, Wampold, & Kivlighan, 2008; Gosling, Vazire, Srivastava, & John, 2004).

Considering potentially traumatic events are quite common in the general population, around 80%, this is a suitable method for assessing variables relevant to PTE and posttraumatic growth (Breslau, 2009).

Retrospective reporting was utilized to assess the occurrence of PTEs, as well as both social support and positive affect *prior* to the PTE. The validity of using retrospective reporting has been debated in the literature (Hardt & Rutter, 2004; Tajima, Herrenkohl, Huang, & Whitney, 2004; McNally, 2005). A 2004 literature review conducted by Hardt &



Rutter found major methodological problems in the assessment of adverse experiences in childhood, due to problems such as the informant of the abuse (sometimes a parent) being different than the reporter of the abuse at follow-up (the survivor). Although Hardt and Rutter (2004) found significant underreporting and bias in the studies they reviewed, they concluded that, "...the retrospective recall in adult life of serious, readily operationalised, adverse experiences in childhood can be made to be sufficiently valid..." (p. 270). Tajima et al. (2004) compared prospective parent reports of child maltreatment to retrospective adolescent reports and found moderate concurrence rates between the two types of reporting ( $\phi = 0.27$ ), such that two-thirds of adolescents recalled the event in childhood that their parent(s) reported. These rates were similar for both males and females. More recently, Lalande and Bonanno (2011) assessed the recalled frequency of PTEs versus non-PTEs in a sample of college students. Lalande and Bonanno (2011) found that similar to Hardt and Rutter's 2004 literature review, 59.4% of respondents underestimated the number of events that had occurred. Interestingly, Lalande and Bonanno found that PTEs were remembered more accurately than non-traumatic events and that the recalled frequency of PTEs was influenced by an interaction of the distress at the time of recall as well as a disposition toward self-enhancement. Meaning that those with high reported distress at the time of recall and scores of low self-enhancement recalled the highest number of PTEs. Due to support of using retrospective reports in general (Hardt & Rutter, 2004) and use of retrospective recall to remember PTEs specifically (Lalande & Bonanno, 2011), retrospective recall was used in this study, although the limitations of doing so will be taken into account when considering the results of this study.

Descriptive field designs are high in external validity and low in internal validity (Heppner et al., 2008). Gosling et al. (2004) have shown that samples derived from Internet methods allow for diverse samples and are of equivalent quality to paper-and-pencil methods. As previous finding on variables associated with posttraumatic growth have been mixed, a non-experimental design is most suited for this study as the “primary aim of such a design is to describe the relationship between two or more variables of interest,” rather than making causal inferences (Gelo, Braakmann, & Benetka, p. 272).

### **Participants**

Participants are university students and who were contacted via email through University of California, Santa Barbara’s (UCSB) Social Science Survey Center (SSSC). A random cross-sectional sample of 1,000 students over 18 years of age were extracted by UCSB Institutional Research, and delivered directly to the UCSB Social Science Survey Center. This number was determined based on a discussion with the investigators and the SSSC to determine: necessary sample size (91) for desired power, frequency of experiencing a potentially traumatic event during a lifetime (around 80%), and the general response rate to online surveys administered through the Social Science Survey Center.

**Power analysis.** Power was calculated using an online power calculator (Soper, 2013). A multiple regression was used to complete an a-priori power analysis in order to compute the required sample size. Power was set at .80, the effect size was set at .15, and alpha was set at .05; the test was one-tailed as we imply a directional hypothesis. Two predictors were used in answering hypothesis 1 and hypothesis 2, and five predictors were used in answering hypothesis 3; the test used to answer the most complex hypothesis (3) will be used to determine our power analysis. Cohen (1992b) suggests setting power at .80 for

scientific research, which has become the accepted standard (Heppner et al., 2008). Small, medium, and large effect sizes can be defined as .10, .30, and .50 (Cohen, 1992a). The meaning of an effect size depends on such things as “(a) the meaning of the study, (b) importance of outcomes, and (c) size of effects obtained in prior studies” (Henson, 2006, p. 620). Effect size is also described as the “most difficult factor to determine in relation to power” (Heppner et al., 2008, p. 356). Meta-analyses on trauma (Read et al., 2011; Tolin & Foa, 2006) and PTG (Prati & Pietrantonio) have revealed small to medium effect sizes. Effect size was set at 0.15, indicating a small effect. With these variables in place, a power analysis provides a needed sample of 91 participants to achieve a small effect size with power at .80. With power set at 0.80, this allows a 20 percent chance for a type II error.

### **Instrumentation**

This study explores how the following independent variables may be related to the dependent variable of posttraumatic growth: trauma (potentially traumatic event), positive affect, social support, and rumination. Additionally, it was important to assess the variables of positive affect and social support pre- and post-trauma/posttraumatic growth as these variables have previously been thought to be more relevant after a trauma takes place, rather than before (Calhoun & Tedeschi, 2006; Prati & Pietrantonio, 2009). Previously established assessments were used and/or modified to measure these variables (see Appendices A-H).

**Demographics.** The following demographics were automatically collected from UCSB’s Social Science Survey Center: gender and class standing. The first question of the assessment battery asked participants to indicate their age for the purposes of additional demographics and in order to rule out participants who are under the age of 18. The Multi-

Ethnic Identity Measure (MEIM; Phinney, 1992) was included in the assessment battery in order to gather information on ethnicity (see Appendix H).

**Trauma.** Carlson et al. (2011) designed the *Trauma History Screen (THS)* to be a brief measure of traumatic events (see Appendix A). Participants are asked to indicate “yes” or “no” to the occurrence of 14 potentially traumatic events; such as “Sudden death of close family or friend” or “A hurricane, flood, earthquake, tornado, or fire” (Carlson et al., 2011, p. 477). If participants endorse an event, they are also asked to report the frequency of the event(s). Participants are asked, “Did any of these things really bother you emotionally?”, and for each item that was emotionally bothersome, further information is gathered as to how long the participant was bothered by this event and how bothersome the event was, both rated on a Likert scale, as well as at what age the trauma occurred, (Carlson et al., 2011, p. 477). Use of the *THS* has been studied in a college population. The *THS* has been found to be both reliable, with “median kappa coefficients of agreement for [high magnitude stressor] items ranging from .61 to .77”, and valid, as exposure to high magnitude stressors as measured by this assessment is comparable to previous research, and to also have convergent validity, as it is highly correlated to another measure of trauma, The Life Events Questionnaire ( $r = .73$ , for young adults) (Carlson et al., 2011, p. 472). The *THS* also compares well to existing, more detailed, assessments of exposure to trauma (Carlson et al., 2011).

When studying psychological trauma, a consideration is that “a major challenge in assessing exposure to severe stressors and their impact is that their severity and emotional impact may vary considerably” (Carlson et al., 2011, p. 464). Carlson et al. (2011) state that though numerous measures have been created to assess exposure to potentially traumatic events, most do not assess the lasting psychological distress. The *THS* was created to

measure high magnitude stressors (*HMS*; “sudden events that have been found to cause extreme distress in most of those exposed”), traumatic stressors (“used to describe HMS events that caused extreme distress for an individual”) as well as persisting posttraumatic distress (“events associated with significant subjective distress that last for more than one month” and could later present as depression, anxiety or behavioral disorder) (Carlson et al., 2011, p. 464). Use of the *THS* has been validated in a clinical sample, a sample of individuals who were recently exposed to traumatic stressors, and three nonclinical samples; one of which included nonclinical community samples of young adults and another which included university students (Carlson et al., 2011). Additionally, Carlson et al. (2011) found a small to moderate relationship between the *THS* and PTSD symptoms.

**Rumination.** The *Ruminative Responses Scale (RRS)* is the “most widely used self-report instrument to assess depressive rumination” (Schoofs, Hermans, & Raes, 2010, p. 609) and was developed by Nolen-Hoeksema (Nolen-Hoeksema, Larson, & Grayson, 1999; Nolen-Hoeksema & Morrow, 1991). However, critics of this measure have “expressed concerns about the content overlap of items of measures of depression such as the BDI” and thus several researchers have proposed changes to this assessment (Roelofs, Muris, Huibers, Peeters, & Arntz, 2006, p. 301) The original *RRS* is a self-report measure of rumination which includes 22 questions in relation to depressed thinking styles (see Appendix B). A sample question is, “Think about how alone you feel” (Treyner, Gonzalez, & Nolen-Hoeksema, 2003, p.248). Respondents answer all questions on a 4-point Likert scale, from “almost never” to “almost always”. This assessment is scored by summing the items. Nolen-Hoeksema (n. d.) recommends percentile cut-offs based on each individual sample, such that “high” ruminators are the top 33% of the sample and “low” ruminators are the bottom 33%

of the sample. Treynor et al. (2003) removed 12 items from the *RRS* that they felt were similar to items on the BDI, leaving the following items on the *RSS*: items 5, 7, 10, 11, 12, 13, 15, 16, 20 and 21 (see Appendix B). With these modifications, Treynore et al. (2003) concluded that the *RRS* is comprised of two factors: brooding and reflection (Treynor et al., 2003). The brooding factor is defined as “moody pondering”, is associated with depression in the present and future, and is thought to be non-adaptive (Treynor et al., 2003). Whereas Treynor et al. (2003) found the reflection factor to be more correlated to depression in the present, but associated with less depression over time. There is adequate internal consistency for both the brooding ( $\alpha = .77$ ) and reflection ( $\alpha = .72$ ) subscales (Treynor et al., 2003). These subscales also have adequate test-retest reliability ( $r = .62$  for brooding,  $r = .60$  for reflection) (Treynor et al., 2003). Subsequent studies have supported the idea that reflection and brooding are two separate subcomponents of depressive rumination and that brooding is generally the maladaptive subcomponent (Schoofs et al., 2010).

Even with these proposed changes by Treynor et al. (2003) and others, researchers appear to continue to use the unmodified 22-item scale in research, resulting in three subscales: brooding, reflection, and depression-related (Roelefs et al., 2006; Johnson, McKenzie, McMurrich, 2007; Schoofs et al., 2010). As a result, consideration of the various subscales on the *RRS* was accounted for in relation to our hypotheses. The brooding subscale was of particular interest in this study as it is found in the literature to be most maladaptive and most related to depression in the present and future. Considering the *RSS* has components related to depressive symptoms, this measure also served as a measure of current mental health functioning for the participants, without having to add an additional measure, which may have been overly burdensome for participants.

**Positive affect.** The *Positive and Negative Affect Schedule (PANAS)* was developed by Watson, Clark, & Tellegen (1988). With a total of 20 items, this scale is comprised of two mood scales, positive and negative affect, which can be coded separately by summing up the corresponding items (see Appendix C). Higher scores on the positive affect scale indicate higher levels of positive affect; conversely, higher scores on the negative affect scale indicate higher levels of negative affect. The respondent is asked to identify how close the listed emotion (i.e. *interested, distressed*), matches their mood, and answers are rated on a 5-point Likert scale from “very slightly or not at all” to “extremely”. Watson et al. (1988) designed the *PANAS* to assess mood during various time frames: in the moment, today, past few days, week, past few weeks, year, general. Watson et al. (1988) found that use of long-term instructions, such as the past year or in general allows for the assessment of “traitlike stability” (p. 1069). The *PANAS* scales have shown high internal consistency; Cronbach’s alpha ranges from .86 to .90 for positive affect scale and .84 to .87 for negative affect scale, depending on time period being assessed (Watson et al., 1988). The subscales have also been found to be uncorrelated ( $r = -.12$  to  $-.23$ ) to each other (Watson et al., 1988). The *PANAS* has been validated with undergraduate samples. Watson & Clark (1994) found that when assessing affect in the moment, their undergraduate sample had a mean score of 29 for positive affect and 15.8 for negative affect. But when assessing affect over the past year, their undergraduate sample had a mean of 35.9 for positive affect and 22.8 for negative affect.

