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The Impact of Perceived Social Support on Event Stressfulness, Core Beliefs Disruption, and Posttraumatic Growth in College Students

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FLORIDA STATE UNIVERSITY
COLLEGE OF EDUCATION

THE IMPACT OF PERCEIVED SOCIAL SUPPORT
ON EVENT STRESSFULNESS, CORE BELIEFS DISRUPTION, AND
POSTTRAUMATIC GROWTH IN COLLEGE STUDENTS

By
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I dedicate this dissertation to my parents, aunts and uncles, cousins, and other family members for their unwavering support and prayers. Mom and Dad, I can't thank you both enough for all you have done for me. Edwina, my older sister, thank you for always being there for me and for my wonderful neice/goddaughter and nephew. I also dedicate this dissertation to my many friends, including Shelly, Christle, Jacqueline, Kathleen, my sorority sisters, and countless others who continue to be in my corner and encourage me to unapologetically pursue my dreams. Thank you also to my partner, Michael, who in a short amount of time has become an important source of support and strength in my life. I thank God for individuals who have served as mentors and angels on Earth in my life throughout the years. I feel blessed to have had the opportunity to pursue my education, and I feel forever grateful for my "village" and community that has helped shape me into the person I am today. Finally, I dedicate this dissertation to those who have been impacted by various traumatic events. I hope that this research may help bring forth understanding, compassion, and hope for these individuals.

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ABSTRACT

Findings from trauma research have indicated that college students report high rates of trauma exposure, yet they may also experience positive growth outcomes following traumatic events. Researchers also indicate that perceptions of social support resources may impact the capacity for posttraumatic growth in these young adults. Examining the factors that may foster these positive posttrauma outcomes is necessary to develop more interventions that promote posttraumatic growth for trauma-exposed individuals, especially young adults in college. As a result of this research, individuals may also better understand the importance of perceived social support following trauma. Therefore, the impact of perceived social support on posttrauma outcomes in college students was examined in this study.

The goal of the present study was to investigate the possible mediating and/or moderating effects of perceived social support on the relationship between event stressfulness, core beliefs disruption, and posttraumatic growth. The study sample consisted of students from colleges and universities within the United States. A total of 212 participants were included in final statistical analyses because they endorsed an event stressfulness level of 4 or more, thus indicating a significant level of distress that could potentially contribute to posttraumatic growth (Groleau, Calhoun, Cann, & Tedeschi, 2013; Joseph, Murphy & Regal, 2012). Data for this study were collected between Summer and Fall 2015. Participants ranged from 18 to 25 years of age. Trauma, event stressfulness, core beliefs disruption, perceived social support, and posttraumatic growth were assessed using the Trauma History Questionnaire (Green, 1996), a one-item Event Stressfulness measure (Cann et al., 2010), the Core Beliefs Inventory (Cann et al., 2010), the Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988), and the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996), respectively. A series of

regression analyses, including one hierarchical regression analysis, were used to examine the research questions.

Based on findings from this study, event stressfulness, core beliefs disruption, and perceived social support were good predictors of posttraumatic growth. Additionally, participants' perceptions of social support resources moderated the relationship between event stressfulness, core beliefs disruption, and posttraumatic growth. Perceived social support was not found to be a mediator in this relationship. In addition, a bivariate correlation analysis was used to examine relationships among the variables. Results showed significant, positive associations among event stressfulness, core beliefs disruption, and posttraumatic growth. Posttraumatic growth was not significantly correlated with endorsement of trauma. Perceived social support was shown to have a significant, negative relationship with endorsement of trauma, but was not significantly positively correlated with any other variable. Discussion of the implications for these results is provided, as well as study limitations and directions for future research.

CHAPTER 1

INTRODUCTION

The primary goal of this study was to investigate the potential mediating or moderating effects of perceived social support on the link among event stressfulness, core beliefs disruption, and posttraumatic growth (PTG) in college students. College students were the population of interest due to the wide range of traumatic events that these individuals tend to report experiencing, with varying degrees of stressfulness. An overview of the literature on traumatic events, PTG, core beliefs disruption, event stressfulness, and perceived social support is covered. Also, empirical findings regarding these variables are discussed, with attention given to gaps in the literature. Based on this information, it was hypothesized that perceived social support would act as both a mediator and moderator on the association among core beliefs disruption, event stressfulness, and PTG. Overall, this study sought to examine the association between PTG, core beliefs disruption, event stressfulness, and perceived social support in order to contribute to the literature on posttrauma outcomes in college students.

This chapter seeks to explore the social significance of trauma exposure in college students. Additionally, information in this chapter addresses the statement of the problem as indicated by gaps in the literature, goals of the study, and research questions and hypotheses. Finally, definitions of key terms are covered.

Social Significance of Trauma Exposure in College Students

Within the literature, rates of trauma exposure in college students have ranged from 52% to 96% (Owens & Chard, 2006; Read, Ouimette, White, Colder, & Farrow, 2011; Scarpa, 2001), with about 85% of students experiencing at least one life event that they regarded as a trauma (Frazier et al., 2009). High rates of exposure reported by college students are due to a wide

range of adverse events that they may experience prior to and upon entering college (Ancis, Sedlacek, & Mohr, 2000; Fisher, Cullen, & Turner, 2000), including sexual and physical abuse in childhood, (Duncan, 2000; Kenny & McEachern, 2000; Priest, 1992), bullying (Anders, Frazier, & Shallcross, 2012), family and community violence (Frazier et al., 2009; Scarpa et al., 2002), and the unexpected passing of someone to whom they were close (Green et al., 2000; Owens & Chard, 2006).

This high rate of exposure raises concerns about the mental health and overall adjustment outcomes of many trauma-exposed students. Mainly, researchers have explored the impact of trauma exposure with attention being given to disorders such as depression (Copeland, Keeler, Angold, Costello, 2007), acute stress disorder (Brewin, Andrews, Rose, & Kirk, 1998), dissociative disorder (Briere, 2006; Nilsson, Holmqvist, & Jonson, 2011), and posttraumatic stress disorder (PTSD; Frounfelker, Klodnick, Mueser, & Todd, 2013). Specifically with college students, studies have shown a link among trauma history and depression (Anders et al., 2012; Mazzeo & Espelage, 2002; Turner & Butler, 2003), higher dropout rates (Duncan, 2000), as well as suicide (Bridgeland, Duane, & Stewart, 2001). Additionally, PTSD diagnosis rates have ranged between 6% and 12% in college students (Bernat, Ronfeldt, Calhoun, & Arias, 1998; Frazier et al., 2009; Smyth, Hockemeyer, Heron, Wonderlich, & Pennebaker, 2008; Watson & Haynes, 2007), while 11% of students have experienced subclinical symptoms (Smyth et al., 2008). Given that the occurrence of traumatic events has been found to have deleterious effects, especially for college students, researchers have become interested in understanding how dealing with trauma can impact individuals in a college setting.

Statement of the Problem

Historically, trauma literature has placed great focus on negative posttrauma outcomes (Creamer, Burgess, & Pattison, 1992; Frans, Rimmo, Aberg, & Fredrikson, 2005; Hapke, Schumann, Rumpf, John, & Meyer, 2006; McKeever & Huff, 2003), neglecting to explore positive outcomes that may arise following adverse events (Shakespeare-Finch & Armstrong, 2010). However, in light of the rise of positive psychology within the last few decades (Seligman & Csikszentmihalyi, 2000), there has been more emphasis placed on positive posttrauma outcomes in trauma research (Cook, Aten, Moore, Hook, & Davis, 2013; Karanci et al., 2012; Park, Riley, & Snyder, 2012). Mainly, researchers and theorists have become more interested in examining how certain factors contribute to positive growth outcomes following trauma, or posttraumatic growth (PTG; Joseph & Linley, 2005; Schaefer & Moos, 1998; Tedeschi & Calhoun, 1995; 2004). Though this shift has led to great advancement in PTG research, there is still much empirical work to be done in this area. Therefore, this study sought to advance the literature on PTG.

Theoretical frameworks regarding stress and trauma (Gabbay, Oatis, Silva, & Hirsch, 2004; Horowitz, 1986; Rachman, 1980; 2001), core beliefs disruption (Janoff-Bulman, 1989; 1992), and social support (Cohen & Wills, 1985) have provided an understanding of how these variables may contribute to posttrauma outcomes. Specifically, core beliefs disruption has been found to be an essential component in the PTG process, whereby the questioning of pre-existing schema is believed to activate positive cognitive and behavioral changes in trauma-exposed individuals (e.g., spiritual growth, valuing life more, putting more effort in interpersonal relationships; Boals, Steward, & Schuettler, 2010; Lindstrom, Cann, Calhoun, & Tedeschi, 2013; Tedeschi & Calhoun, 1995; 2004). The disruption of beliefs may also be associated with

negative posttrauma outcomes (e.g., PTSD, depression, social isolation), and this has received considerable attention in the trauma literature (Dutra, Callahan, Forman, Mendelsohn, & Herman, 2008; Jenkins, Meyer, & Blissett, 2013; Wright, Crawford, & Del Castillo, 2009). While mechanisms of processing trauma can contribute to both negative and positive outcomes, it is believed that challenge to core beliefs, especially within PTG research, may lead individuals to appraise their world and make positive meaning of their experiences (Cann et al., 2010; Janoff-Bulman, 1992; Joseph & Linley, 2008). Therefore, it was essential to examine the influence of core beliefs disruption in this study in order to better understand the occurrence of PTG in individuals.

Theories regarding the particular role of social support in posttrauma outcomes suggest that greater support may protect against negative outcomes in the presence of high stress and challenge to core beliefs following trauma (Cohen & Wills, 1985; Flannery 1990; Janoff-Bulman, 1992). In addition, theorists suggest that lower social support amid high stressfulness and core beliefs disruption may lead to more deleterious effects (Cohen & Wills, 1985; Janoff-Bulman, 1992). Regarding PTG literature and theoretical frameworks, there is indication that greater perceived stressfulness of a traumatic event as well as greater disruption of core beliefs may promote greater PTG outcomes (Cann et al., 2010; Lindstrom et al., 2013; Wilson, Morris, & Chambers, 2014). Research also suggests a link among social support and PTG, whereby greater perceived social support contributes to greater PTG (Cormio et al., 2013; Senol-Durak and Ayvasik 2010; Swickert & Hittner, 2009). However, the interplay between these variables as they relate to PTG is unclear. Hence, this study sought to further explore their roles in the PTG process.