**Social support.** The *Multidimensional Scale of Perceived Social Support (MSPSS)* is a 12 item assessment comprised of three subscales: family, friends and significant others (Zimet, Dahlem, Zimet, & Farley, 1988). Respondents answer each statement on a seven-point Likert-scale ranging from “very strongly disagree” to “very strongly agree” (see

Appendix E). An example statement from the friends subscale is, “I can count on my friends when things go wrong” (Zimet et al., 1988, p. 35). This assessment was originally normed on male and female undergraduates, but has also been validated in studies with adults, adolescents, and children (Zimet et al., 1988; Zimet, Powell, Farley, Werkman, & Berkoff, 1990). A total score of support can be summed from the three subscales, or the subscales can be scored individually and compared to one another.

The *MSPSS* has good internal reliability (Cronbach’s  $\alpha = .88$ ), good test-retest reliability (.85), and moderate construct validity, as the scale was significantly negatively related to depression ( $r = -.25, p < .01$ ) (Zimet et al., 1988). Zimet et al. (1988) found that women tend to report higher levels of social support from friends and significant others than males do.

**Posttraumatic growth.** Tedeschi and Calhoun (1996) created the *Posttraumatic Growth Inventory (PTGI)* to assess the five factors found to be associated with growth in the literature: new possibilities, relating to others, personal strengths, spiritual change, and appreciation of life (Park & Lechner, 2006). Confirmatory factor analyses revealed this five-factor model of growth to best fit the data, rather than viewing the domain as comprising three factors (changed perception of self, changed interpersonal relationships and changed philosophy of life) or being unitary, indicating good construct validity (Taku, Cann, Calhoun, & Tedeschi, 2008). This scale has 21 items for which respondents answer to each statement on a scale from zero to five (see Appendix G); zero meaning the respondent did not experience the change as a result of their crisis, five meaning the respondent experienced this change to a very great degree as a result of their crisis (Tedeschi & Calhoun, 1996). An example statement is, “I have a greater appreciation for the value of my own life” (Tedeschi



& Calhoun, 1996, p. 460). This assessment can yield a total sum score, as well as the five individual factor scores. Higher scores indicate more reported benefits after the potentially traumatic events.

The *PTGI* has good internal consistency ( $\alpha = .90$ ) and acceptable test-retest reliability ( $r = .71$ ) (Tedeschi & Calhoun, 1996). Overall, women tend to report more benefits than men (Tedeschi & Calhoun, 1996). *PTGI* was also found to be unrelated to social desirability, but to be positively correlated to optimism and religiosity (Tedeschi & Calhoun, 1996). This assessment is appropriate for use with college students as it was developed and validated using a university sample (Park & Lechner, 2006).

### **Procedures**

An email notification was distributed to the local university community to let students know that Dr. Collie Conoley and his doctoral student were conducting a study on emotions and life events. Participants were offered the chance to win one of three raffle prizes (two \$25 gift cards, one \$50 gift card) by being a participant in the study. Respondents were asked to electronically click on a link provided in their email to complete assessments on a dedicated server administered by the Social Science Survey Center (SSSC) at UCSB.

All respondents were asked to complete: the *THS*, the *RRS*, the *MSPSS*, the *PANAS* and the *MEIM* (see Table 1). The assessments were administered in this order because similar studies examining the variables of positive affect, rumination, and/or posttraumatic growth have also started with an assessment of negative life events, followed by assessment of functioning and adjustment, and ending with assessment of posttraumatic growth (Park et al., 2008; Boyraz & Efstathiou, 20011; Park & Fenster, 2004). Since PTG is a phenomenon only relevant after a potentially traumatic life event, respondents were only administered the

PTGI if they positively endorsed (by selecting “yes”) any item on the THS and only these individuals were included in the analysis of this study. Participants who endorsed at least one PTE on the PTGI completed the research modified version of the *MSPSS*, directly after the unmodified version, in which participants answered the same 12 statements, but this time the prompt read: “We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you generally felt about each statement the year **before** the most emotionally bothersome event you previously indicated” (see Appendix F).

All participants completed the *PANAS* and were asked to respond how they feel in terms of the “past few weeks”, in order to get a more stable (as opposed to using the specifier “present moment”) and current report of affect. Participants who endorsed at least one PTE on the PTGI were also administered the *PANAS-modified* directly after the *PANAS*. Unlike the first administration of the *PANAS*, during the second administration of this measure only the positive affect subscale was administered (as positive affect has shown mixed results in its relation to PTGI) and respondents were asked to complete the 10-item subscale with the following prompt: “This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you generally felt this way during the year **before** the most emotionally bothersome event you previously indicated. Use the following scale to record your answers” (see Appendix D). Responses from all questionnaires were securely stored on the SSSC’s dedicated server and made available to the researchers for analysis through SPSS and Mplus. Differences due to gender, ethnicity, and age when the PTE was experienced were also explored in order to determine any potential differences for participants.

Table 1

*Order of Measures*

Measure	If a PTE was endorsed on the <i>THS</i> , include:
1. Trauma History Screen ( <i>THS</i> )	
2. Ruminative Responses Scale ( <i>RRS</i> )	
3. Multidimensional Scale of Perceived Social Support ( <i>MSPSS</i> )	4. Multidimensional Scale of Perceived Social Support – Modified ( <i>MSPSS - M</i> )
5. Positive and Negative Affect Schedule ( <i>PANAS</i> )	6. Positive and Negative Affect Schedule - Modified ( <i>PANAS - M</i> )
	7. Posttraumatic Growth Inventory ( <i>PTGI</i> )
8. Multigroup Ethnic Identity Measure ( <i>MEIM</i> )	

**Results**

**Participants**

Two-hundred and ninety-five undergraduate and graduate students participated in this study. Over half (65.4%) were female, the average age was 20.05 years ( $SD = 1.99$ ), and 22% identified as Caucasian, 8.1% identified as Latino/a/Chicano/a, 12.9% identified as Asian/Pacific Islander/Filipino, 2.7% identified as bi-racial/multi-racial, 0.7% identified as African-American, 0.7% identified as E. Indian, and data on ethnicity was missing for 70 participants. Of these participants, 61.4% (181 individuals) endorsed at least one potentially traumatic event on the *THS* and 60 percent (177 individuals) stated that the potentially traumatic event they experienced bothered them emotionally. Only those who endorsed a potentially traumatic event and stated that it was emotionally bothersome to them were included in the analyses. After removing participants who had incomplete data, and removing two individuals who were under the age of 18, the final number of participants included in

analyses was 127. Seventy-four percent were female, the average age was 20.27 years ( $SD = 2.53$ ), and 32.3% identified as Caucasian, 21.3% identified as Latino/a/Chicano/a, 20.5% identified as Asian/Pacific Islander/Filipino, 6.3% identified as bi-racial/multi-racial, 1.6% identified as African-American, and one person declined to state ethnicity. Comparing the demographic data of all those who participated in the study to those who endorsed a PTE (not included in this text), to those who endorsed a PTE and were emotionally bothered by it, shows comparable numbers based on age, gender and ethnicity. There was almost a ten percent increase in females in the sample overall, compared to those who experienced a PTE and were emotionally bothered by it, this difference fits with the literature that states that women have a higher prevalence rate of PTSD. The analyses were conducted assuming that the individuals in this sample who responded to the email request were not significantly different from the individuals in the larger population, however, there is no demographic data from the population, so this assumption cannot be verified. The most commonly experienced potentially traumatic event by participants was experiencing the death of a close family member or friend (61 occurrences of this potentially traumatic event reported). The Trauma History Screen has an option for participants to endorse “some other sudden event” that made them feel “very scared, helpless or horrified”; this was the second most commonly experienced potentially traumatic event (54 occurrences of this potentially traumatic event reported, see Table 2).

Table 2

*Frequency of Endorsement of Each Type of Potentially Traumatic Event on the Trauma*

*History Screen Measure*

PTE Item	<i>N</i> <sup>1</sup>	<i>Percent</i>
Transportation Accident	22	17.3%
Accident at Work/Home	7	5.5%
Natural Disaster	21	16.5%
Hit/Kicked as Child	20	15.7%
Hit/Kicked as Adult	8	6.3%
Forced Sexual Contact as Child	16	12.6%
Forced Sexual Contact as Adult	12	9.4%
Attack with Weapon	4	3.1%
Military Service PTE	0	0.0%
Sudden Death Family/Friend	61	48.0%
Witness Death/Injury	17	13.4%
Horrifying Event	54	42.5%
Sudden Move/Loss	17	13.4%
Abandonment	26	20.51%

1. Total number of endorsements across all participants. Since multiple traumas occur, the percentage totals to more than 100%.

**Hypothesis 1**

Hypothesis 1 examines the relationship between perceived social support and posttraumatic growth (see Table 3 for correlations of all constructs). The association of social support pre- and post-trauma was examined separately and then together. The variables were examined separately because of the importance of knowing the advisability of pursuing prevention and/or remediation efforts using social support interventions in response to trauma. The third analysis examined both pre- and post-trauma measures of social support to see which had the greatest effect on participants' scores on the PTGI. Bivariate regressions

were run for Hypothesis 1a and 1b. In order to test Hypothesis 1c, a multiple regression was run. Multiple regression was appropriate to examine the relationship between three continuous variables. In general, regression allows us to make the “prediction of one variable from knowledge of one or more other variables” (Howell, 2008, p. 212). Multiple regression refers to the use of one criterion (dependent variable) and more than one predictor variable (independent variable). There are three methods of variable entry when using multiple regression: standard, sequential/hierarchical, and statistical (Warner, 2008). Standard entry means that all variables are entered at once. Sequential, or hierarchical, entry means that there may be a “temporal priority among predictor variables...or a theoretical rationale for order of entry” (Warner, 2008, p. 591). Statistical, or data-driven, entry means that “the only research goal is to identify the smallest possible set of predictor variables that will generate the largest possible  $R^2$  value” (Warner, 2008, pp. 591-592).

Using PASW Statistics 18.0 (SPSS Inc., 2009) three separate regression analyses examined the relationship between the dependent variable, PTGI scores, predicted by the independent variables, current and past social support. The first two regression analyses were as follows:

Analysis 1: Social support post-potentially traumatic event predicting PTGI

(Hypothesis 1a)

Analysis 2: Social support pre-potentially traumatic event predicting PTGI

(Hypothesis 1b)

The final analysis for Hypothesis 1 was a multiple regression using standard entry and was as follows:

Analysis 3: Social support post-potentially traumatic event; Social support pre-potentially traumatic event predicting PTGI (Hypothesis 1c)

The Trauma History Screen was used to screen out those who did not endorse at least one potentially traumatic event. In order to ensure that the assumptions for a regression are met, a histogram was examined in PASW to look at the relationship between each predictor variable and the criterion variable, to make sure that the distribution is approximately normal, and to assess for extreme outliers (Warner, 2008). Additionally, a scatter plot was examined to make sure that the relationship between all pairs of variables is linear and that there are no extreme bivariate outliers (Warner, 2008). All regression analyses were run in PASW Statistics 18.0.

Table 3

*Correlations of Sums of Scales*

		RRS	PANAS	PANAS- Modified	MSPSS	MSPSS- Modified	PTGI
RRS <sup>1</sup>	<i>r</i>	1	-.442**	-.278**	-.215*	-.148	.136
	<i>p</i>		.000	.006	.037	.154	.222
	<i>N</i>	101	98	96	94	94	82
PANAS <sup>2</sup>	<i>r</i>	-.442**	1	.470**	.521**	.356**	.150
	<i>p</i>	.000		.000	.000	.000	.166
	<i>N</i>	98	108	104	103	102	87
PANAS - Modified	<i>r</i>	-.278**	.470**	1	.216*	.385**	.078
	<i>p</i>	.006	.000		.029	.000	.468
	<i>N</i>	96	104	106	102	102	88
MSPSS <sup>3</sup>	<i>r</i>	-.215*	.521**	.216*	1	.685**	.232*
	<i>p</i>	.037	.000	.029		.000	.032
	<i>N</i>	94	103	102	105	101	86
MSPSS - Modified	<i>r</i>	-.148	.356**	.385**	.685**	1	.101
	<i>p</i>	.154	.000	.000	.000		.347
	<i>N</i>	94	102	102	101	104	88
PTGI <sup>4</sup>	<i>r</i>	.136	.150	.078	.232*	.101	1
	<i>p</i>	.222	.166	.468	.032	.347	
	<i>N</i>	82	87	88	86	88	89

\*\* Correlation is significant at the 0.01 level (2-tailed)

\* Correlation is significant at the 0.05 level (2-tailed)

1. Ruminative Responses Scale

2. Positive and Negative Affect Schedule

3. Multidimensional Scale of Perceived Social Support

4. Posttraumatic Growth Inventory

**Hypothesis 1a.** Examination of the assumptions for a regression showed that the histogram for the predictor variable of perceived social support *after* the potentially traumatic event was slightly skewed to the right. This could be due to a small sample size. The



histogram for the criterion variable of posttraumatic growth was relatively normally distributed. The results of this regression analysis indicated that perceived social support after a potentially traumatic event was significantly predictive of an individual's posttraumatic growth,  $R^2 = .054$ ,  $F(1, 84) = 4.78$ ,  $p = 0.03$ . Although this result was significant, only 5.4% of the variance in PTGI scores was predictable from MSPSS scores.

**Hypothesis 1b.** Examination of the assumptions for a regression showed that the histogram for the predictor variable of perceived social support pre-potentially traumatic event was slightly skewed to the right. Again, this could be due to a small sample size and thus analyses continued. The histogram for the criterion variable of posttraumatic growth was normally distributed. The results of this regression analysis indicated that perceived social support prior to a potentially traumatic event was not significantly predictive of an individual's posttraumatic growth,  $R^2 = .01$ ,  $F(1, 86) = .895$ ,  $p = 0.35$ .

**Hypothesis 1c.** Analysis of a scatterplot of sums of the measures for perceived social support (both pre- and post-potentially traumatic event) and posttraumatic growth revealed a generally linear relationship, with weak correlations between these predictor variables and posttraumatic growth. Results of the multiple regression reveal that when combined, the variables of perceived social support prior to and after a potentially traumatic event do not significantly predict posttraumatic growth,  $R^2 = .06$ ,  $F(2, 82) = 2.49$ ,  $p = 0.09$ .

## **Hypothesis 2**

Similar to the analysis of Hypothesis 1, regression analyses were also be used to analyze the data in Hypothesis 2 but with different independent variables. For this test, the criterion variable was again posttraumatic growth (as indicated by scores on the PTGI), but the predictor variables were pre- and post-positive affect (pre and post referring to before and

after the potentially traumatic event). As in Hypothesis 1, the Trauma History Screen was used to screen out those who did not endorse at least one potentially traumatic event and variables were analyzed before running the regression analyses to ensure that the statistical test assumptions were met. Linear regressions were run for analysis 1 and 2 in order to examine the relationship between PTGI scores and current and past positive affect. All regression analyses were run in PASW Statistics 18.0.

**Hypothesis 2a.** The sum of the subscale of positive affect from the PANAS was the predictor variable for this analysis. Examination of the assumptions for a regression showed that the histogram for the predictor variable of positive affect post-potentially traumatic event and the histogram for the criterion variable of posttraumatic growth were both relatively normally distributed. Positive affect occurring after the potentially traumatic event was not significantly predictive of an individual's posttraumatic growth,  $R^2 = .022$ ,  $F(1, 85) = 1.95$ ,  $p = 0.16$ .

**Hypothesis 2b.** Examination of the assumptions for a regression showed that the histogram for the predictor variable of positive affect pre-potentially traumatic event and the histogram for the criterion variable of posttraumatic growth were both relatively normally distributed. Positive affect occurring before the potentially traumatic event was not significantly predictive of an individual's posttraumatic growth,  $R^2 = .01$ ,  $F(1, 86) = 0.531$ ,  $p = 0.47$ .

**Hypothesis 2c.** Examination of the assumptions for a regression showed that the scatterplot of sums of the PANAS, PANAS-modified, and PTGI scales revealed a generally linear relationship, with weak correlations between these predictor variables and posttraumatic growth. Results of the multiple regression reveal that when combined, the

variables of positive affect pre- and post-potentially traumatic event do not significantly predict posttraumatic growth,  $R^2 = .02$ ,  $F(2, 83) = 1.00$ ,  $p = 0.37$ .

### **Validity of Subscales**

Factor analyses were run for the multifactor measures MSPSS and PTGI. Mplus (Muthen & Muthen, 2012) was used to run both exploratory factor analyses (EFA) and confirmatory factor analyses (CFA) on these two measures. In an exploratory factor analysis, the “number and nature of the retained factors is determined to a great extent by the sample data” whereas, in confirmatory factor analysis the “researcher typically begins with the theoretically based model that specifies the number of latent variables and identifies which specific measured variables are believed to be indicators of each latent variable in the model” (Warner, 2008, pp. 814-815).

**Social support before a potentially traumatic event.** An EFA was performed on both measures to “investigate the emergent factor structure at the item level” and “allowed for an unconstrained investigation of the best structure to explain the correlation among the variables” (Dowdy, Twyford, Chin, DiStefano, Kamphaus & Mays, 2011, p. 381). An EFA of social support pre-PTE showed that goodness-of-fit statistics supported a three factor model with the set of 12 items,  $\chi^2(33) = 100.72$ ,  $p = 0.00$ , RMSEA = 0.139 (90% confidence interval [CI] = .109–.171), and SRMR = .017. The comparative fit index (CFI) was .955, indicating reasonable model fit (Bentler, 2007). The Standardized Root Mean Residual (SRMR) is less than .05, which indicates a good model fit (Hu & Bentler, 1999). Although the root mean square error of approximation (RMSEA) was a little high (above .08; Steiger, 1990), these fit indices in general (CFI, SRMR, RMSEA), represented the best factor model based on the 5 models explored.

Due to an error in the administration of the perceived social support measure, two items (item 8 and item 12) were accidentally identical, and thus only one item (item 8) was included in the CFA. A CFA based on the three-factor structure of the EFA (factor 1: items 1, 2, 5, 10; factor 2: items 3, 4, 8, 11, 12; factor 3: 6, 7, 9) was conducted, removing problematic item 12. Fit indices were as follows:  $\chi^2 (55) = 1343.51, p = 0.00$ , RMSEA = 0.087 (90% confidence interval [CI] = .054–.119), and SRMR = .038 and show an acceptable model fit. This model, with the exception of item 12, matched the literature (Zimet et al., 1998) showing a scale with three factors: significant other (factor 1), family (factor 2), and friend (factor 3).

**Social support after a potentially traumatic event.** An EFA of social support after a potentially traumatic event showed that goodness-of-fit statistics supported a three factor model with the set of 12 items,  $\chi^2 (33) = 84.06, p = 0.00$ , RMSEA = 0.120 (90% confidence interval [CI] = .088–.152), and SRMR = .022. The CFI (.953), along with the SRMR indicated reasonable model fit.

Item 12 was again removed from CFA analyses. A CFA based on the three-factor solution (factor 1: items 1, 2, 5, 10; factor 2: items 3, 4, 8, 11, 12; factor 3: 6, 7, 9) was conducted, removing problematic item 12. Fit indices were as follows:  $\chi^2 (41) = 96.77, p = 0.00$ , RMSEA = 0.112 (90% confidence interval [CI] = .083–.141), and SRMR = .068, revealing less of a good model fit than for perceived social support prior to a PTE. Once again, this model, with the exception of item 12, matched the literature (Zimet et al., 1998) showing a scale with three factors: significant other (factor 1), family (factor 2), and friend (factor 3).

**Posttraumatic growth.** An EFA of posttraumatic growth showed that goodness-of-fit statistics for five-factor model (factor 1: items 3, 4, 7, 10, 11, 12, 14, 19; factor 2: items 2, 13; factor 3: 6, 9, 15, 16, 17, 20, 21; factor 4: items 5, 18; factor 5: item 1) with the set of 21 items was acceptable,  $\chi^2(115) = 162.68, p = 0.0023, RMSEA = .063$  (90% confidence interval [CI] = .039-.085), and SRMR = .036. The CFI (.95) along with the SRMS and RMSEA indicated reasonable model fit. The three-factor and four-factor models were also acceptable.

As a result, CFAs were conducted on the three factor (factor 1: items 1, 3, 4, 5, 6, 7, 8, 10, 11, 12, 14, 17, 19; factor 2: items 2, 13; factor 3: items 9, 15, 16, 20, 21), the four factor (factor 1: items 1, 3, 4, 6, 7, 8, 10, 12, 14, 17, 19; factor 2: items 2, 11, 13; factor 3: items 9, 15, 16, 20, 21; factor 4: items 5, 18) and the five factor models. Problematic items were deleted in order to increase the fit indices. The fit of these CFAs was compared to the five-factor model (factor 1: items 6, 8, 9, 15, 16, 20, 21; factor 2: items 3, 7, 11, 14, 17; factor 3: items 4, 10, 12, 19; factor 4: items 5, 18; factor 5: items 1, 2, 13) reported by the literature (Taku et al., 2008). The model reported in the literature had the best fit. Fit indices were as follows:  $\chi^2(177) = 1168.41, p < 0.001, RMSEA = .081$  (90% confidence interval [CI] = .065-.097), and SRMR = .07. This five-factor model is comprised of the following five subscales: relating to others (factor 1), new possibilities (factor 2), personal strength (factor 3), spiritual change (factor 4), and appreciation of life (factor 5).

### **Demographic Differences**

Before analyzing hypothesis 3, it was important to explore if any differences on the PTGI were due to the demographic variables of age, gender, or ethnicity. Utilizing the factor

structures for PTGI from the EFA/CFA results, potential differences based on age, gender or ethnicity for different types of posttraumatic growth were explored.