Several empirical studies have examined how social support impacts posttrauma outcomes and found this variable to act as either a mediator (Lincoln, Chatters, & Taylor, 2003; Runtz & Schallow, 1997; Tremblay, Hébert, & Piché, 1999; Trunzo, & Pinto, 2003; Vranceanu, Hobfoll, & Johnson, 2007) or a moderator (Ergh, Rapport, Coleman, & Hanks, 2002; Haden, Scarpa, Jones, & Ollendick, 2007; Schmidt, Blank, Bellizzi, & Park, 2012). However, not many researchers have investigated the possible mediating or moderating effects of perceived social support on core beliefs disruption and event stressfulness as they relate to PTG (Bozo, Gündoğdu, & Büyükaşık-Çolak, 2009; Demirtepe-Saygılı, & Bozo, 2011; Swickert & Hittner, 2009). Antithetical to the buffering effect of social support on negative posttrauma outcomes, it is plausible that perceived social support may enhance the relationship between high core beliefs disruption, event stressfulness, and PTG (Schaefer & Moos, 1998; Tedeschi & Calhoun, 2004), making perceived social support a moderator variable. The literature also suggests that event stressfulness and core beliefs disruption may influence perceived social support, which then influences PTG (Janoff-Bulman, 2010; Linley & Joseph, 2004), making perceived social support a mediator variable. In spite of this, and as previously mentioned, no attention has been given specifically to the possible mediating or moderating role that perceived social support plays in the relationship among event stressfulness, core beliefs disruption, and PTG. Therefore, this study investigated whether social support was in fact a mediating or moderating factor for these variables.

Purpose of the Study

Due to subjectivity in interpreting traumatic events, it is important to focus on how individuals view different adverse events in terms of stressfulness, and how these events may affect their core beliefs as well as their perceptions of social support. Regarding college students

that have experienced trauma, closely investigating this process can provide invaluable information on ways to promote positive growth following trauma. In terms of outreach efforts, college campuses can use this information to improve efforts for serving the mental health needs of these individuals. Mainly, focusing on a shift in core beliefs and ways to promote use of social support resources may help trauma-exposed individuals process their experiences and have more favorable outcomes.

Thus, a goal of the study was to investigate the association among PTG, core beliefs disruption, event stressfulness, and perceived social support in college students. Specifically, perceived social support was examined as a possible mediator or moderator in the association among core beliefs disruption, event stressfulness, and PTG. By exploring whether perceived social support acts as a mediator or moderator upon these variables, it was hopeful that the phenomenon of trauma and posttrauma outcomes might be better understood. While examining potential mediating and moderating effects may not translate into specific interventions for trauma-exposed college students, the conceptual implications of findings from the study may help inform and guide our understanding of trauma and posttrauma outcomes for these individuals. Therefore, this study sought to contribute to the well-being of college students through exploration of the trauma phenomenon and examination of how variables such as perceived social support may contribute to positive growth outcomes following trauma.

Research Questions and Hypotheses

This study addressed the following primary research questions and hypotheses:

1. Do core beliefs disruption, event stressfulness, and perceived social support predict PTG?
 - HYP 1: Event stressfulness, core beliefs disruption, and perceived social support will be significant predictors of PTG

2. Does perceived social support mediate the relationship between event stressfulness, core beliefs disruption and PTG?
 - HYP 2: Perceived social support will mediate the relationship between each individual independent variable (event stressfulness, core beliefs disruption) and PTG
3. Does perceived social support moderate the relationship between event stressfulness, core beliefs disruption, and PTG?
 - HYP 3: Perceived social support will moderate the relationship between each individual independent variable (event stressfulness, core beliefs disruption) and PTG

Results from this study can contribute to the literature regarding trauma, posttraumatic growth, and outcomes for college students. Additionally, findings may have implications for clinicians serving mental health concerns of trauma-exposed college students. Overall, it is likely that this research will help inform intervention strategies and outreach efforts for these individuals.

Definitions of Key Terms

The following are key definitions that were used in the study:

- Trauma- emotional, psychological, and/or physiological reaction of an individual to a disturbing event or series of events (Braga, Fiks, Mari, & Mello, 2008)
- Core Beliefs Disruption (CBD)- shattering of fundamental beliefs regarding the world, self, and others (Janoff-Bulman, 1992)
- Event Stressfulness (ES)- degree to which an adverse event elicits distress in an individual (Norris, 1992)

- Perceived Social Support (PSS)- one's views of support resources in terms of availability and quality (e.g., that of friends, family members, romantic partners, and other important individuals; Zimet et al., 1988)
- Posttraumatic Growth (PTG)- positive growth outcomes following trauma, occurring in the realms of appreciating life, relating to others, undergoing changes in spiritual or religious beliefs/practices, being more open to new experiences, and developing greater inner strength (Tedeschi & Calhoun, 1994)
- Mediator- variable that accounts for the association among predictor and outcome variables, explaining why or how this associations occurs (Baron & Kenny, 1986)
- Moderator- variable that acts on the association among predictor and outcome variables by changing its strength and/or direction (Baron & Kenny, 1986)

Summary

In this chapter, the importance of examining trauma exposure and its impact on college students was highlighted. Additionally, information was presented regarding the purpose and research questions of the current study. The following chapters will provide additional information regarding this study. Specifically, Chapter Two will provide a literature review regarding trauma exposure and PTG, core beliefs disruption, event stressfulness, and perceived social support. Information will be discussed regarding difficulty with defining terms, theoretical frameworks, inconsistencies in empirical findings, and directions for future research. In Chapter Three, specific information about the research methodology will be covered. Mainly, the research questions and hypotheses, study participants, measures used, procedure, methods for data analysis, and delimitations will be described.

CHAPTER 2

REVIEW OF THE LITERATURE

This chapter begins by introducing the construct of trauma and detailing its prevalence and forms within the college student population. Both negative and positive posttrauma outcomes are then discussed, with emphasis given to the study's outcome variable, Posttraumatic Growth (PTG). Subsequent sections of this chapter focus on the variables hypothesized to explain college students' variance in PTG scores whether as a primary predictor or as an intervening variable. Namely, Core Beliefs Disruption, Event Stressfulness, and Perceived Social Support are examined. Finally, directions for future research are presented in response to identified gaps in the current literature.

Trauma

Trauma is described as the emotional, psychological, and/or physiological reaction of an individual to a disturbing event or series of events (Braga, Fiks, Mari, & Mello, 2008). Common responses include shock and disturbance in psychological functioning (Braga et al., 2008; Dulmus & Hilarski, 2003), as well as physiological responses including increased heart rate, shortness of breath, chest pains, and nausea (Bernat, Ronfeldt, Calhoun, & Arias, 1998; Nixon, Resick, & Griffin, 2004). Though these are seen as normal reactions to highly stressful life events, some people continue to experience dysfunction due to trauma-related distress. For instance, individuals may struggle with social interactions and academics (e.g., Ancis, Sedlacek, & Mohr, 2000; Fisher, Cullen, & Turner, 2000) or develop posttraumatic stress disorder (PTSD), anxiety, and depression, among other disorders (Briere, 2006; McLaughlin et al., 2013; Nilsson, Holmqvist, & Jonson, 2011). Also, individuals who have experienced significant trauma and meet PTSD diagnostic criteria are 80% more likely to present with a comorbid disorder (e.g.,

depression, anxiety, substance abuse) compared to those without PTSD (American Psychiatric Association, 2013). Additional information on PTSD will be provided in the section examining posttrauma outcomes. Next, there will be a discussion on issues with defining trauma.

Distinguishing Trauma from Distress

Though many researchers accept the aforementioned definition of trauma (Ancis et al., 2000; Braga et al., 2008; McLaughlin et al., 2013; Nixon, Resick, & Griffin, 2004), some raise concerns about distinguishing trauma from stress and crisis (Dulmus & Hilarski, 2003; Green, 1990). Green (1990) posits that generally, an event evokes a traumatic reaction when an individual receives adverse information from the environment, appraises and perceives this information to be threatening, and experiences negative outcomes such as PTSD or depression. However, similar definitions have been offered for stress (Dohrenwend, 2000; Lazarus, 1984; Selye, 1973) and crisis (Knox & Roberts, 2001; Lazarus, 1986; Roberts & Corcoran, 2000). Therefore, Dulmus and Hilarski (2003) have suggested that stress, trauma, and crisis fall on a continuum, where subjective appraisal determines level of distress and event classification. In relation to stress and crisis on this continuum, a traumatic reaction is often believed to be more severe (Dulmus & Hilarski, 2003). Some aspects of an event that specifically classify it as traumatic, according to these theorists, include the likelihood for psychopathology to develop as well as continued and heightened distress (Dulmus & Hilarski, 2003). This circular explanation, however, makes it even more difficult to further distinguish trauma from such related terms and merits further investigation.

While trauma symptomology has more commonly been associated with events such as war and natural disaster, research suggests that individuals may experience reactions of trauma from more common events including divorce, a loved one's passing, and media coverage of

violence (McNally, 2004; Silver, Holman, McIntosh, Poulin, & Gil-Rivas, 2002). Such findings have led to discrepancies in the prevalence of trauma exposure (Breslau & Kessler, 2001). Mainly, having trauma defined more broadly has been shown to impact rate of reports for experiencing traumatic events. For example, Breslau and Kessler (2001) sampled 2,181 adults from the Midwestern United States (ranging from 18 to 45 years old) and documented a 59.2% increase in reports of trauma exposure that met criteria for PTSD diagnosis when allowing for subjective appraisal of various events (e.g., physical attack, witnessing a crime, learning about the misfortune of others). These findings suggest that defining trauma more broadly may allow for more adverse events to be examined and lead to advancement in trauma research. Taking into consideration this broader definition of trauma and the previously mentioned difficulty in having trauma defined on a continuum, this chapter will focus on an all-encompassing view of traumatic events. Mainly, various kinds of events thought to elicit traumatic reactions will be examined.