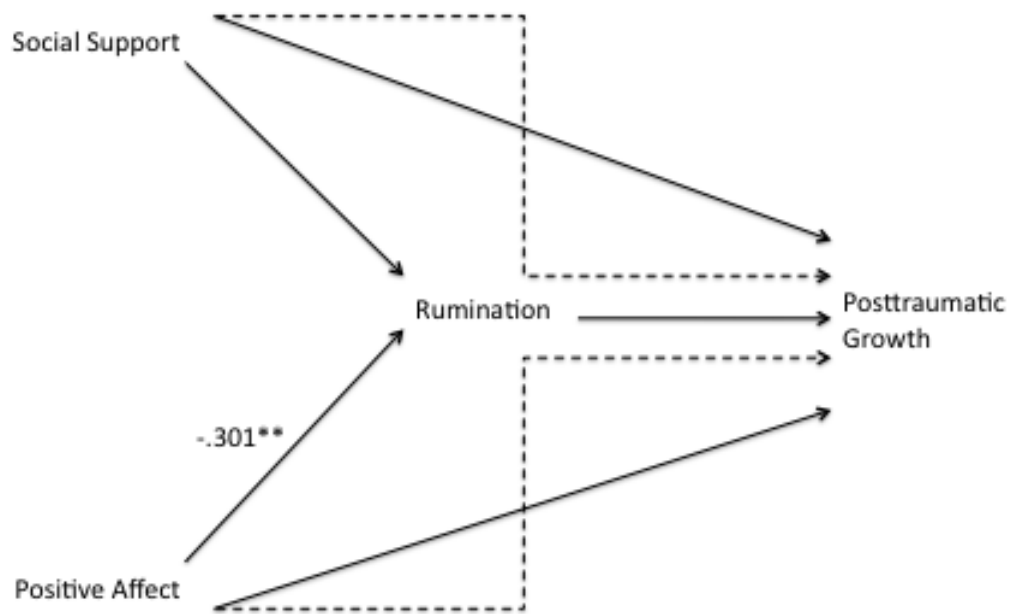
Use of the average score for all measures instead of the sum score allowed for a more accurate depiction of participants' scores, less influenced by a missing response on an item. Demographic differences for the average scores on the PTGI were explored first.  $k-1$  dummy variables were created for every group of  $k$  (Warner, 2008). There was one dummy variable for gender (male = 1, else = 0) and seven dummy variables (American Indian, African American, Latino/a, Asian, East Indian, Caucasian and biracial/multiracial for the eight categories of ethnicity. After categorizing ages of participants into groups based on early childhood (ages zero to five), middle childhood (ages six to eleven), adolescence (ages twelve to twenty) and early adulthood (ages twenty-one to forty), three dummy variables were created (early childhood, middle childhood, adolescence). In respect to averages scores on the PTGI, there was no difference for participants in terms of gender ( $p = .238$ ), ethnicity ( $p = .198$ ) or age ( $p = .124$ ).

The dummy variables of American Indian and East Indian were not included by PASW in analyses due to low numbers of participants identifying as either ethnicity.

### **Hypothesis 3**

Hypothesis 3 examines whether rumination affects the relationships between both positive affect and posttraumatic growth and between perceived social support and posttraumatic growth. To test this path analysis hypothesis, structural equation modeling (SEM) was utilized in Mplus, because an "SEM model is often represented as a path model," showing a latent variables potential correlation with potential "indicator" variables of the construct (Warner, 2008, p. 815). Two separate analyses were ran, one for the variables of

posttraumatic growth, rumination and perceived social support and positive affect pre-potentially traumatic events, and one looking at perceived social support and positive affect post-potentially traumatic event in respect to posttraumatic growth and rumination. Results of the first path analysis (see Figure 2) revealed a significant relationship only between positive affect pre- potentially traumatic event and rumination;  $\beta = -0.30, t = -2.92, p < .001$ . Results of the second path analysis (see Figure 3) revealed a significant direct effect of positive affect on rumination ( $\beta = -.44, t = -4.46, p < .001$ ), rumination on posttraumatic growth ( $\beta = .25, t = 2.42, p = .015$ ), social support on posttraumatic growth ( $\beta = .23, t = 2.14, p = .03$ ), and a significant indirect effect of positive affect on posttraumatic growth ( $\beta = -.11, t = 02.09, p = .04$ ). Both models are just identified, which means that it is not possible to judge the model fit because there are no degrees of freedom due to the fact that there are the same number of parameters as there are independent pieces of information in the variance/covariance matrix.



*Figure 2.* Path analysis of the influences of positive affect, perceived social support and rumination occurring prior to the potentially traumatic event. Dotted line indicates indirect effect.



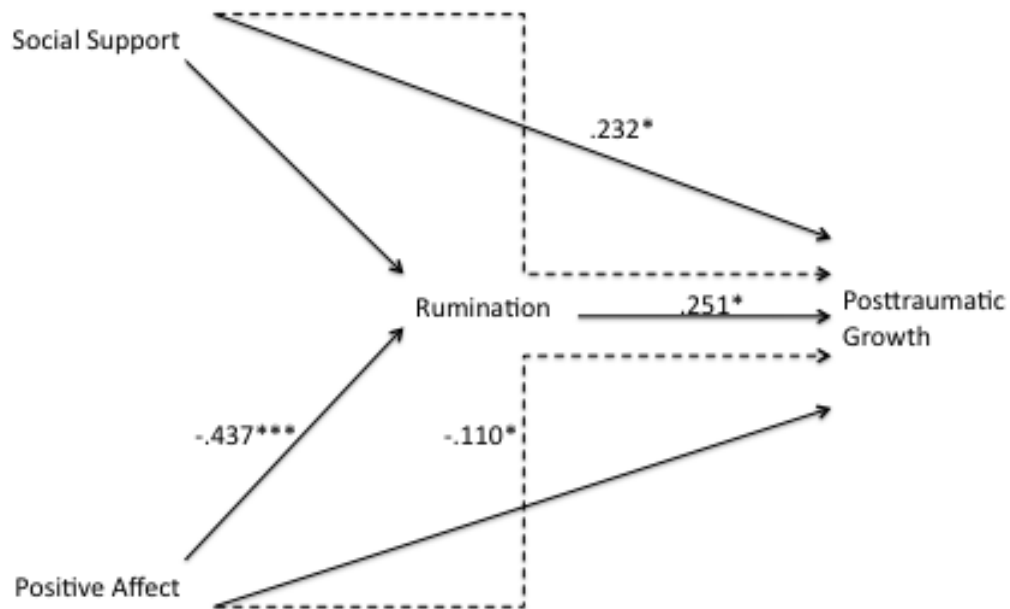


Figure 3. Path analysis of the influences of positive affect, perceived social support and rumination occurring after the potentially traumatic event. Dotted line indicates indirect effect.

The initial just identified a priori model did not allow for testing the fit of the path model. Since there were two non-significant paths for the second path analysis (perceived social support on rumination and positive affect on posttraumatic growth), the two non-significant paths were set equal to zero allowing an identified model for analysis. Results indicated a very good model fit:  $\chi^2(2) = 1.24, p = 0.54, RMSEA = .00$  (90% confidence interval [CI] = .000-.166), and SRMR = .021 (see Table 4). Setting the same parameters to zero, assuming the model pre- potentially traumatic event would be similar to the model

post- potentially traumatic event, and re-ran the model for path analysis 3a. Again, results indicated a very good model fit:  $\chi^2(2) = 1.33, p = 0.51, RMSEA = .00$  (90% confidence interval [CI] = .000-.172), and SRMR = .027 (See Table 5).

Table 4

*Decomposition of Effects from the Path Analysis: Post-Potentially Traumatic Event*

Effect	$\beta$	<i>T</i>
<i>PTGI</i> <sup>1</sup> on <i>MSPSS</i> <sup>2</sup>	.291	3.117**
<i>PTGI</i> on <i>PANAS</i> <sup>3</sup>	Removed	Removed
<i>PTGI</i> on <i>RRS</i> <sup>4</sup>	.205	2.131*
<i>RRS</i> on <i>MSPSS</i>	Removed	Removed
<i>RRS</i> on <i>PANAS</i>	-.439	-5.401***
<i>PTGI</i> on <i>RRS</i>	-.090	-1.96*
<i>PANAS</i>		
<i>PTGI</i> on <i>RRS</i>	0	0
<i>MSPSS</i>		

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

1. Posttraumatic Growth Inventory
2. Multidimensional Scale of Perceived Social Support
3. Positive and Negative Affect Schedule
4. Ruminative Responses Scale

Table 5

*Decomposition of Effects from the Path Analysis: Pre-Potentially Traumatic Event*

Effect	$\beta$	<i>T</i>
<i>PTGI</i> <sup>1</sup> on <i>MSPSS</i> <sup>2</sup>	.136	1.375
<i>PTGI</i> on <i>PANAS</i> <sup>3</sup>	Removed	Removed
<i>PTGI</i> on <i>RRS</i> <sup>4</sup>	.121	1.188
<i>RRS</i> on <i>MSPSS</i>	Removed	Removed
<i>RRS</i> on <i>PANAS</i>	-.316	-3.356***
<i>PTGI</i> on <i>RRS</i>	-.038	-1.129
<i>PANAS</i>		
<i>PTGI</i> on <i>RRS</i>	0	0
<i>MSPSS</i>		

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

1. Posttraumatic Growth Inventory
2. Multidimensional Scale of Perceived Social Support
3. Positive and Negative Affect Schedule
4. Ruminative Responses Scale

As the literature has identified one of the RRS subscales, brooding, to be most maladaptive and most related to depression in the present and future, the two path analysis models were examined in respect to the three subscales of the RRS (brooding, depression and reflection) in order to explore whether there are individual subscale effects. Results of this analysis showed a significant direct effect of positive affect pre- potentially traumatic event on the brooding subscale of the RRS ( $\beta = -.299, t = -3.126, p = .002$ ). The brooding subscale also had a significant direct effect on PTG ( $\beta = .241, t = 2.394, p = .017$ ); there were no indirect effects. Results of perceived social support and positive affect post- potentially traumatic event had the following results: significant direct effect of positive affect on brooding subscale of the RRS ( $\beta = -.363, t = -3.632, p < .001$ ), significant direct effect of the brooding subscale on PTG ( $\beta = .265, t = 2.733, p = .04$ ), significant direct effect of social support on the PTG ( $\beta = .222, t = 2.051, p = .04$ ), and a significant indirect effect of positive affect on PTG ( $\beta = -.096, t = -2.142, p = .03$ ). These results were similar to the overall model of rumination and were similar when looking at the RRS subscale of depression. Interestingly, the results changed for the subscale of reflection, such that there are no significant direct or indirect effects when looking at the variables prior to a potentially traumatic event, and only a significant direct effect of perceived social support after a potentially traumatic event on PTG ( $\beta = .236, t = 2.146, p = .03$ ).

## Discussion

The major purpose of the present research was to examine the relationship of positive affect and social support on an individual's posttraumatic growth. Further, this study examined the importance of positive affect and social support occurring prior to and after the reported traumatic experience. Finally, a model of influence was tested that included the direct and indirect role of rumination in the hypothesized influence of positive affect upon posttraumatic growth.

The influence of perceived social support reported before and after the potentially traumatic event were both hypothesized to increase posttraumatic growth. The results showed that this was only the case for perceived social support *post*-potentially traumatic event. Additionally, the combined effects of social support pre- and post-potentially traumatic event did not significantly alter scores on the Posttraumatic Growth Inventory. Although some studies do not show a link between perceived social support after a potentially traumatic event and posttraumatic growth (Linley & Joseph, 2004), most of the literature on these two constructs does show a significant relationship (Prati & Pietrantonio, 2009; Calhoun & Tedeschi, 2006). This finding is true for studies that have used the same measures, the MSPSS and the PTGI (Bozo, Gündođdu & Büyükasik-Colak, 2009; Cohen & Numa, 2011). One reason for inconsistencies for the construct of social support could be that, as previous studies have suggested, social support may be a more important variable to posttraumatic growth in the short-term, rather than the long-term (Cohen & Numa, 2011). The retrospective reporting used in this study meant that there was a large range (from zero to thirty-four years old) in which the individual experienced the potentially traumatic event. It could be that the non-significant findings were due to the range of time since the potentially traumatic event

was experienced, and thus altering the perception of importance that social support carries in relation to posttraumatic growth. Similarly, Prati and Peitranoni (2009) suggest, “It is likely that the beneficial effect of social support is different when controlling for the impact of different types of social support in difference phases after the trauma” (p. 375). Senol-Durak and Ayvasik (2010) found that perceived social support was significantly related to posttraumatic growth; however, this was through the effect of coping. Coping was not a variable explored in the current study, but may contribute to the lack of significant findings in the current study. Thus, this study might not have adequately assessed the complexity of the relationship between perceived social support and posttraumatic growth, rather than implying that perceived social support before a potentially traumatic event does not contribute to posttraumatic growth.

The influence of positive affect reported before and after the potentially traumatic event were both hypothesized to increase posttraumatic growth. The results did not support the hypothesis that positive affect significantly influences posttraumatic growth. These findings do not support Fredrickson’s (2000) *broaden-and-build* hypothesis and other studies finding a link between positive affect and posttraumatic growth (Reyes et al., 2008; Fredrickson, 2000; Folkman & Moskowitz, 2000a; Fredrickson et al., 2003). Past studies using both the PANAS and the PTGI have found that positive affect is positively correlated to posttraumatic growth (Hamama & Sharon, 2013; Abraido-Lanza, Guier, & Colon, 1998). A review of 39 empirical studies found that the general constructs of positive affect and posttraumatic growth to be positively associated with one another (Linley & Joseph, 2004). With such strong empirical support for the relationship between these two variables, it is confusing why this study was not able to replicate these findings. This may mean that our

sample was not large enough to capture this relationship. Or it may mean that there is something unique about this sample that nullified this finding. Other studies have conceptualized positive affect as a mediator for posttraumatic growth, such that it mediates the relationship between trait resilience and psychological resources as well as rumination and posttraumatic growth (Boyraz & Efstathiou, 2011; Fredrickson, et al., 2003). Thus, similar to the findings of this study between perceived social support and posttraumatic growth, rather than implying that perceived social support before or after a potentially traumatic event does not contribute to posttraumatic growth, it may be that this study did not adequately measure the complexity of the relationship between positive affect and posttraumatic growth in such a way as to show significant results.

Finally, a model of influence was tested that examined the direct and indirect role of rumination in the hypothesized influence of positive affect upon posttraumatic growth revealing the most interesting results. When examining influences upon growth after the potentially traumatic events, the path model revealed that rumination can negatively affect the relationship between positive affect and posttraumatic growth; a finding that is consistent with the literature on positive emotions (Folkman & Moskowitz, 2000a). Path analyses on the Ruminative Responses Scale subscale for brooding showed that positive affect, experienced both before and after a potentially traumatic event, significantly decreased brooding.

The surprising results of this study were that brooding significantly increased posttraumatic growth, a finding that does not make sense in regard to the current literature showing that rumination leads to negative mood and posttraumatic stress disorder (Nolen-Hoeksema et al., 2008; Lyubormirsky, et al., 2011). The Ruminative Responses Scale

subscale of depression also significantly increased posttraumatic growth after a potentially traumatic event; the same was not true for the reflection subscale of the Ruminative Responses Scale. Although past research has found that intentional/deliberate rumination positively affects posttraumatic growth (Taku et al., 2009; Stockton et al., 2011), a more problematic dwelling has been found to lead to a negative mood (Lyubormirsky et al., 2011). Thus, this finding contradicts findings of past studies. Path analyses for rumination as a whole, as well as the subscales of brooding and depression, show a significant positive relationship between these constructs experienced after a potentially traumatic event and posttraumatic growth. However, based on this model, the reflection subscale of the Ruminative Responses Scale, an intentional/deliberate type of rumination, has no effect on posttraumatic growth.

In order to explore this interesting, albeit confusing, finding, correlations were examined between all of the items in the Ruminative Responses Scale with the averages of the Positive and Negative Affect Schedule, the Multidimensional Scale of Perceived Social Support and the Posttraumatic Growth Inventory. The only item on the Ruminative Responses Scale that correlates with the Posttraumatic Growth Inventory is the item that states, “What am I doing to deserve this?” ( $r = .318, p = .001$ ); this item is part of the brooding subscale. None of the items from the Ruminative Responses Scale that correlate with the Positive and Negative Affect Schedule and the Multidimensional Scale of Perceived Social Support also correlate with the Posttraumatic Growth Inventory. What makes this item different than the others included in the Ruminative Responses Scale? Does it imply that the individual has accepted that a potentially traumatic event has happened to them and that they are not in denial? Although the question appears to imply that what occurred is the survivor’s

fault, might it be that this question allows for acceptance of the event and moves the individual toward growth? Ehring et al. (2008) found that rumination may be adaptive in situations in which repetitive thinking allows an individual to both think about their problem and identify solutions. This type of deliberate rumination has been linked to posttraumatic growth (Taku et al., 2009) and could potentially explain the confusing findings in this study.

Another explanation might be that another construct mediates this positive relationship between brooding and posttraumatic growth. It could be that brooding, the subscale most correlated to psychopathology, leads an individual to behave in such a way that others offer support to the individual in need, thus increasing posttraumatic growth. The same may be true for rumination as a whole and the depression subscale. Birrer and Michael (2011) found that rumination led to increased helplessness, a finding that may indicate openness to increased support from external sources. Reflective rumination might lead the individual to act in ways in which less social support is offered to the individual, as they may be perceived as higher functioning.

A third potential explanation for these findings comes from research on coping. Researchers have used the terms engaged or disengaged, approach or avoidance, and attention or avoidance to refer to “behavioral and cognitive efforts one uses to manage the demands of a stressful situation”, meaning coping (Chang & DeSimone, 2011, p. 118; Suls & Fletcher, 1985; Tobin, Holroyd, Reynolds & Wigal, 1989). Tobin et al. (1989) define engagement as “active efforts to manage both problem- and emotion-focused aspects of the stressor,” which engages an individual in “active efforts to control, manage or change stressful circumstances, as well as to manage emotional responses to the stressor” (p. 350). Whereas disengagement means that the individual avoids thinking about the situation and



disengages the individual from the “person/environment transaction” (Tobin et al. , 1989, p. 350). Items included in the Ruminative Responses Scale might be capturing an engaged coping style.

The sample collected in this study appear to fit with the literature. The sample revealed that about sixty-percent of students who participated in this study experienced at least one PTE which is comparable to other reported percentages in the literature (Hepp et al., 2006; Norris, 1992; Carlson et al., 2011). Experiencing the sudden death of a close family member or friend was the most frequently endorsed PTE across all participants in this study, a finding that is also consistent with the literature (Norris, 1992; Carlson et al., 2011).

When looking at gender, ethnicity and age differences in terms of the Posttraumatic Growth Inventory as a whole, no significant differences were found. However, previous studies have found age and gender differences in relation to the construct of posttraumatic growth. Nilsson et al. (2010) found that adolescent boys endorsed higher exposure to PTEs; which was explained as adolescent boys being “more exposed to violence and being in more dangerous environments” (Nilsson et al., 2010, p. 25). Past studies have consistently shown that males are more likely to experience a traumatic event than females (National Comorbidity Survey, 2005; Breslau, 2009). Given the literature, it is uncertain why gender and age differences were not found. Unlike the results of this study, other studies did find ethnic differences in the experience of PTEs (Norris, 1992; Anders et al., 2013). One hypothesis is that age differences were not found due to the narrow age band of responders, ranging from age 18 to 36, with 86.6% of respondents between the ages of 18 and 21. Additionally, this sample was not evenly distributed in terms of ethnicity or gender. Ninety-four of the 127 participants were female. Although there were larger numbers of Caucasian,

Latino/a and Asian participants than other ethnicities, the small sample size might have prevented gender differences from occurring.

### **Limitations**

The small sample size of participants who endorsed at least one potentially traumatic event means that the results should be interpreted with caution. Additionally, lack of significant findings in terms of positive affect and based on age, gender, or ethnicity may be due to the small sample size, rather than the conclusion that these variables are unrelated to posttraumatic growth. In the factor analyses, there were instances where fit indices and residuals were incompatible. Browne, MacCallum, Kim, Anderson and Glaser (2002) state that “one should not automatically conclude that the model in question is a poor one” (p. 419) as models “are more sensitive to misfit when unique variances are small than when they are large” (p. 403). However, caution should be taken in interpreting these results.

Assumptions for regression were generally met, however, for hypotheses 1a and 1b the histograms were slightly skewed to the right and for hypotheses 1c and 2c, scatterplot matrices revealed mostly linear, but weak, correlations between the predictor variables and posttraumatic growth. The skewness could potentially be due to the limited sample size and the range in frequency and type of potentially traumatic events endorsed by participants. A transformation of variables might increase the correlations between the predictor and criterion variables.

### **Implications**

In terms of interventions preventing psychopathology and increasing growth, the finding that perceived social support occurring after the potentially traumatic event increases posttraumatic growth is important for researchers and clinicians alike. It is important that a

survivor of a potentially traumatic event perceives him/herself to have a solid support system. Although the results of this study did not show a link between perceived social support prior to a potentially traumatic event and posttraumatic growth, prevention strategies that focus on social support will allow for this crucial component of growth to be present for an individual after a potentially traumatic event.

Rumination and the subscales of brooding and depression significantly negatively influenced the relationship between positive affect after a potentially traumatic event and posttraumatic growth. This implies that these intrusive types of rumination should be targeted in treatment after the potentially traumatic event as intrusive rumination may be inhibiting survivors from their healing process. However, rumination and the subscales of brooding and depression also significantly influenced posttraumatic growth. The implication for psychotherapy is that “not all intrusive thoughts are negative and need to be eliminated”, but rather that purposeful reflection may lead to posttraumatic growth (Stockton et al., 2011, p. 91). Clinicians may want to “encourage enough emotional regulation to allow for deliberate rumination about shattered core beliefs, and explicitly discuss emerging PTG in order to promote a sense of well-being and life satisfaction” (Triplett, Tedeschi, Cann, Calhoun, & Reeve, 2012, p. 408).

Just as rumination was found to be a complex process, the results of this study also imply that posttraumatic growth is similarly multidimensional. Similar conclusions have been found for the construct of resilience. Luthar et al. (2000) discussed the multidimensional nature of resilience and the need for researchers to “avoid overly global statements while describing their findings, limiting their conclusions to the precise domains in which resilience is manifested” (pp. 554-555). Luthar, Doernberger, and Zigler (1993) empirically

showed that “resilience is not an all-or-none phenomena” (p. 713). Researchers have called for a multilevel perspective that integrates biological and psychological perspectives on this construct and the potential pathways to resilience (Cicchetti & Curtis, 2007). The results of this study on posttraumatic growth, in conjunction with empirical findings on the construct of resilience, imply the need to continue to examine the construct of posttraumatic growth from a broad perspective and continue to explore potential pathways that can lead to posttraumatic growth.

Although the results of this study did not show gender differences, it is important to discuss how demographics might have influenced the outcome. The participants sampled were all undergraduate or graduate students at a four-year university. The unusual findings in terms of rumination might also be attributed to the fact that the participants are currently at college, where the ability to think deeply about ideas and events contributes to their academic success. Thus, for this sample, what is labeled as “rumination” might be the very thing that got them into college and allows them to obtain good grades. There were also more females who participated in this study than males. Research on rumination and gender roles shows that women ruminate more than men in response to a stressor (Broderick, 1998; Nolen-Hoeksema, 1987; Simonson, Mezulis, & Davis, 2011).

### **Future Directions**

Future research should explore the subscales of the Positive and Negative Affect Schedule and the Multidimensional Scale of Perceived Social Support in relation to the subscales of the Posttraumatic Growth Inventory. In particular, future studies should explore potential differences between the types of perceived social support (family, friends, significant others) and posttraumatic growth. In addition, exploring potential gender, ethnic

or age differences in relation to these subscales could be allow for an understanding of unique group differences. It may also be beneficial to explore other measures of the constructs used in this study in an effort to further explore relationships between positive affect, perceived social support, rumination and posttraumatic growth. Future research should continue to explore these and other variables that may contribute to posttraumatic growth in order to increase clinical interventions for treating trauma. Additionally, continuing to examine any relevant pre-trauma variables is important in understanding prevention interventions.