Trauma Exposure and College Students

From a developmental perspective, young adults (typically ages 18 to 25) face difficulties such as trying to establish a sense of independence and autonomy (Kroger, Martinussen, & Marcia, 2010). In particular, trauma-exposed college students may encounter challenges at this juncture (Read et al., 2011). Commonly reported traumatic events experienced by college students include bullying in childhood, unanticipated death or life-threatening experience of someone to whom they are close, family violence, sexual assault, and emotional abuse (Frazier et al., 2009; Gracie et al., 2007; Read, Ouimette, White, Colder, & Farrow, 2011). Following these kinds of experiences, students may have difficulty relating to others and they may face academic difficulties as well as attention issues (Unrau, Font, & Rawls, 2012). Additionally, these

individuals may experience various posttrauma and physiological difficulties such as intrusive thoughts, dissociation, and hyperarousal (Hetzel & McCanne, 2005; McDevitt-Murphy et al., 2007; Read et al., 2011; Smyth et al., 2008; Ullman & Filipas, 2005). The likelihood of maladaptive outcomes such as substance abuse and risky sexual behaviors is also greater for trauma-exposed college students (Walsh, Lutzman, & Lutzman, 2014), thus demonstrating the importance of focusing on this particular population in trauma research.

The scope of the issue regarding outcomes for trauma-exposed college students is higher than one might expect, as evidenced by several empirical studies (Gracie et al., 2007; Grills-Taquechel, Littleton, & Axsom, 2011; Littleton, Grills-Taquechel, & Buck, 2012). These studies have focused on events that occurred prior to students entering college (e.g., abuse in childhood) as well as during their time in college (e.g., campus shooting). For instance, research conducted by Gracie and colleagues (2007) investigated the impact of trauma exposure on psychosis in a sample of 228 college students. Participants were an average age of 28.9 years old ($SD = 8.7$). Among the sample, 88.6% of participants indicated having faced one or more instances of trauma, and 14.5% met PTSD diagnostic criteria (Gracie et al., 2007). These rates are consistent with prior studies examining trauma and PTSD in college students (Bernat et al., 1998; Vrana & Lauterbach, 1994). The researchers also found that trauma type was associated with psychotic symptoms ($p < .05$), as was frequency of the event ($p < .01$; Gracie et al., 2007). Of note, the sample consisted primarily of Caucasian (82%) and female (71%) participants (Gracie et al., 2007), making it difficult to generalize findings to more diverse college settings. Nevertheless, these findings of psychopathology following trauma further support the need for trauma research with college student samples. Further examination of empirical studies with trauma-exposed college students will be provided in subsequent sections.

Measuring Trauma Exposure

Some measures used to examine trauma exposure include the Stressful Life Events Screening Questionnaire (SLESQ; Goodman, Corcoran, Turner, Yuan, & Green, 1998), the Trauma History Questionnaire (Green, 1996), and the Traumatic Life Events Questionnaire (TLEQ; Kubany et al., 2000). Though all of these measures have provided some evidence for sound psychometric properties and usefulness when assessing for trauma exposure, some strengths of the THQ are that it specifically assesses various instances of trauma and allows for subjective appraisal (e.g., individuals can report an additional adverse event they view as traumatic that may not be captured in the previous items; Kubany et al., 2000). More information on the THQ will be provided in the following chapter.

Coping with Trauma

Different mechanisms of coping with trauma may influence the posttrauma outcomes an individual may experience. Lazarus and Folkman (1984) conceptualize coping styles as being placed in “emotion-focused” or “problem-focused” categories. Emotion-focused coping strategies, also referred to as avoidant coping strategies, attempt to lessen distress levels by selectively attending to matters that do not cause distress while avoiding more distressing situations (Lazarus & Folkman, 1984). Individuals using techniques that are emotion-focused also tend to minimize their issues, avoid stressful circumstances, and engage in positive comparison in order to cope with their problems (Lazarus & Folkman, 1984). In contrast, techniques that are more problem-focused, also known as active coping strategies, utilize an action oriented approach that actively works to diminish the negative impact of the trauma or stressor (Lazarus & Folkman, 1984).

Shontz (1975) proposed earlier theories of avoidance and approach coping strategies to explain how individuals may deal with trauma, particularly from illness or disability. These theories include retreat-encounter and fragmentation-containment coping formulations (1975). Specifically, he posited that an individual engaging in retreat-encounter coping might try to avoid the effects of an illness, for example, by “retreating” from or not thinking about what has occurred, or approach his circumstances through active acknowledgement and processing. In fragmentation-containment coping, an individual may take steps to avoid a trauma by disconnecting himself from that unwanted event (e.g., not acknowledging an illness). On the other hand, he may approach a threatening situation by allowing it to be integrated into his existence and view of self (Shontz, 1975). The ideas proposed by theorists such as Shontz (1975) as well as Lazarus and Folkman (1984) have helped researchers understand the cognitive and emotional mechanisms often activated in response to trauma. Researchers have also examined these kinds of avoidant and active coping strategies to understand posttrauma outcomes for impacted individuals.

For example, Horowitz’s (1986) information processing model asserts that psychopathology such as PTSD arises due to an unwillingness to acknowledge feelings and thoughts that are disturbing and associated with trauma. In addition, Creamer, Burgess, and Pattison’s (1992) explanation of cognitive synthesis of trauma posits that intrusive memories might cause avoidance, which ultimately contributes to higher distress levels that lead to PTSD (Creamer et al., 1992). In support for these theoretical claims, research suggests that avoidant coping strategies may be linked to PTSD (Leiner, Kearns, Jackson, Astin, & Rothbaum, 2012; Pineles et al., 2011; Boden et al., 2014).

On the other hand, findings from empirical research suggest that more active coping strategies may promote more positive outcomes such as posttraumatic growth (PTG; Schmidt, Blank, Bellizzi, & Park, 2012; Scignaro, Barni, & Magrin, 2011; Yu et al., 2014). PTG refers to the psychological growth that individuals may experience after a distressing event (Calhoun, Cann, Tedeschi, & McMillan, 2000; Calhoun & Tedeschi, 1999; Tedeschi and Calhoun, 1996; Tedeschi & Calhoun, 2004). PTG models outlined by Tedeschi and Calhoun (1995; 2004) as well as Schaefer and Moos (1998) conceptualize growth as occurring after a traumatic event causes an individual to ruminate, process the trauma, and make new meaning. More specifically, the trauma's impact causes distress, followed by schematic challenges as well as intrusive rumination (Tedeschi & Calhoun, 1995; 2004). The individual then uses active coping approaches (e.g., reflecting on the trauma through written form, discussing the trauma with others) in order to manage emotional distress and reduce automatic rumination (Schaefer & Moos, 1998; Tedeschi & Calhoun, 1995; 2004). This allows the individual to engage in more intentional rumination and cognitive restructuring of the trauma (Tedeschi & Calhoun, 1995; 2004). The outcome of this process is newfound wisdom and a sense of endurance as well as positive change, or PTG (Schaefer & Moos, 1998; Tedeschi & Calhoun, 1995; 2004). These specific posttrauma outcomes of PTSD and PTG will be examined in the following section.

Posttrauma Outcomes

PTSD. PTSD is a commonly examined negative posttrauma outcome in the literature (Leiner et al., 2012; Weathers and Keane, 2007). As outlined in the fourth edition *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)* criteria for PTSD, three symptom clusters of hyperarousal, avoidance, and intrusion must be present to warrant a diagnosis (American Psychiatric Association, 2000). Additionally, a traumatic event typically raises a

sense of helplessness, horror, or extreme fear and causes intrusion, hyper-arousal, and avoidance to warrant a PTSD diagnosis (APA, 2000). While about 40%-70% of individuals in the general population report experiencing one or more instances of trauma (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Norris & Slone, 2013; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993), about 8.7% of the population reportedly experiences PTSD following traumatic events (American Psychiatric Association, 2013; Giaconia et al., 1995; Kessler et al., 2005; McLaughlin et al., 2013). This discrepancy between reported trauma exposure and diagnosis of PTSD likely reflects issues with diagnosis and assessment, raising further concerns for the manner in which trauma is viewed in the literature (Weathers & Keane, 2007).

In the recently revised fifth edition *Diagnostic and Statistical Manual of Mental Disorders*, or the DSM-5, the requirement for a traumatic event to elicit helplessness, horror, or fear has been eradicated (APA, 2013). In addition to this modification, a fourth symptom cluster (negative moods, feelings, or thoughts) has been added (APA, 2013). Also, the disorder has been removed from the classification of Anxiety Disorders, and is now classified as a Trauma and Stress-Related Disorder (TSRD; APA, 2013; Weathers, Marx, Friedman, & Schnurr, 2014). Though further discussion of PTSD is beyond the scope of this chapter, these changes demonstrate an effort towards modifying diagnosis and assessment of this disorder as well as posttrauma outcomes more generally.

PTG. Though literature has focused much attention on negative outcomes of trauma such as PTSD, investigating positive outcomes of trauma offers researchers, clinicians, and trauma-exposed individuals the opportunity to focus on strategies for overcoming difficulties due to trauma. Theory maintains that individuals who experience PTG formulate a new schematic structure to help them thrive and positively process a trauma (Calhoun & Tedeschi, 1999;

Tedeschi & Calhoun, 2004). Dimensions of PTG include self-perception, relationships with others, gaining a deeper sense of life's importance, spiritual and religious beliefs, and overall outlook on life (Calhoun & Tedeschi, 1999; Tedeschi & Calhoun, 2004).

While older concepts related to PTG (e.g., resilience, stress-related growth) have been previously studied (Garmezy, 1991; Hobfoll & Lilly, 1993), researchers have attempted to distinguish PTG from these previously used terms. For instance, Linley and Joseph (2004) have argued that PTG goes beyond resilience, which involves one's capacity to remain stable following trauma (Bonanno, 2004), in that it incorporates the traumatic event as a catalyst for positive change rather than mere homeostasis. Additionally, other researchers have asserted that PTG is distinct from the idea of stress-related growth because it relates to more strenuous circumstances as opposed to more minimal kinds of stress (Kira et al., 2013; Tedeschi & Calhoun, 2004). In sum, PTG is a newer term used to describe an already-existing concept, but is distinct in its operational definition when compared to previously used terms such as resilience and stress-related growth. The PTG construct will be further examined in the next section and in subsequent sections.