## References

- Abraido-Lanza, A. F., Guier, C., & Colon, R. M. (1998). Psychological thriving among Latinas with chronic illness. *Journal of Social Issues, 54*, 405–424. doi: 10.1111/j.1540-4560.1998.tb01227.x
- Ai, A. L., & Park, C. (2005). Possibilities of the positive following violence and trauma: Informing the coming decade of research. *Journal of Interpersonal Violence, 20*, 242-250. doi: 10.1177/0886260504267746
- Aldwin, C. M. (1994). *Stress, coping, and development: An integrative perspective*. New York, New York: Guilford.
- American Psychological Association. (2000). *Diagnostic and statistical manual of mental Disorders (4<sup>th</sup> ed., text revision)*. Washington, D.C.: Author.
- American Psychological Association. (2013). *Diagnostic and statistical manual of mental Disorders (5<sup>th</sup> ed.)*. Washington, D.C.: Author.
- Anders, S. L., Frazier, P. A., Shallcross, S. L. (2013). Changes in functioning following potentially traumatic life events in college students. *Psychological Trauma: Theory, Research, Practice, and Policy, Advance online publication*. doi: 10.1037/a0033835
- Bentler, P.M. (2007). On tests and indices for evaluating structural models. *Personality and Individual Differences, 45*, 825-829. doi: 10.1016/j.paid.2006.09.024
- Birrer, E., & Michael, T. (2011). Rumination in PTSD as well as in traumatized and nontraumatized depressed patients: A cross sectional clinical study. *Behavioural and Cognitive Psychotherapy, 39*, 381-397. doi: 10.1017/S1352465811000087
- Boyras, G., & Efstathiou, N. (2011). Self-focused attention, meaning, and posttraumatic

- growth: The mediating role of positive and negative affect for bereaved women. *Journal of Loss and Trauma*, *16*, 13-32. doi: 10.1080/15325024.2010.507658
- Bozo, Ö., Gündođdu, E., Büyükasik-Colak, C. (2009). The moderating role of different sources of perceived social support on the dispositional optimism-posttraumatic growth relationship in postoperative breast cancer patients. *Journal of Health Psychology*, *14*, 1009-1020. doi: 0.1177/1359105309342295
- Breslau, N. (2009). The epidemiology of trauma, PTSD, and other posttrauma disorders. *Trauma, Violence, & Abuse*, *10*, 198-210. doi: 10.1177/1524838009334448
- Broderick, P. C. (1998). Early adolescent gender differences in the use of ruminative and distracting coping strategies. *The Journal of Early Adolescence*, *18*, 173-191. doi: 10.1177/0272431698018002003
- Browne, M. W., MacCallum, R. C., Kim, C., Anderson, B. L., & Glaser, R. (2002). When fit indices and residuals are incompatible. *Psychological Methods*, *7*, 403-421. doi: 10.1037/1082-989X.7.4.403
- Butler, L. D. Blasey, C. M., Garlan, R. W., McCaslin, S. E., Azarow, J., Chen, X, . . . Spiegel, D. (2005). Posttraumatic growth following the terrorist attacks of September 11, 2001: Cognitive, coping, and trauma symptom predictors in an internet convenience sample. *Traumatology*, *11*, 247-267. doi: 10.1177/153476560501100405
- Calhoun, L. G., & Tedeschi, R. G. (Eds.) (2006). *Handbook of posttraumatic growth: Research and practice*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Carlson, E. B., Smith, S. R., Palmieri, P. A., Dalenberg, C., Ruzek, J. I., Kimerling, R., &

- Burling, T. A. (2011). Development and validation of a brief self-report measure of trauma exposure: The Trauma History Screen. *Psychological Assessment, 23*, 463-477. doi: 10.1037/a0022294
- Carver, C. S. (1998). Resilience and thriving: Issues, models and linkages. *Journal of Social Issues, 54*, 245-266. doi: 10.1111/j.1540-4560.1998.tb01217.x
- Chang, E. C., & DeSimone, S. L. (2001). The influence of hope on appraisals, coping and dysphoria: A test of hope theory. *Journal of Social and Clinical Psychology, 20*, 117-129. doi: 10.1521/jscp.20.2.117.22262
- Cicchetti, D., & Curtis, J. (2007). Multilevel perspectives on pathways to resilient functioning. *Development and Psychopathology, 19*, 627-629. doi: 10.1017/S0954579407000314
- Clay, R., Knibbs, J., & Joseph, S. (2009). Measurement of posttraumatic growth in young people: A review. *Clinical Child Psychology and Psychiatry, 14*, 411-422. doi: 10.1177/1359104509104049
- Cohen, J. (1992a). A power primer. *Psychological Bulletin, 112*, 155-159. doi: 10.1037/0033-2909.112.1.155
- Cohen, J. (1992b). Statistical power analysis. *Current Directions in Psychological Science, 1*, 98-101. doi: 10.1111/1467-8721.ep10768783
- Cohen, M., & Numa, M. (2011). Posttraumatic growth in breast cancer survivors: A comparison of volunteers and non-volunteers. *Psycho-Oncology, 20*, 69-76. doi: 10.1002/pon.1709
- Derryberry, D., & Tucker, D. M. (1994). Motivating the focus of attention. In: P. M. Neidenthai, & S. Kitayama (Eds.). *The hearts eye: Emotional influences in perception*



- and attention* (pp. 167-196). San Diego, CA: Academic Press.
- Dowdy, E. Twyford, J. M., Chin, J. K., DiStefano, C. A., Kamphaus, R. W., & Mays, K. L. (2010). Factor structure of the BASC–2 Behavioral and Emotional Screening System Student Form. *Psychological Assessment, 23*, 379-387. doi: 10.1037/a0021843
- Ehring, T., Frank, S., & Ehlers, A. (2008). The role of rumination and reduced concreteness in the maintenance of post traumatic stress disorder and depression following trauma. *Cognitive Therapy & Research, 32*, 488-506. doi: 10.1007/s10608-006-9089-7
- Ehring, T., Fuchs, N., & Klasener, I. (2009). The effects of experimentally induced rumination versus distraction on analogue posttraumatic stress symptoms. *Behavior Therapy, 40*, 403-413.
- Epel, E. S., McEwen, B. S., & Ickovics, J. R. (1998). Embodying psychological thriving: Physical thriving in response to stress. *Journal of Social Issues, 54*, 301-322. doi: 10.1111/j.1540-4560.1998.tb01220.x
- Fletcher, K. E. (2003). Childhood posttraumatic stress disorder. In E. J. Mash & R. A. Barkley (Eds.) *Child psychopathology*. New York, NY: The Guilford Press.
- Folkman, S., & Moskowitz, J. T. (2000a). Positive affect and the other side of coping. *American Psychologist, 55*, 647-654. doi: 10.1037//0003-066X.55.6.647
- Folkman, S., & Moskowitz, J. T. (2000b). Stress, positive emotion, and coping. *Current Directions in Psychological Science, 9*, 115-118. doi: 10.1111/1467-8721.00073
- Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology, 2*, 300-319. doi: 10.1037/1089-2680.2.3.300
- Fredrickson, B. L. (2000). Cultivating positive emotions to optimize health and well-being.

- Prevention & Treatment*, 3, 1-25. doi: 10.1037/1522-3736.3.1.31a
- Fredrickson, B. L. (2004). The broaden-and-build theory of positive emotions. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 359, 1367-1377. doi: 10.4135/9781412956253
- Fredrickson, B. L. & Levenson, R. W. (1998). Positive emotions speed recovery from the cardiovascular sequelae of negative emotions. *Cognitive Emotion*, 12, 191-220. doi: 10.1080/026999398379718
- Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crises? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11<sup>th</sup>, 2001. *Journal of Personality & Social Psychology*, 84, 365-376. doi: 10.1037/0022-3514.84.2.365
- Gelo, O., Braakmann, D., & Benetka, G. (2008). Quantitative and qualitative research: Beyond the debate. *Integrative Psychological & Behavioral Science*, 42, 266-290. doi: 10.1007/s12124-009-9107-x
- Gosling, S. D., Vazire, S., Srivastava, S., & John, O. P. (2004). Should we trust web-based studies? A comparative analysis of six preconceptions about internet questionnaires. *American Psychologist*, 59, 93-104. doi: 10.1037/0003-066x.59.2.93
- Hamama, L., & Sharon, M. (2013). Posttraumatic growth and subjective well-being among caregivers of chronic patients: A preliminary study. *Journal of Happiness Studies*, 14, 1717-1737. doi: 10.1007/s10902-012-9405-8
- Hardt, J., & Rutter, M. (2004). Validity of adult retrospective reports of adverse childhood experiences: Review of the evidence. *Journal of Child Psychology and Psychiatry*, 45, 260-273. doi: 10.1111/j.1469-7610.2004.00218.x

- Henson, R. K. (2006). Effect-size measure and meta-analytic thinking in counseling psychology research. *The Counseling Psychologist, 34*, 601-629. doi: 10.1177/0011000005283558
- Hepp, U., Gamma, A., Milos, G., Eich, D., Ajdacic-Gross, V., Rössler, W., Angst, J., & Schnyder, U. (2006). Prevalence of exposure to potentially traumatic events and PTSD. *European Archives of Psychiatry and Clinical Neuroscience, 256*, 151-158. doi: 10.1007/s00406-005-0621-7
- Heppner, P. P., Wampold, B. E., & Kivlighan, D. M. (2008). *Research Design in Counseling* (3<sup>rd</sup> ed.). Belmont, CA: Thomson Brooks/Cole.
- Herman, J. (1997). *Trauma and recovery: The aftermath of violence-from domestic abuse to political terror*. New York, NY: Basic Books.
- Howell, D. C. (2008). *Fundamental statistics for the behavioral sciences* (6<sup>th</sup> ed.). Belmont, CA: Thomson Wadsworth.
- Hu, L-T., & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55. doi: 10.1080/10705519909540118
- Isen, A. M. (2001). An influence of positive affect on decision making in complex situations: Theoretical issues with practical implications. *Journal of Consumer Psychology, 11*, 75-85. doi: 10.1207/S15327663JCP1102\_01
- Johnson, S. L., McKenzie, G., & McMurrich, S. (2008). Ruminative responses to negative and positive affect among students diagnosed with bipolar disorder and major depressive disorder. *Cognitive Therapy Research, 32*, 702-713. doi: 10.1007/s10608-007-9158-6

- Joseph, S., & Linley, P. A. (2005). Positive adjustment to threatening events: An organismic valuing theory of growth through adversity. *Review of General Psychology, 9*, 262-280. doi: 10.1037/1089-2680.9.3.262
- Joseph, S., & Linley, P. A. (2006). Growth following adversity: Theoretical perspectives and implications for clinical practice. *Clinical Psychology Review, 26*, 1041-1053. doi: 10.1016/j.cpr.2005.12.006
- Joseph, S., & Linley, P. A. (Eds.) (2008). *Trauma, recovery, and growth: Positive psychological perspectives on posttraumatic stress*. Hoboken, NJ: John Wiley & Sons, Inc.
- Joseph, S., Linley, P. A., & Harris, G. J. (2004). Understanding positive change following trauma and adversity: Structural clarification. *Journal of Loss & Trauma: International Perspective on Stress & Coping, 10*, 83-96. doi: 10.1080/15325020490890741
- King, L. A., Hicks, J. A., Krull, J. & Del Gaiso, A. (2006). Positive affect and the experience of meaning in life. *Journal of Personality and Social Psychology, 90*, 179-196. doi: 10.1037/0022-3514.90.1.179
- Lalande, K. M., & Bonanno, G. A. (2011). Retrospective memory bias for the frequency of potentially traumatic events: A prospective study. *Psychological Trauma: Theory, Research, Practice, and Policy, 3*, 165-170. doi: 10.1037/a0020847
- Lepore, S. J., & Revenson, T. A. (2006). Resilience and posttraumatic growth: Recovery, resistance and reconfiguration. In R. G. Tedeschi & L. G. Calhoun (Eds.) *Handbook of posttraumatic growth: Research and practice* (pp. 24-46). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Linley, P. A., & Joseph, S. (2004). Positive change following trauma and adversity: A

- review. *Journal of Traumatic Stress, 17*, 11-21. doi:  
10.1023/B:JOTS.0000014671.27856.7e
- Luthar, S. S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. *Child Development, 71*, 543-562. doi:  
10.1111/1467-8624.00164
- Luthar, S. S., Doernberger, C. H., & Zigler, E. (1993). Resilience is not a unidimensional construct: Insights from a perspective study of inner-city adolescents. *Development and Psychopathology, 5*, 703-717. doi: 10.1017/S0954579400006246
- Lyubormirsky, S., Boehm, J. K., Kasri, F., & Zehm, K. (2011). The cognitive and hedonic costs of dwelling on achievement-related negative experiences: Implications for enduring happiness and unhappiness. *Emotion, 11*, 1152-1167. doi:  
10.1037/a0025479
- Masten, A. S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist, 56*, 227-238. doi: 10.1037//0003-066X.56.3.227
- McNally, R. J. (2005). Debunking myths about trauma and memory. *Canadian Journal of Psychiatry, 50*, 817-822.
- Morland, L. A., Butler, L. D., & Leskin, G. A. (2008). Resilience and thriving in a time of terrorism. In S. Joseph & P. A. Linley (Eds.) *Trauma, recovery, and growth: Positive psychological perspectives on posttraumatic stress* (pp. 39-62). Hoboken, New Jersey: John Wiley & Sons, Inc.
- Moskowitz, J. T., & Epel, E. S. (2006). Benefit finding and diurnal cortisol slope in maternal caregivers: A moderating role for positive emotion. *The Journal of Positive Psychology, 1*, 83-91. doi: 10.1080/17439760500510510

- Muthén, L. K., & Muthén, B. O. (2012). *Mplus User's Guide (Seventh Edition)*. Los Angeles, CA: Muthén & Muthén. National Comorbidity Survey. (2005). Publications. Retrieved from <http://www.hcp.med.harvard.edu/ncs/publications.php#date2005>
- Nickerson, A. B., Reeves, M. A., Brock, S. E., & Jimerson, S. R. (2009). *Identifying, assessing, and treating PTSD at school*. New York, NY: Springer.
- Nilsson, D., Gustafsson, P. E., & Göran Svedin, C. (2010). Self-reported potentially traumatic life events and symptoms of post-traumatic stress and dissociation. *Nordic Journal of Psychiatry, 64*, 19-26. doi: 10.3109/08039480903264846
- Nolen-Hoeksema, S. (n. d.). *Ruminative responses scale*. Retrieved from [http://www.yale.edu/snhlab/People\\_files/Ruminative%20Responses%20Scale.pdf](http://www.yale.edu/snhlab/People_files/Ruminative%20Responses%20Scale.pdf)
- Nolen-Hoeksema, S. (1987). Sex difference in unipolar depression: Evidence and theory. *Psychological Bulletin, 101*, 259-282. doi: 10.1037/0033-2909.101.2.259
- Nolen-Hoeksema, S. & Morrow, J. (1991). A prospective study of depression and posttraumatic stress symptoms after a natural disaster: The 1989 Loma Prieta Earthquake. *Journal of Personality and Social Psychology, 61*, 115-121. doi: 10.1037/0022-3514.61.1.115
- Nolen-Hoeksema, S., Larson, J., & Grayson, C. (1999). Explaining the gender difference in depressive symptoms. *Journal of Personality and Social Psychology, 77*, 1061-1072. doi: 10.1037/0022-3514.77.5.1061
- Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking rumination. *Perspective on Psychology Science, 3*, 400-424. doi: 10.1111/j.1745-6924.2008.00088.x
- Norris, F. H. (1992). Epidemiology of trauma: Frequency and impact of different potentially

- traumatic events on different demographic groups. *Journal of Consulting and Clinical Psychology*, *60*, 409-418. doi: 10.1037/0022-006x.60.3.409
- O'Leary, V. E. (1998). Strength in the face of adversity: Individual and social thriving. *Journal of Social Issues*, *54*, 425-446. doi: 10.1111/j.1540-4560.1998.tb01228.x
- O'Leary, V. E., & Ickovics, J. R. (1995). Resilience and thriving in response to challenge: An opportunity for a paradigm shift in women's health. *Women's Health: Research on Gender, Behavior, & Policy*, *1*, 1-142.
- Park, C. L., Cohen, L. H., & Murch, R. L. (1996). Assessment and prediction of stress-related growth. *Journal of Personality*, *64*, 71-105. doi: 10.1111/j.1467-6494.1996.tb00815.x
- Park, C. L., & Fenster, J. R. (2004). Stress-related growth: Predictors of occurrence and correlates with psychological adjustment. *Journal of Social and Clinical Psychology*, *23*, 195-215. doi: 10.1521/jscp.23.2.195.31019
- Park, C. L., Lechner, S. C. (2006). Measurement issues in assessing growth following stressful life experiences. In L. G. Calhoun & R. G. Tedeschi (Eds.), *Handbook of posttraumatic growth: Research and practice* (pp. 47-67). Mahwah, NJ: Lawrence Erlbaum Associated, Inc.
- Park, C. L., Aldwin, C. M., Fenster, J. R., & Snyder, L. B. (2008). Pathways to posttraumatic growth versus posttraumatic stress: Coping and emotional reactions following the September 11, 2001, terrorist attacks. *American Journal of Orthopsychiatry*, *78*, 300-312. doi: 10.1037/a0014054
- Phinney, J. S. (1992). The Multigroup Ethnic Identity Measure: A new scale for use with

- adolescents and young adults from diverse groups. *Journal of Adolescent Research*, 7, 156–176. doi:10.1177/074355489272003
- Prati, G., & Pietrantoni, L. (2009). Optimism, social support, and coping strategies as factors contributing to posttraumatic growth: A meta-analysis. *Journal of Loss and Trauma*, 14, 364-388. doi: 10.1080/15325020902724271
- Read, J. P., Ouimette, P., White, J., Colder, C., & Farrow, S. (2011). Rates of DSM–IV–TR trauma exposure and posttraumatic stress disorder among newly matriculated college students. *Psychological Trauma: Theory, Research, Practice & Policy*. Advance online publication. doi: 10.1037/a0021260
- Reyes, G., Elhai, J. D., & Ford, J. D. (Eds.) (2008). *The encyclopedia of psychological trauma*. Hoboken, New Jersey: John Wiley & Sons, Inc.
- Roelofs, J., Muris, P., Huibers, M., Peeters, F., & Arntz, A. (2006). On the measurement of rumination: A psychometric evaluation of the ruminative response scale and the rumination on sadness scale in undergraduates. *Journal of Behavior Therapy and Experimental Psychiatry*, 37, 299-313. doi: 10.1016/j.jbtep.2006.03.002
- Ryff, C., & Singer, B. (1998). The role of purpose in life and personal growth in positive human health. In P. T. P. Wong, & P. S. Fry (Eds.), *The human quest for meaning: A handbook of psychological research and clinical applications* (pp. 213–235). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Santa Maria, A., Reichert, F., Hummel, S. B., & Ehring, T. (2012). Effects of rumination on intrusive memories: Does processing mode matter? *Journal of Behavior Therapy and Experimental Psychiatry*, 43, 901-909. doi: 10.1016/j.jbtep.2012.01.004
- Schiffirin, H. H., & Falkenstern, M. (2012). The impact of affect on resource development:



- Support for the broaden and build model. *North American Journal of Psychology*, *14*, 564-584.
- Schmidt, S. D., Blank, T. O., Bellizzi, K. M., & Park, C. L. (2011). The relationships of coping strategies, social support, and attachment style with posttraumatic growth in cancer survivors. *Journal of Health Psychology*, *17*, 1033-1040. doi: 10.1177/1359105311429203
- Schoof, H., Hermans, D., & Raes, F. (2010). Brooding and reflection as subtypes of rumination: Evidence from confirmatory factor analysis in nonclinical samples using the Dutch Ruminative Response Scale. *Journal of Psychopathology & Behavioral Assessment*, *32*, 609-617. doi: 10.1007/s10862-010-9182-9
- Schroevers, M. J., Helgeson, V. S., Sanderman, R., & Ranchor, A. V. (2010). Type of social support matters for prediction for posttraumatic growth among cancer survivors. *Psycho-Oncology*, *19*, 46-53. doi: 10.1002/pon.1501
- Senol-Durak, E., & Ayvasik, H. B. (2010). Factors associated with posttraumatic growth among myocardial infarction patients: Perceived social support, perception of the event and coping. *Journal of Clinical Psychology in Medical Settings*, *17*, 150-158. doi: 10.1007/s10880-010-9192-5
- Simonson, J., Mezulis, A., & Davis, K. (2011). Socialized to ruminate? Gender role mediates the sex difference in rumination for interpersonal events. *Journal of Social and Clinical Psychology*, *30*, 937-959. doi: 10.1521/jscp.2011.30.9.937
- Soper, D.S. (2013). A-priori Sample Size Calculator for Multiple Regression [Software]. Retrieved from <http://www.danielsoper.com/statcalc>
- SPSS Inc. (2009). PASW Statistics for MAC, Version 18.0. Chicago: SPSS Inc.

- Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research, 25*, 173-180. doi: 10.1207/s15327906mbr2502\_4
- Stockton, H., Hunt, N., & Joseph, S. (2011). Cognitive processing, rumination, and posttraumatic growth. *Journal of Traumatic Stress, 24*, 85-92. doi: 10.1002/jts.20606
- Suls, J., & Fletcher, B. (1985). The relative efficacy of avoidant and nonavoidant coping strategies: A meta analysis. *Health Psychology, 4*, 249-288. doi: 10.1037/02786133.4.3.249
- Tajima, E. A., Herrenkohl, T. I., Huang, B., & Whitney, S. D. (2004). Measuring child maltreatment: A comparison of prospective parent reports and retrospective adolescent reports. *American Journal of Orthopsychiatry, 74*, 424-435. doi: 10.1037/0002-9432.74.4.424
- Taku, K., Cann, A., Calhoun, L. G., & Tedeschi, R. G. (2008). The factor structure of the Posttraumatic Growth Inventory: A comparison of five models using confirmatory factor analysis. *Journal of Traumatic Stress, 21*, 158-164. doi: 10.1002/jts.20305
- Taku, K., Cann, A., Tedeschi, R. G., & Calhoun, L. G. (2009). Intrusive versus deliberate rumination in posttraumatic growth across US and Japanese samples. *Anxiety, Stress, & Coping: An International Journal, 22*, 129-136. doi: 10.1080/10615800802317841
- 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. doi: 10.1002/jts.2490090305

- Tedeschi, R. G., & Calhoun, L. G. (2004). Posttraumatic growth: Conceptual foundation and empirical evidence. *Psychological Inquiry, 15*, 1-18. doi: 10.1207/s15327965pli1501\_01
- Thoits, P. A. (1982). Conceptual, methodological, and theoretical problems in studying social support as a buffer against life stress. *Journal of Health and Social Behavior, 23*, 145-159. doi: 10.2307/2136511
- Thoits, P. A. (1995). Stress, coping, and social support processes: Where are we? What next? *Journal of Health and Social Behavior, Extra Issue*, 53-79. doi: 10.2307/2626957
- Tobin, D. L., Holroyd, K. A., Reynolds, R. V., & Wigal, J. K. (1989). The hierarchical factor structure of the Coping Strategies Inventory. *Cognitive Therapy and Research, 13*, 343-361. doi: 10.1007/bf01173478
- Tolin, D. F., & Foa, E. B. (2006). Sex differences in trauma and post-traumatic stress disorder: A quantitative review of 25 years of research. *Psychological Bulletin, 132*, 959-992. doi: 10.1037/0033-2909.132.6.959
- 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*, 400-410. doi: 10.1037/a0024204
- Vázquez, C., Cervellón, P., Pérez-Sales, P., Vidales, D., & Gaborit, M. (2005). Positive emotion in earthquake survivors in El Salvador (2001). *Anxiety Disorders, 19*, 313-328. doi: 10.1016/j.janxdis.2004.03.002
- Warner, R. M. (2008). *Applied statistics: From bivariate through multivariate techniques*. Thousand Oaks, CA: Sage Publications, Inc.