Occurrence of PTG

Theorists posit that for PTG to occur, the experienced trauma has to be taxing enough to challenge existing schemas and cause significant rumination—which in turn promotes schematic reconstruction (Tedeschi & Calhoun, 2004). Schemas are then rebuilt through cognitive processing (Shigemoto & Poyrazli, 2013; Tedeschi & Calhoun, 2004). Unlike cognitive models portraying the pathological impact of trauma, the challenge to core beliefs in PTG is believed to help individuals positively reappraise their traumatic experience (Shigemoto & Poyrazli, 2013; Tedeschi & Calhoun, 2004). As an example, an individual who previously viewed himself as

invincible may rethink his susceptibility to danger after experiencing a traumatic automobile accident. This might lead him to renew commitments to his intimate relationships, spend more time with loved ones, and experience a refined outlook on life (Rabe, Zöllner, Maercker, & Karl, 2006).

Armeli and colleagues (2001) suggest that individuals experience greater PTG when they encounter traumatic events that are more dangerous, thereby posing a greater threat to their safety and well being, and have a major impact on their schema. They do not discuss which specific events classify as more traumatic, however (Armeli, Gaunthert, & Cohen, 2001). In contrast, Aldwin and Levenson (2004) contend that even events that do not pose a major threat to one's life may result in positive growth. This growth may occur incrementally and manifest in areas such as the mastery of coping skills (Aldwin & Levenson, 2004). These researchers also argue that events that are not necessarily viewed as traumatic, but invoke some stress, may lead to positive outcomes resembling PTG (Aldwin & Levenson, 2004). These mixed views speak to the complexity in determining what traumatic events may promote PTG outcomes, and suggest that additional investigation is warranted.

Researchers who study PTG have looked at major traumatic events to better understand what kind of positive growth may occur following these events. For instance, studies conducted with Holocaust survivors showed that some of these individuals experienced PTG in terms of greater personal strength, a deeper appreciation for life, and greater ability to get along with others (Lev-Wiesel & Amir, 2003; Lurie-Beck et al., 2008). Specifically, in sampling 23 Jewish Holocaust survivors, Lurie-Beck and other researchers (2008) found a substantial positive relationship between age (being older) during the Holocaust and appreciation of life ($r = 0.58, p < 0.01$; Lurie-Beck et al., 2008). Comparable findings were reported in earlier research

conducted by Lev-Wiesel and Amir (2003), who sampled 97 survivors of the Holocaust that were an average age of 67 and mainly residing in Israel while the study was being conducted. Given that all of these researchers used small sample sizes of older participants in their studies, however, it is questionable as to whether these findings are generalizable. Also, there was no discussion in either study about whether the researchers assessed for the participants' cognitive functioning and memory, which might have been important information considering that they experienced these events a long time ago (Lev-Wiesel & Amir, 2003; Lurie-Beck et al., 2008).

Research examining the impact of more recent traumatic events has found that making sense of experiences of substantial distress or loss may be linked to PTG (Cook et al., 2013; Park et al., 2012). For example, about six weeks following the incidents of terrorism in the U.S. on September 11th, Park and colleagues (2012) utilized a nationwide sample of 1,004 adults to assess mainly for PTG in these individuals. Greater exposure to the events of that day contributed to more PTG ($r = .23, p < .001$; Park et al., 2012). Additionally, 63% of the participants indicated having made at least some sense of the experience (Park et al., 2012). Similarly, Cook and colleagues (2013) obtained a sample of 189 Mississippi college students four months after Hurricane Katrina to assess for PTG and religiousness. Results showed that loss of resources, though not specified ($b = 0.19, p = .008$) and comfort from religion ($b = 0.18, p = .045$) positively predicted PTG (Cook et al., 2013).

The separate studies conducted by Park et al. (2012) and Cook et al. (2013) both mainly examined PTG outcomes and revealed that individuals who did go on to experience more PTG exhibited more proactive strategies such as turning to religion, seeking social support, and meaning-making. Those who did not experience much PTG were found to not make much use of proactive strategies, and engaged in more avoidant behaviors (e.g., denial, disengagement,

emotional withdrawal; Cook et al., 2013; Park et al., 2012). Important aspects of these studies such as the method of data collection used (telephone survey) by Park and colleagues (2012) and the characteristics of the sample (college students of higher socioeconomic status, with 80% being female) in the Cook et al. (2013) study, however, may have impacted the results observed and limit generalizability. Nevertheless, examining PTG in these circumstances has contributed to the previously mentioned discussion on trauma type and PTG, thereby helping researchers develop a better understanding of the PTG construct. A discussion on PTG outcomes in college is provided in the next section.

PTG and College Students

Some researchers believe that wisdom gained from life experiences, particularly instances of trauma, may help young adults in college continue experiencing positive transformations across developmental domains and promote PTG (Aldwin, Sutton, & Lachman, 1996; Bluck, & Glück, 2004). In addition to these experiences, some research suggests that several factors may aid in facilitating positive outcomes for these individuals (Banyard & Cantor, 2004). For example, Banyard and Cantor (2004) found that in a sample of 367 first semester college freshman (80.4% female), participants with trauma history (e.g., childhood physical and sexual abuse, severe illness, dating violence) experienced positive college adjustment by attributing positive meaning to their traumatic experiences (i.e., cognitive reappraisal), experiencing greater perceived social support, and possessing an internal locus of control (Banyard & Cantor, 2004).

Investigation of the PTG process in college students specifically has contributed greatly to the advancement of research regarding positive growth following trauma for these individuals. For instance, Wild and Paivio (2004) found that PTG was associated with factors such as distress

level ($r = .21, p < .01$), active coping ($r = .27, p < .01$) and subjective positive appraisal ($r = .18, p < .05$). The researchers obtained these findings by using a sample of 193 Canadian college students, 88% of which were female and 76.2% of which were Caucasian (Wild & Pavio, 2004). In other work investigating the impact of the 2004 Madrid train bombings on college students and their relatives ($N = 661$, 63% college students, 28% male), Páez and colleagues (2007) observed substantially higher levels of PTG, $t(661) = 5.3, p < .001$, and positive emotional functioning, $t(661) = 52.34, p < .02$, in individuals who utilized social sharing and cohesion through participation in protest demonstrations with others (Páez et al., 2007).

The studies conducted by Wild and Paivio (2004) as well as Páez et al. (2007) included samples of college students from different countries (Canada and Spain, respectively) and with various traumatic experiences, yet both revealed important findings regarding PTG in young adults, particularly in college students. Specifically, aforementioned factors such as distress level and social sharing appeared to be essential to the PTG process for these individuals (Wild & Paivio, 2004; Páez et al., 2007). However, the use of a primarily female sample in both studies raises questions regarding the generalizability of these results to males in college. Additionally, the inclusion of non-college students in the sample from the Páez et al. (2007) study raises concerns about generalizing these findings to a wider population of college students. Taken together, these findings on trauma in college students suggest that having protective factors in place may promote PTG outcomes in these individuals. By continuing to investigate variables that may influence the PTG process in more diverse college student samples, researchers can develop a better understanding of how positive outcomes emerge in the face of trauma during this transitional period of development.

Measuring PTG

When assessing for PTG, researchers have utilized various measures. For instance, the Stress Related Growth Scale (SRGS; Park et al., 1996), Changes in Outlook Questionnaire (COQ; Joseph, Williams, & Yule, 1993), Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) and Perceived Benefit Scale (PBS; McMillen & Fisher, 1998), have been used in studies with different adult populations. Though all of these measures have revealed adequate psychometrics, the PTGI has been widely accepted as the standard measure of examining PTG (Loiselle et al., 2011; Park et al., 2012; Salo, Qouta, & Punamaki, 2005; Schmidt, Blank, Bellizzi, & Park, 2012; Shigemoto & Pyrazli, 2013). Additional psychometric information for the PTGI will be covered in the next chapter.

Summary

A discussion of PTG offers some insight into this particular posttrauma outcome. The relationship between PTG and other variables of interest is examined in subsequent sections of this chapter. Specifically included in these sections is the examination of PTG as it pertains to core beliefs disruption, event stressfulness, and perceived social support. A discussion on the construct of core beliefs disruption is provided in the following section.

Core Beliefs Disruption

Many theorists and researchers believe that an essential aspect of trauma exposure is its impact on an individual's *core beliefs* (Cann et al., 2010; Epstein, 1991; Janoff-Bulman, 1992; Tedeschi & Calhoun, 2004). Core beliefs are described as interpretations of the self, the surrounding environment, and the external world that are developed early on in life (Janoff-Bulman, 1992). According to Janoff-Bulman (1992), a traumatic event can disrupt core beliefs about the assumptive world, promoting reappraisal of one's life and environment. This

disruption of core beliefs can also lead to meaning-making of the event experienced (Cann et al., 2010; Joseph & Linley, 2008). Similar to event stressfulness, the idea regarding core beliefs disruption following trauma suggests that an individual's interpretation of an event plays a larger role than objective details in eliciting trauma. Theories of coping, specifically those regarding the avoidance of processing information from trauma (Lazarus & Folkman, 1984; Shontz, 1975), suggest that individuals try to maintain pre-existing schema regarding the world and self (Roth & Cohen, 1986). By acknowledging and processing information from traumatic events, individuals may alter previously held beliefs about their environment and face new realities about their own existence (Roth & Cohen, 1986).

Theorists highlight the significance of core beliefs disruption in posttrauma outcomes, attesting to how subjective interpretations of events offer more insight into individuals' trauma experiences than objective event details alone (Cann et al., 2010; Tedeschi & Calhoun, 2004). For instance, Epstein (1991) posits that four core beliefs can be adversely impacted by trauma exposure: 1) the world is non-threatening; 2) the world has meaning; 3) other people can be trusted; and 4) the individual person is worthy (Epstein, 1991). Similarly, Janoff-Bulman (1992) proposed the theory regarding "shattered assumptions," which posits that three core beliefs can be challenged following a traumatic experience: 1) the belief that one's world is benevolent; 2) the belief that one's world has meaning; and 3) the belief that one's own self is worthy. How an individual personally appraises an event may influence whether or not it will be considered traumatic (Janoff-Bulman, 1992). In turn, one examines whether that appraisal impacts or "shatters" fundamental ideas about the world and oneself (Janoff-Bulman, 1992). This can be true of events that are experienced directly (such as sexual abuse) or indirectly (such as learning of a loved one's illness; Janoff-Bulman, 1992). Janoff-Bulman's (1992) shattered assumptions

theory has been widely accepted and cited throughout the literature on trauma (Brewin & Holmes, 2003; Cann et al., 2010; Cason, Resick, & Weaver, 2002; Danhauer et al., 2013; Lindstrom, Cann, Calhoun, & Tedeschi, 2013).