- Watson, D., & L. A. Clark (1994). The PANAS-X: Manual for the Positive and Negative Affect Schedule – Expanded form. Retrieved from [http://ir.uiowa.edu/psychology\\_pubs/11](http://ir.uiowa.edu/psychology_pubs/11)
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, *54*, 1063-1070. doi: 10.1037/0022-3514.54.6.1063
- 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. doi: 0.1002/jts.20210
- Weiss, T. (2005). A researcher's personal narrative: Positive emotions, mythical thinking, and posttraumatic growth. *Traumatology*, *11*, 209-219. doi: 0.1177/153476560501100402
- Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*, *52*, 30-41. doi: 10.1207/s15327752jpa5201\_2
- Zimet, G. D., Powell, S. S., Farley, G. K., Werkman, S., & Berkoff, K. A. (1990). Psychometric characteristics of the Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*, *55*, 610-617. doi: 10.1207/s15327752jpa5503&4\_17

Appendix A

Trauma History Screen (Carlson et al., 2011)

The events below may or may not have happened to you. Circle “YES” if that kind of thing has happened to you or circle “NO” if that kind of thing has not happened to you. **If you circle “YES” for any events:** put a number in the blank next to it to show many times something like that happened.

	<b>Number of times something like this happened</b>	
A. A really bad car, boat, train, or airplane accident	NO	YES _____
B. A really bad accident at work or home	NO	YES _____
C. A hurricane, flood, earthquake, tornado, or fire	NO	YES _____
D. Hit or kicked hard enough to injure – as a child	NO	YES _____
E. Hit or kicked hard enough to injure – as an adult	NO	YES _____
F. Forced or made to have sexual contact – as a child	NO	YES _____
G. Forced or made to have sexual contact – as an adult	NO	YES _____
H. Attack with a gun, knife, or weapon	NO	YES _____
I. During military service – seeing something horrible or being badly scared	NO	YES _____
J. Sudden death of close family or friend	NO	YES _____
K. Seeing someone die suddenly or get badly hurt or killed	NO	YES _____
L. Some other sudden event that made you feel very scared, helpless, or horrified	NO	YES _____
M. Sudden move or loss of home and possessions	NO	YES _____
N. Suddenly abandoned by spouse, partner, parent or family	NO	YES _____

**Did any of these things really bother you emotionally?      NO    YES**

If you answered “YES”, which event bothered you the most emotionally (A-N)? \_\_\_\_\_

Keep this one event in mind when answering the following questions:

You age when this happened: \_\_\_\_\_

Describe what happened:

When this happened, did anyone get hurt or killed?    NO      YES

When this happened, were you afraid that you or someone else might get hurt or killed? NO YES

When this happened, did you feel very afraid, helpless, or horrified? NO      YES

After this happened, how long were you bothered by it?      not at all/ 1 week/ 2-3 weeks/ a  
month or more

How much did it bother you emotionally?    not at all/ a little/ somewhat/ much/ very much

## Appendix B

### Ruminative Responses Scale (Treyner et al., 2003)

People think and do many different things when they feel depressed. Please read each of the items below and indicate whether you almost never, sometimes, often, or almost always think or do each one when you feel down, sad, or depressed. Please indicate what you *generally* do, not what you think you should do.

1 almost never                      2 sometimes                      3 often                      4 almost always

1. think about how alone you feel
2. think "I won't be able to do my job if I don't snap out of this"
3. think about your feelings of fatigue and achiness
4. think about how hard it is to concentrate
5. think "What am I doing to deserve this?"
6. think about how passive and unmotivated you feel
7. analyze recent events to try to understand why you are depressed
8. think about how you don't seem to feel anything anymore
9. think "What can't I get going?"
10. think "Why do I always react this way?"
11. go away by yourself and think about why you feel this way
12. write down what you are thinking about and analyze it
13. think about a recent situation, wishing it had gone better
14. think "I won't be able to concentrate if I keep feeling this way"
15. think "Why do I have problems other people don't have?"
16. think "Why can't I handle things better?"
17. think about how sad you feel
18. think about all your shortcomings, failings, faults, mistakes
19. think about how you don't feel up to doing anything
20. analyze your personality to try to understand why you are depressed
21. go someplace alone to think about your feelings
22. think about how angry you are with yourself

## Appendix C

### Positive and Negative Affect Schedule (Watson et al., 1988)

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you generally felt this way during the past year. Use the following scale to record your answers.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

\_\_\_interested

\_\_\_distressed

\_\_\_excited

\_\_\_upset

\_\_\_strong

\_\_\_guilty

\_\_\_scared

\_\_\_hostile

\_\_\_enthusiastic

\_\_\_proud

\_\_\_irritable

\_\_\_alert

\_\_\_ashamed

\_\_\_inspired

\_\_\_nervous

\_\_\_determined

\_\_\_attentive

\_\_\_jittery

\_\_\_active

\_\_\_afraid

## Appendix D

### Positive and Negative Affect Schedule (Watson et al., 1988) – Modified

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you generally felt this way during the year **before** the most emotionally bothersome event you previously indicated. Use the following scale to record your answers.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

- \_\_\_ interested
- \_\_\_ excited
- \_\_\_ strong
- \_\_\_ enthusiastic
- \_\_\_ proud
- \_\_\_ alert
- \_\_\_ inspired
- \_\_\_ determined
- \_\_\_ attentive
- \_\_\_ active



## Appendix E

### Multidimensional Scale of Perceived Social Support (Zimet et al., 1988)

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you generally feel about each statement when thinking of the past year.

**Circle the “1” if you Very Strongly Disagree**

**Circle the “2” if you Strongly Disagree**

**Circle the “3” if you Mildly Disagree**

**Circle the “4” if you are Neutral**

**Circle the “5” if you Mildly Agree**

**Circle the “6” if you Strongly Agree**

**Circle the “7” if you Very Strongly Agree**

1. There is a special person who is around when I am in need. 1 2 3 4 5 6 7
2. There is a special person with whom I can share my joys and sorrows. 1 2 3 4 5 6 7
3. My family really tries to help me. 1 2 3 4 5 6 7
4. I get the emotional help and support I need from my family. 1 2 3 4 5 6 7
5. I have a special person who is a real source of comfort to me. 1 2 3 4 5 6 7
6. My friends really try to help me. 1 2 3 4 5 6 7
7. I can count on my friends when things went wrong. 1 2 3 4 5 6 7
8. I can talk about my problems with my family. 1 2 3 4 5 6 7
9. I have friends with whom I can share my joys and sorrows. 1 2 3 4 5 6 7
10. There is a special person in my life who cares about my feelings. 1 2 3 4 5 6 7
11. My family is willing to help me make decisions. 1 2 3 4 5 6 7
12. I can talk about my problems with my friends. 1 2 3 4 5 6 7

Appendix F

Multidimensional Scale of Perceived Social Support (Zimet et al., 1988) –  
Modified

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you generally felt about each statement the year **before** the most emotionally bothersome event you previously indicated.

**Circle the “1” if you Very Strongly Disagree**

**Circle the “2” if you Strongly Disagree**

**Circle the “3” if you Mildly Disagree**

**Circle the “4” if you are Neutral**

**Circle the “5” if you Mildly Agree**

**Circle the “6” if you Strongly Agree**

**Circle the “7” if you Very Strongly Agree**

1. There was a special person who was around when I was in need. 1 2 3 4 5 6 7
2. There was a special person with whom I could share my joys and sorrows. 1 2 3 4 5 6 7
3. My family really tried to help me. 1 2 3 4 5 6 7
4. I got the emotional help and support I needed from my family. 1 2 3 4 5 6 7
5. I had a special person who was a real source of comfort to me. 1 2 3 4 5 6 7
6. My friends really tried to help me. 1 2 3 4 5 6 7
7. I could count on my friends when things went wrong. 1 2 3 4 5 6 7
8. I could talk about my problems with my family. 1 2 3 4 5 6 7
9. I had friends with whom I could share my joys and sorrows. 1 2 3 4 5 6 7
10. There was a special person in my life who cared about my feelings. 1 2 3 4 5 6 7
11. My family was willing to help me make decisions. 1 2 3 4 5 6 7
12. I could talk about my problems with my friends. 1 2 3 4 5 6 7

## Appendix G

### Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996)

#### Posttraumatic Growth Inventory

Indicate for each of the statements below the degree to which this change occurred in your life as a result of your crisis [**or researcher inserts specific descriptor here**], 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. (V)
- 2. I have a greater appreciation for the value of my own life. (V)
- 3. I developed new interests. (II)
- 4. I have a greater feeling of self-reliance. (III)
- 5. I have a better understanding of spiritual matters. (IV)
- 6. I more clearly see that I can count on people in times of trouble. (I)
- 7. I established a new path for my life. (II)
- 8. I have a greater sense of closeness with others. (I)
- 9. I am more willing to express my emotions. (I)
- 10. I know better that I can handle difficulties. (III)
- 11. I am able to do better things with my life. (II)
- 12. I am better able to accept the way things work out. (III)
- 13. I can better appreciate each day. (V)
- 14. New opportunities are available which wouldn't have been otherwise. (II)
- 15. I have more compassion for others. (I)
- 16. I put more effort into my relationships. (I)
- 17. I am more likely to try to change things which need changing. (II)
- 18. I have a stronger religious faith. (IV)
- 19. I discovered that I'm stronger than I thought I was. (III)
- 20. I learned a great deal about how wonderful people are. (I)
- 21. I better accept needing others. (I)

Note: Scale is scored by adding all responses. Factors are scored by adding responses to items on each factor. Items to which factors belong are not listed on form administered to participants.

## Appendix H

### Multi-Ethnic Identity Measure (Phinney, 1992)

In this country, people come from a lot of different cultures and there are many different words to describe the different backgrounds or ethnic groups that people come from. Some examples of the names of ethnic groups are Hispanic, Black, Asian-American, Native American, Irish-American, and White. These questions are about your ethnicity or your ethnic group and how you feel about it or react to it.

Please fill in: In terms of ethnic group, I consider myself to be \_\_\_\_\_

Use the numbers below to indicate how much you agree or disagree with each statement.

(4) Strongly agree; (3) Agree; (2) Disagree; (1) Strongly disagree

1. I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs.
2. I am active in organizations or social groups that include mostly members of my own ethnic group.
3. I have a clear sense of my ethnic background and what it means for me.
4. I think a lot about how my life will be affected by my ethnic group membership.
5. I am happy that I am a member of the group I belong to.
6. I have a strong sense of belonging to my own ethnic group.
7. I understand pretty well what my ethnic group membership means to me.
8. To learn more about my ethnic background, I have often talked to other people about my ethnic group.
9. I have a lot of pride in my ethnic group and its accomplishments.
10. I participate in cultural practices of my own group, such as special food, music, or customs.
11. I feel a strong attachment towards my own ethnic group.
12. I feel good about my cultural or ethnic background.