Attention has been given to specific traumatic experiences and core beliefs disruption. For example, researchers have examined the challenges faced by individuals that were abused and mistreated during childhood, and several studies have found evidence for substantial core beliefs disruption in previously abused individuals (Coates & Messman-Moore, 2014; Dutra et al., 2008; Hartt & Waller, 2002; Jenkins et al., 2013; Waller et al., 2001; Wright et al., 2009). Core beliefs disruption from childhood abuse has also been linked to the development of depression ($r = .55, p < .01$; Coates & Messman-Moore, 2014) and suicidal ideation ($r = .44, p < .01$; Dutra et al., 2008). In some cases, researchers have found disruption of core beliefs to be a mediator (or a variable that explains the nature of the link among predictor and outcome variables; Baron & Kenny, 1986) in the relationship between child maltreatment and psychopathology (Jenkins, Meyer, Blissett, 2013; Waller et al., 2002; Wright et al., 2009). Evidently these findings, though based on a particular kind of trauma, further indicate that core beliefs disruption from certain traumatic events may have deleterious effects on the traumatized individual.

PTG and Core Beliefs Disruption

Several studies offer preliminary evidence that a positive association may exist between PTG and core beliefs disruption (Boals et al., 2010; Lindstrom et al., 2013; Wilson et al., 2014). In one study, for instance, Boals and colleagues (2010) surveyed 2,321 college students from a southern US university who had experienced various events they believed led to trauma (e.g., romantic breakup, a loved one's passing, academic hardship, natural disaster, sexual assault).

Participants were between 18 and 62 years of age ($M = 20.6$, $SD = 3.9$), with 65% being female. The sample was comprised of individuals from various races and ethnicities (e.g., Caucasian, African American, Hispanic, and Asian). The researchers found that when focusing primarily on events that were central to the core beliefs of participants instead of general events thought to elicit trauma responses, these events promoted a stronger positive association between overall quality of life and PTG ($r = .30$, $p < .001$; Boals et al., 2010). These findings indicate that core beliefs disruption is likely critical in facilitating PTG and positive outcomes in college students who experience trauma. However, it would be helpful for results to be replicated in other samples to further support this idea.

More recently, Lindstrom and colleagues (2013) sampled 129 18- to 47-year-old college students ($M = 20.29$, $SD = 3.73$) to examine the influence of several factors on PTG. These factors included disclosure, rumination, sociocultural factors (e.g., media portrayal of adverse events), and challenge of core beliefs (Lindstrom et al., 2013). Through use of stepwise regression analysis, the researchers found core beliefs challenge alone to account for 34% of the variance in PTG, $F(1, 125) = 63.31$, $p < .001$ (Lindstrom et al., 2013). This type of analysis provides some evidence to suggest that the relationship among core beliefs disruption and PTG is predictive rather than just correlational (Lindstrom et al., 2013).

Another study conducted by Wilson and colleagues (2014) investigated the impact of core beliefs disruption, peer support, rumination, resilience, and appraisal of stress from cancer on PTG. The researchers used structural equation modeling to analyze data collected from a sample of 514 adults who belonged to a support network for men with prostate cancer (Wilson, Morris, & Chambers, 2014). Participants were an average age of 70.04 ($SD = 8.36$), and about one third of the sample had a college degree. No information was provided regarding race and

ethnicity of participants. After adjusting model fit, results showed that core beliefs disruption was positively associated with PTG ($p < .001$; Wilson et al., 2014). These results also underline the significance of assessing for core belief disruption in PTG research to examine the impact of trauma exposure. These few studies also provide some evidence that a connection exists between core beliefs disruption and PTG, but further exploration is needed to determine whether additional variables are involved.

Measuring Core Beliefs Disruption

Regarding the assessment of core beliefs disruption, some measures used to examine core beliefs include the Core Beliefs Inventory (CBI; Cann et al., 2010), the Young Schema Questionnaire (YSQ; Young & Brown, 1994), and the World Assumptions Scale (WAS; Janoff-Bulman, 1989). The YSQ measures challenges to fundamental beliefs across 16 domains (Young & Brown, 1994), and contains 205 items. A briefer version exists, the Young Schema Questionnaire-Short Form (Young, 1998), with 75 items that address all of the domains from the original measure. The WAS is much shorter, with 32 items, and taps into eight different domains: controllability, self-control, self-esteem, benevolent world, benevolent people, randomness, luck, and justice (Janoff-Bulman, 1989). Internal consistency of the WAS is believed to be acceptable, with Chronbach's alpha coefficients between .40 and .70 (Ginzburg, 2004; Tomich & Helgeson, 2002; Walker, Archer, & Davies, 2005).

The CBI was recently developed to examine specific disruption of core beliefs as a result of a traumatic event and contains nine items to examine impact of the trauma (Cann et al., 2010). Cann and colleagues (2010) suggest that some strengths of the CBI are its brevity, sound reliability, and validity to assess for specific disruption of core beliefs due to trauma. Additional

information regarding psychometric properties of the CBI will be provided in the following chapter. In the following section, information regarding event stressfulness is provided.

Event Stressfulness

Like core beliefs disruption, event stressfulness focuses on individuals' subjective interpretation of an adverse event (Norris & Kaniasty, 1991). Specifically, event stressfulness is defined as the degree to which an adverse event elicits distress in an individual (Norris & Kaniasty, 1991). Adverse events can elicit varying degrees of stress on individuals and events that are perceived as traumatic, in particular, may induce greater distress (Groleau et al., 2013; Norris & Kaniasty, 1991). Further discussion on the impact of this variable on posttrauma outcomes will be described in this section.

Due to subjectivity in interpreting trauma, researchers have postulated that there is no consensus regarding a global criterion for what event will be considered traumatic for different individuals (Mueser, Rosenberg, Goodman, & Trumbetta, 2001). Though it is generally understood that certain events such as natural disasters may profoundly impact an individual, other kinds of events may be less severe, yet still impactful. In a college student sample, for instance, researchers discovered that individuals who faced adverse events that do not meet DSM-IV-TR criteria for trauma, such as infidelity and breakup, still endorsed symptoms of PTSD (Anders, Shallcross, & Frazier, 2012). It is unclear whether these individuals met diagnostic criteria for PTSD diagnosis, however. Similar findings were shown among a large community sample ($N = 884$; Anders, Frazier, & Frankfurt, 2011). Use of primarily Caucasian, all-female samples in both studies limits generalizability of findings, however, and additional research is warranted with men. Nonetheless, these findings provide some support for the idea that an individual's interpretation of event stressfulness may contribute more greatly than the

objective nature of an event in determining traumatic reactions (Anders et al., 2011; Anders et al., 2012).

Researchers have explored the role that event stressfulness plays in the different patterns of traumatic symptomology that typically follow traumatic events such as bereavement, sexual abuse, natural disaster, and motor vehicle accidents (Frans, Rimmo, Aberg, & Fredrikson, 2005; Hapke, Schumann, Rumpf, John, & Meyer, 2006; Shakespeare-Finch & Armstrong, 2010). In doing so, they have observed a difference in outcomes dependent upon the kind of trauma experienced and stressfulness of these events. This suggests that examining event stressfulness based on these types of trauma may help explain how trauma exposure plays a role in psychopathological outcomes. For instance, researchers have found a substantial difference in PTSD symptomology among individuals that have experienced sexual abuse when compared to individuals with other trauma histories such as motor vehicle accident, natural disaster, and bereavement (Frans et al., 2005; Hapke et al., 2006). Specifically, those with sexual abuse history have reported greater event stressfulness and impact from the trauma and presented with more symptoms of PTSD ($p < .001$; Frans et al., 2005; Hapke et al., 2006). Additionally, a study by Frans and colleagues (2005) found that stressfulness based on trauma type contributed to 16.7% of the variance in PTSD diagnosis.

In addition to the previously mentioned findings, researchers have examined the role of event stressfulness in response to cancer diagnosis (Beatty, Lee, & Wade, 2009). For example, Beatty and colleagues (2009) observed the effect of this variable in 140 middle-aged women with a breast cancer diagnosis. These researchers found that stress from this diagnosis was linked to lower “quality of life” in the domain of social functioning for participants ($r = -.42, p < .001$; Beatty et al., 2009). However, it is critical to consider that the researchers did not provide

information regarding stage of cancer diagnosis (early vs. late) for participants. Having this information might provide a better understanding of stress observed in the participants, depending on whether reports of stressfulness were different for the different stages of diagnosis (Beatty et al., 2009). Nevertheless, findings from these studies suggest that stressfulness from various traumatic events is linked to negative posttrauma effects such as PTSD and lower quality of life (Beatty et al., 2009; Frans et al., 2005; Hapke et al., 2006).

There is emerging empirical evidence for a possible link between event stressfulness and disruption of core beliefs (Cann et al., 2010; Lindstrom et al., 2013; Wilson et al., 2014). Using a sample of 181 adults ages 18 to 62 ($M = 22.8$, $SD = 7.4$), for example, Cann and colleagues (2010) discovered a significant positive link among event stressfulness and core beliefs disruption ($r = .24$, $p < .001$; Cann et al., 2010) with regard to traumatic events (e.g., bereavement, difficulty in a romantic relationship, health related issues) that occurred within the last three years (Cann et al., 2010). The previously mentioned study by Lindstrom and colleagues (2013) also found a positive association between core beliefs disruption and event stressfulness following traumatic events ($r = .22$, $p < .05$), with participants reporting similar events from the study by Cann and colleagues (2010). Though these findings provide preliminary support for the relationship between event stressfulness and core beliefs disruption, information on this topic is scarce and therefore, additional research is warranted.

PTG and Event Stressfulness

In exploring the impact of event stressfulness on PTG, researchers have examined this association based on trauma type. As previously mentioned, the PTG literature suggests that individuals who experience greater distress as a result of their trauma will likely undergo a psychological transformation that causes growth (Tedeschi, 1999; Tedeschi & Calhoun, 1995;

Updegraff & Marshall, 2005). This has often been shown to be related to the nature of the trauma, with more severe life events such as a life-threatening illness typically leading to greater distress than events such as a romantic breakup (Tedeschi & Calhoun, 1995). At the same time, research has found severity of injury from traumatic events to be irrelevant to one's potential for experiencing growth (Updegraff & Marshall, 2005), thereby suggesting that event stressfulness may be a better predictor for such outcomes.

Though empirical evidence exists for the positive link among level of distress and PTG (Park, Riley, & Snyder, 2012), some studies suggest that there is actually a negative link between these two factors (Frazier, Conlon, & Glaser, 2001; Park, Cohen, & Murch, 1996), while others indicate that there is no substantial relationship at all (Powell, Rosner, Butollo, Tedeschi, & Calhoun, 2003). For instance, results from a meta-analytic study conducted by Linley & Joseph (2004) suggested that individuals who experienced a loved one's passing reported more positive growth outcomes when compared to individuals who were in a motor vehicle accident or those who were sexually abused. Similarly, a study conducted by Shakespeare-Finch and Armstrong (2010) examined the association between these same trauma types (motor vehicle accident, sexual abuse, loss of a love one) and PTG using a sample of 425 adults with various trauma histories. Participants were 18 to 73 years old ($M= 28.26$, $SD= 3.37$; Shakespeare-Finch & Armstrong, 2010). Results showed a difference in PTG according to type of trauma experienced, $F(2, 91) = 3.82$, $p < .05$, (Shakespeare-Finch & Armstrong, 2010). Specifically, individuals that experienced the death of a loved one ($n = 43$) reported higher levels of PTG with regard to appreciation for life ($p < .05$) and relating to others ($p < .01$) when compared to individuals that experienced sexual abuse ($n = 32$; Shakespeare-Finch & Armstrong, 2010). Though bereaved individuals reported greater PTG regarding new possibilities when compared to individuals

involved in a motor vehicle accident ($n = 9$), this finding was not significant ($p = .06$; Shakespeare-Finch & Armstrong, 2010).

Another study conducted by Karanci and colleagues (2012) investigated the distinctions in PTG outcomes among bereavement, natural disaster, and accidents (though specific accident types reported is unclear). Using a sample of 969 Turkish adults, the researchers found a substantial difference in PTG across the three trauma types, $F(10, 1518) = 8.8, p < .001$ (Karanci et al., 2012). Mainly, bereaved individuals reported less PTG with regards to appreciation of life and relating to others (Karanci et al., 2012). These studies reveal mixed findings regarding PTG and trauma type. Additional studies examining this relationship have also found mixed results (Kira et al., 2013; Milam, Ritt-Olson, & Unger, 2004; Park et al., 1996; Polatinsky & Esprey, 2000; Weiss, 2004). Therefore, the nature of the relationship between trauma type and PTG is unclear and demonstrates the importance of assessing for subjective interpretation of event stressfulness rather than objective event details.

Measuring Event Stressfulness

Researchers have utilized various measures to assess for event stressfulness. Examples of measures used include the Impact of Events Scale (IES; Horowitz, Wilner, & Alvarez, 1979), the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983), as well as various methods of one- to two-item measures asking individuals to rate the stressfulness of an event (Cann et al., 2010; Lindstrom et al., 2013; Senol-Durak & Ayvasik, 2010; Taku & Cann, 2014). However, the PSS assesses for general stress as opposed to stress related to a particular adverse event (Cohen et al., 1983), while the IES is often used to pinpoint specific PTSD symptomology (Horowitz et al., 1979). Use of a single-item measure, on the other hand, provides information on the specific trauma and allows individuals to provide a rating that reflects their reaction to that

event. In the following chapter, further discussion of a single-item measure will be presented. Next, the construct of social support will be discussed.

Social Support

Another potential positive predictor of PTG in college students who have experienced trauma is their perception of available social support. In general, social support is described as the sharing of resources between at least two individuals (Shumaker & Brownell, 1984). These resources can be both tangible (e.g., financial assistance) and intangible (e.g., emotional support; Shumaker & Brownell, 1984). The exchange of such resources is thought to improve functioning of the recipient and may even have positive implications for the provider (Shumaker & Brownell, 1984). Though social support is useful when an individual is in distress, it can also promote functioning in the absence of distress (Shumaker & Brownell, 1984). Therefore, the importance of social support can be observed across various circumstances (Shumaker & Brownell, 1984).

Cohen and Wills (1985) propose four main types of social support that an individual may receive: 1) emotional expressions of acceptance and a sense that the individual is valued (esteem support); 2) assistance through financial or other tangible means (instrumental support); 3) the presence of one or more other individuals in recreational or leisure activities (social companionship); and 4) assistance with understanding difficult issues (informational support; Cohen & Wills, 1985). This theory of social support, in addition to the effects of specific sources of support (e.g., family, friends, significant others, community resources, cultural groups) in the presence of trauma, has received considerable attention in trauma literature (Benda, 2006; Cohen & Wills, 1985; Crimmins et al., 2000; Flannery, 1990; Janoff-Bulman, 1992; Noh & Kaspar, 2003; Stephens, Long, & Miller, 1997; Wilson et al., 2014). Mainly,

researchers have investigated the importance of support from caregivers and other family members, friends, and spouses or romantic partners (i.e., significant others) in determining negative and positive posttrauma outcomes. Therefore, support from significant others, friends, and family members are the main sources being examined in this study and they will be further discussed in subsequent sections.

As previously mentioned, theory as well as empirical findings have suggested that use of more active coping strategies contributes to less negative outcomes following adverse events (Lazarus & Folkman, 1984; Schmidt et al., 2012; Scignaro et al., 2011; Yu et al., 2014). Use of social support to deal with trauma, in particular, is more common among individuals who rely more on active coping strategies and can be viewed as a form of active coping (Coyne & Downey, 1991). Some research has demonstrated the effectiveness of coping techniques such as seeking social support and confiding in others for managing stress (e.g., Ognibene & Collins, 1998; Schmidt et al., 2012). Therefore, use of social support may be a helpful aspect of the coping process for many individuals that have experienced traumatic and highly stressful events (Coyne & Downey, 1991).

Perceived Social Support

Though social support is described as the assistance (both tangible and intangible) one receives from others (e.g., family, friends, significant others), it has been argued that there is a distinction between receiving and perceiving social support (Zimet et al., 1988). Specifically, the availability of social support resources may not necessarily align with how open and willing individuals may be to utilize such resources. When taking into account traumatic experiences, the manner in which individuals perceive the quality and availability of social support resources may impact their ability to utilize these resources, thus impacting their ability to manage their

distress and experience positive outcomes following trauma (Demirtepe-Saygılı & Bozo, 2011; Lakey & Orehek, 2011; Hyman, 2004; Kaniasty & Norris, 2008; Panagioti, Gooding, Taylor, & Tarrier, 2014; Senol-Durak & Ayvasik, 2010). Additionally, a literature review by Lakey and Orehek (2011) has suggested that focusing specifically on perceived social support instead of received social support or general help-seeking behavior may be a better indicator of mental health outcomes, especially in trauma research.

Perceived Social Support and Trauma

Social support has several implications for posttrauma outcomes. Mainly, a look at the impact of social support perceptions and source of support, can provide a better understanding of how these factors can be used to deal with event stressfulness and core beliefs disruption following trauma, thereby leading to PTG. The impact of perceived social support in posttrauma outcomes will be discussed in the following sections.

Posttrauma Outcomes and Perceived Social Support

Research has shown that maladaptive functioning following adverse events may contribute to a lack of perceived social support (Brancu et al., 2014; Kao et al., 2014; Vranceanu et al., 2007). For instance, in a recent study sampling 1,825 war veterans, a PTSD diagnosis was linked to lower levels of perceived social support (Brancu et al., 2014). Another recent study found an association between trauma type and perceived social support in 235 incarcerated individuals diagnosed with depression (Kao et al., 2014). Specifically, sexual abuse, crime, and physical abuse were all linked to lower levels of perceived social support (Kao et al., 2014). Though these data offer some indication that traumatic events may adversely impact perceived social support, the studies by Brancu and colleagues (2014) as well as Kao and colleagues (2014)

utilized samples more prone to traumatic events (war veterans and incarcerated individuals, respectively) and results may not generalize to a college student population.

While a lack of perceived social support has been associated with negative adjustment outcomes, it is thought that social support from different sources (e.g., friends, romantic partners, caregivers) can promote more favorable outcomes during times of adversity and distress (Cohen & Wills, 1985). In the trauma literature specifically, social support is believed to protect against the negative impact of traumatic events (i.e., Buffering Hypothesis; Cohen & Wills, 1985). Several researchers have examined this buffering hypothesis with regards to perceived social support in trauma studies. Findings have revealed the importance of perceived social support in helping individuals manage and overcome traumatic experiences such as domestic violence (Liang et al., 2005), motor vehicle accidents (Buckley, Blanchard, & Hickling, 1996), and sexual abuse (Hyman, Gold, & Cott, 2003). Evidence also exists for the protective role of perceived social support in individuals who have been diagnosed with PTSD (Buckley et al., 1996). Additionally, evidence exists for the critical role that perceived social support plays after a natural disaster (Kaniasty, 2012; Kaniasty & Norris, 2009; La Greca, Silverman, Vernberg, & Prinstein, 1996). Kaniasty (2012), for example, examined the impact of perceived social support on 285 18- to 87-year-old adults (an average of 48 years old) within one year of a severe flood in Poland in 2007 (Kaniasty, 2012). Study results demonstrated that individuals who received and perceived greater levels of social support (e.g., community support resources) were more likely to have more favorable psychological outcomes (Kaniasty, 2012).

PTG and Perceived Social Support

As previously discussed, it is apparent that social support may be a critical factor in helping individuals experience positive outcomes following a trauma. In closely examining this

idea, researchers have examined how perceived social support influences PTG outcomes (Cormio et al., 2013; Senol-Durak & Ayvasik, 2010). For example, Senol-Durak and Ayvasik (2010) investigated these constructs in a study with a sample of 148 27-to 80-year-old adults ($M = 56$, $SD = 10.66$) in Turkey who were receiving treatment after experiencing a heart attack (Senol-Durak & Ayvasik, 2010). As a result, the researchers found a substantial relationship among PTG and perceptions of social support regarding friends ($r = .24$, $p < .05$) as well as significant others ($r = .18$, $p < .01$; Senol-Durak & Ayvasik, 2010). Additionally, a recent study conducted by Cormio and other researchers (2013) examined the link between perceived social support and PTG among 360 individuals (ages 23 to 85) that experienced trauma from a cancer diagnosis and were in remission. The researchers utilized a primarily female sample (84%) and the participants were an average age of 58.6 years old (Cormio et al., 2013). Similar to the study conducted by Senol-Durak and Ayvasik (2010), results showed that individuals who reported greater perceived social support also more often utilized social support resources and experienced greater PTG, $r = .32$, $p < .05$ (Cormio et al., 2013).

When considering limitations, the use of two specific cultural groups in the studies by Senol-Durak and Ayvasik (2010) and Cormio et al. (2013), Turkish and Italian respectively, raises concerns about possible cultural differences in dealing with trauma that may have influenced the results. Also, both studies examined perceived social support and PTG in individuals experiencing trauma from illness, and no other traumatic events were investigated. Therefore, findings should be interpreted with caution, and further investigation is necessary to determine the association between PTG and perceived social support with culturally diverse individuals who have experienced more varied types of traumatic events.

Perceived Social Support and Core Beliefs Disruption

According to theorists, disruption of core beliefs following trauma may also impact perceived social support (Schwartzberg & Janoff-Bulman 1991). In the case of sexual abuse, for example, traumatized individuals might experience lower self-worth, have mistrust for others, and view the world as an unsafe place (Schwartzberg & Janoff-Bulman 1991). Similar disruption of core beliefs may occur following events such as crime and bullying (Mikkelsen & Einarsen, 2002; Norris & Kaniasty, 1991). Theory has posited that altered schema regarding a benevolent world, the goodness of others, and self-worth might preclude such individuals from seeking or utilizing support (Schwartzberg & Janoff-Bulman 1991). On the other hand, core beliefs disruption following trauma may lead affected individuals to reach out to those close to them to receive assistance in processing what has transpired (Janoff-Bulman, 1992). Though these associations have been proposed in theoretical frameworks for trauma and supported in a few empirical studies (detailed in the next few paragraphs), additional empirical support is warranted so that the link between social support and core beliefs disruption may be better understood.

Studies exploring adjustment in college following trauma have revealed important findings regarding perceived social support and core beliefs disruption. For example, Grills-Taquechel and colleagues (2011) investigated the adjustment of 298 female college students two to three months following the Virginia Tech school shooting. Specifically, the researchers examined the effect of the shooting on anxiety and the impact of social support and world assumptions on adjustment. The results showed that the shooting contributed to altered schema regarding self-worth and controllability (Grills-Taquechel et al., 2011). Additionally, the support

of family members as well as friends was linked to better adjustment following the shooting (Grills-Taquechel et al., 2011).

Similarly, Littleton and colleagues (2012) found that individuals with multiple trauma exposure (in this case, past sexual abuse and the Virginia Tech school shooting) experienced greater PTSD symptomology, $t(212) = 2.10, p = .04, d = .30$, and depression, $t(213) = 2.76, p = .006, d = .40$, when compared to individuals without sexual abuse history prior to the school shooting. Additionally, individuals with multiple trauma exposure reported less family support, $t(213) = 2.47, p = .014, d = .35$, as well as negatively altered core beliefs regarding worth of self, $t(213) = 2.84, p = .005, d = .41$, and belief in a benevolent world, $t(212) = 3.56, p = .001, d = .51$. Participants in this sample included 215 female college students ages 18 to 27 ($M = 19.5, SD = 1.4$), with a majority identifying as European American (86%; Littleton et al., 2012). Though these findings demonstrate support for examining trauma in college students, the inclusion of female-only samples limits generalizability. Additional research is needed to determine whether core beliefs disruption and perceived social support, when assessed together, act as predictors of PTG in college students (Grills-Taquechel et al., 2011; Littleton et al., 2012).

Perceived Social Support and Event Stressfulness

Research is beginning to demonstrate that perceived social support and event stressfulness may be positively connected. Mainly, substantial positive correlations have been uncovered between event stressfulness and perceived social support from peers ($r = .19, p < .05$) as well as significant others ($r = .21, p < .05$; Senol-Durak & Ayvasik, 2010). Additionally, Smyth and colleagues (2008) found that among 1,499 college students, individuals who experienced greater distress from traumatic events for longer periods of time were more likely to disclose information about their trauma to others ($r = .126, p < .01$). Though use of a large

sample was a strength of the study, the majority of participants were Caucasian (96%) and recruited solely from the Southwestern US, which likely impacts generalizability of the findings (Smyth et al., 2008). While additional research is needed with more diverse samples, these findings are consistent with earlier theoretical claims made by Pennebaker and Susman (1988) as well as Rimé and colleagues (1998) regarding the importance of perceived social support in managing distress following traumatic events. Just as inclusion of both perceived social support and core beliefs disruption in PTG research is needed, additional investigation into the association between event stressfulness and all of these variables is warranted.

Perceived Social Support and College Students

Regarding family members, research has indicated the importance of this source of perceived social support in helping college students overcome negative effects of trauma (Brannan, Biswas-Diener, Mohr, Mortazavi, & Stein, 2013; Procidiano & Heller, 1983). While some researchers have found perceptions of family support to be important in college adjustment, there is also evidence for the important role of perceived peer support in outcomes for college students. Mainly, theorists believe that emerging adults in college rely less on caregivers and place less dependence on family support (Knutson & Woszidlo, 2014). Subsequently, heavier reliance is placed on relationships with peers and sometimes significant others (Knutson & Woszidlo, 2014). Due to this shift, greater emotional support from peers as compared to caregivers and other family members has been associated with better mental health and academic functioning in college students (Whiteman et al., 2013). For instance, Rodriguez and colleagues (2003) found peer support to be more influential than family support in a sample of 338 Latino students in college (Rodriguez, Mira, Myers, Morris, & Cardoza, 2003). On the other hand, lack of support from peers has been associated with academic underperformance in

college students ($r = -.40, p < .01$; Dennis, Phinney, & Chuateco, 2005). Thus, Knutson and Woszidlo (2014) postulate that support from peers may surpass that of family support for college students. While perceived social support from family members is still considered to be essential to promoting positive outcomes for these individuals, the impact of perceived social support from friends cannot be denied.

In addition to support from family and peers, researchers have examined the impact of romantic relationships and support from significant others in college students. For instance, Braithwaite and colleagues (2010) found that in a sample of 1,621 18- to 25-year-old students at a southeastern university in the U.S. (64% female), forming romantic relationships in college contributed to better mental health and overall functioning. Students were an average age of 20.19 years old and they represented various races such as Caucasian (73.3%), Hispanic (9.5%), African American (9.3%), Asian (3.6%), and other (3.7%). Results revealed that participants in relationships reported substantially fewer negative mental health outcomes ($d = .09, p = .049$), less obesity ($d = .21, p = .003$), fewer sexual partners ($d = .16, p = .002$), and less alcohol consumption ($d = .14, p = .001$; Braithwaite et al., Delevi, & Fincham, 2010). These findings support the idea that romantic relationships and support from significant others may contribute to more favorable outcomes for college students (Braithwaite et al., 2010).

While these aforementioned studies indicate that social support (e.g., that of romantic partners, family members, and friends) contributes to positive adjustment in college students, it is unclear whether one source of support is more influential in posttrauma outcomes for these individuals. Hefner and Eisenberg (2009), for example, found no significant difference among three types of perceived support in predicting most mental health outcomes among college students ($N = 1, 378$), though they did find that perceived peer support was substantially

associated with lower depression in this population ($p < .05$; Hefner & Eisenberg, 2009). Based on these results, future studies examining trauma in college students are needed to better determine whether source of perceived social support predicts psychological functioning in these individuals.

Measuring Perceived Social Support

Measures such as the Social Support Questionnaire (SSQ; Sarason, Levine, Basham, & Sarason, 1983), the Multidimensional Scale of Perceived Social Support (Zimet et al., 1988), and the Social Support Inventory (SSI; Brown, Brady, Lent, Wolfert, & Hall, 1987) have been used to examine the construct of perceived social support in various research studies and across disciplines. The MSPSS in particular, however, specifically explores the quality and availability of perceived social support resources (e.g., family, friends, significant others) rather than actual use of such resources (Zimet et al., 1988). This measure will be further examined in the next chapter.

Mediating and Moderating Roles of Social Support

While examination of perceived social support as an intervening variable is emerging, several researchers continue to investigate the intervening effects of social support, mainly either as a mediator or moderator, in the trauma literature. As mentioned in the previous chapter, a mediator variable explains the relationship between predictor and outcome variables, while a moderator variable acts on the relationship between these variables (Baron & Kenny, 1986). Also previously mentioned, studies have focused on the mediating function that social support serves when examining various traumatic events such as childhood abuse and maltreatment (Runtz & Schallow, 1997; Tremblay, Hébert, & Piché, 1999; Vranceanu et al., 2007), financial hardship (Lincoln, Chatters, & Taylor, 2003), and breast cancer diagnosis (Trunzo & Pinto,

2003). For instance, Vranceanu and colleagues (2007) assessed the impact of various instances of mistreatment in childhood (e.g., abuse, neglect), stress, and social support on PTSD and depression. The researchers sampled 100 women with an average age of 28.92 ($SD= 10.52$) that were receiving gynecological services from an inner-city treatment center in the Midwestern United States. Participants were primarily women from Caucasian (48%) and African American (47%) racial backgrounds. Through use of structural equation modeling (SEM), the researchers discovered that lower social support acted as a partial mediator (or explained some of the observed correlation) for the positive relationship between maltreatment and PTSD symptomology ($\beta = .26, p < .01$), but this was not the case for depression (Vranceanu et al., 2007). The use of a fairly small, predominantly low-income, and entirely female sample in this study, however, contributes to limitations in generalizing these results.

In longitudinal research conducted by Trunzo and Pinto (2003), social support had a mediating effect on the association among optimism and distress. The researchers observed this effect with a sample of 69 middle-aged women ($M = 57.5$ years, $SD = 13.2$) that experienced early stage breast cancer (Trunzo & Pinto, 2003). Regression analyses revealed a significant mediation model when accounting for the impact that higher social support had on the negative link among optimism and distress, $F(2, 62) = 18.79, p < .0001$ (Trunzo & Pinto, 2003). The social support that participants received is what seemed to explain the alleviating effect of optimism on distress (Trunzo & Pinto, 2003). However, it should be noted that the effect appeared to occur at baseline and six months into the study, but not at 12 months. Though it is unclear why the mediating effects disappeared after this time, it is possible that the participants' level of distress decreased after a year and therefore led to less dependence on social support (Trunzo & Pinto, 2003). Comparable to findings observed by Vranceanu et al. (2007), findings

from this study should be cautiously considered, given the rather small and all-female sample. Nevertheless, results from these and similar studies indicate the mediating impact of social support on the link among traumatic experiences and psychopathological outcomes.

Other research has suggested that social support may function as a moderator of posttrauma outcomes. Mainly, and in further support of the previously mentioned buffering hypothesis of social support on stress outcomes, studies have shown social support to act as a buffering moderator, thereby protecting against negative effects of trauma (Bozo, Tathan, & Yilmaz, 2013; Buckley, Blanchard, & Hickling, 1996; Ergh et al., 2002; Haden et al., 2007; Penninx et al., 1997). For instance, Haden and colleagues (2007) examined the nature in which social support moderated the relationship among injuries sustained following a traumatic event and PTSD symptomology. The researchers utilized a sample of 150 college students aged 17-22 years old ($M = 19.33$, $SD = 1.31$) that had experienced various instances of trauma (e.g., abuse in childhood, domestic violence, natural disasters, car accidents). Using hierarchical regression analyses, they found social support to be a significant moderator, whereby more severely perceived injury contributed to greater PTSD symptomology for individuals with lower support. For those individuals with higher support, more severe injury led to less reported PTSD symptoms, $\beta = -.17$, partial $t(145) = -2.34$, $p = .021$ (Haden et al., 2007). While the results demonstrate the significance of investigating effects of social support in trauma-exposed young adults, the predominantly Caucasian (81%) sample limits generalizability of findings to a more racially diverse population.

Similarly, an earlier study conducted by Ergh and colleagues (2002) observed how social support may moderate the link among traumatic brain injury and distress for impacted individuals and their families. Specifically, the researchers sampled 60 adult dyads, each

consisting of one injured individual (mean age 40.9 years old, 81.7% male) and one caregiver (mean age 54.1 years old, 71.7% female). Use of hierarchical regression analyses revealed substantial interaction effects in that individuals receiving lower social support demonstrated poorer adjustment when compared to those receiving moderate or high levels of support, $p < .001$ (Ergh et al., 2002). It should be considered that caregiver participants receiving lower support had to care for more severely injured individuals. Hence, it is important to interpret these findings cautiously.

These commonly explored functions of social support in empirical research bolster theoretical claims regarding the impact of this variable following traumatic experience. The examination of how social support mediates and moderates outcomes in trauma research also has theoretical implications to inform initiatives for addressing the impact of trauma through social support resources. Furthermore, these studies provide a better understanding for the relationship among different predictor variables and posttrauma outcomes.

Roles of Perceived Social Support

Researchers have begun documenting the role of perceived social support specifically in either mediating (Swickert & Hittner, 2009) or moderating (Bozo, Gündoğdu, & Büyükaşık-Çolak, 2009; Demirtepe-Saygılı & Bozo, 2011) positive growth outcomes following trauma. For example, Swickert and Hittner (2009) investigated the role that social support plays on the association among PTG and gender in a sample of 221 individuals ranging from 18 to 54 years old, with the sample including 52 community members and 169 college students. The researchers found that females ($n = 178$) were more likely than males ($n = 43$) to experience PTG and utilize social support coping, but they did not provide specific information regarding tests used to determine significant differences (Swickert & Hittner, 2009). They did provide

information on a substantial association between gender and reports of social support coping ($r = .28, p < .01$; Swickert & Hittner, 2009), but perhaps statistical information such as an independent samples t-test would have been more useful to compare means and demonstrate significant gender differences. Also noteworthy, though the researchers indicated that individuals endorsed having experienced traumatic events within the six months leading up to the study, they did not provide specific information regarding the kinds of traumatic events that were endorsed (Swickert & Hittner, 2009). Nevertheless, the researchers concluded that females are more likely to confide in others during times of great distress and have a more positive outlook on social relationships with family members and other important individuals (Swickert & Hittner, 2009). Given that no other PTG has yet documented the mediating effect of perceived social support, additional research is warranted.

In addition, research from Bozo and colleagues (2009) indicates that perceived social support is a possible moderator in PTG. Mainly, these researchers sampled 104 middle-aged women to examine the moderating function that perceived social support serves in the association among PTG and optimism. Through use of regression analyses, they found perceived support (given mainly by significant others) to be a moderator in this relationship ($\beta = .23, p < .05, R^2 = .05$; Bozo et al., 2009). Similar to the previously mentioned study by Beatty and colleagues (2009), these researchers did not provide information regarding stage of diagnosis (Bozo et al., 2009). A later study by Demirtepe-Saygılı & Bozo (2011) utilized a sample of 100 individuals who were caring for a child diagnosed with cancer to examine perceived social support may moderate the link among well-being and trauma symptomology (e.g., depression). These researchers found a significant interaction among perceived social support and well-being indicators (e.g., ability to complete tasks daily). Mainly, higher perceived social support

increased ability for task completion in participants and reduced symptomology, $\beta = -.43$, $t(96) = -3.11$, $p < .01$ (Demirtepe-Saygılı & Bozo, 2011). This study did not examine specific positive outcomes pertaining to PTG, however. Considering these findings and limitations, additional research regarding either the mediating or moderating role of perceived social support in posttrauma outcomes, particularly PTG, is warranted.

Results from studies exploring the intervening roles of perceived social support, may also have an impact on trauma research and initiatives. By examining the mediating and moderating effects of this variable, researchers may better understand the importance of perceived versus actual help from important individuals in times of heightened stress and trauma. The examination of mediators and moderators may not offer immediate and direct effects on how services are provided to trauma-exposed individuals, but over time this research may advance theoretical approaches to alleviating negative outcomes of trauma.

Directions for The Present Research Study

Despite recent advancements in trauma research and PTG theory, several points are still debated within the literature. For instance, disagreement exists surrounding what types of traumatic events are most impactful for triggering positive growth. On the one hand, some researchers indicate that greater levels of PTG are associated with more severe and life-threatening traumatic events. On the other hand, some researchers posit that the subjective interpretation of a traumatic event's impact is more telling of whether or not growth will occur, rather than the objective details of that event. This suggests that events such as divorce or harassment, which may not necessarily pose a threat to one's physical safety, can lead to just as much distress and trauma-related growth as more dangerous events (i.e., physical abuse, severe accident). Therefore, a closer look at the subjective interpretation of traumatic events is needed

in PTG research. The present study, in particular, allowed for participants to report a wide range of traumatic events in order to better account for subjective experiences of trauma.

Given that studies have demonstrated the importance of examining the capacity for individuals to experience PTG, researchers believe that future studies should continue examining whether disruption of core beliefs leads to positive growth following trauma (Lindstrom et al., 2013). Also, recent research suggests that there should be more of a focus on the impact of core beliefs disruption in the PTG process and on support from important individuals such as peers (Wilson et al., 2014). Taking this into consideration, the present study has examined the role of core beliefs disruption in PTG, as well as the influence of perceived social support from family, friends, and significant others in the positive growth experience.

Additionally, there is emerging evidence for the importance of event stressfulness in the cognitive processing of events. Specifically, research has found that more stressful events tend to elicit stronger reactions. However, interpreting stressfulness of an event is in and of itself a subjective process, thereby making it difficult to determine what events constitute as traumatic. Therefore, there is evolving research that explores the impact of various adverse events on individuals, from bullying and divorce to terrorism and natural disaster. Recent research has also been closely examining the impact of trauma on core beliefs disruption, perceived social support, and PTG, yet there are some gaps in the literature that must be addressed. Among these gaps is the need for more research with college students and samples including both males and females. In order to better examine the relationship between event stressfulness and trauma, this study allowed participants to rate the level of stress they experienced from adverse events.

After examining various theories and empirical studies, it is apparent that trauma influences the capacity for utilizing social support and the ability to sustain meaningful

relationships. Though several researchers have examined the association among social support and posttraumatic growth, there is still much research to be done in this area. Mainly, the availability of important individuals to provide adequate emotional, financial, or informational assistance to those dealing with trauma is futile if those trauma-exposed individuals do not feel a connection to people in their lives and do not have a positive framework for relationships in general. Therefore, it may be important to continue focusing on the manner in which perceived social support might influence the tendency of individuals to utilize social support resources (e.g., caregivers, romantic partners, peers) that they may have available to them following a traumatic event. Due to mixed findings, the present study sought to further examine the mediating and moderating roles of perceived social support in PTG.

Furthermore, an overview of the impact of trauma on college students has revealed important findings regarding outcomes for these individuals. Specifically, it is evident that event stressfulness, core beliefs disruption, and perceived social support influence posttrauma outcomes for these individuals. Though some studies have examined the separate constructs of PTG, core beliefs disruption, event stressfulness, and perceived social support, and PTG in samples with college students, additional studies are needed with these individuals to further examine the relationship between and among these variables. Ultimately, empirical findings from such work may inform interventions designed to serve the psychological needs of college students who have been exposed to trauma.

CHAPTER 3

METHODOLOGY

Information on key aspects regarding trauma and PTG, core beliefs disruption, event stressfulness, and perceived social support was provided in the previous chapter. Given the gaps in the literature also previously identified, information regarding methodology for the present research study is covered in this chapter. Mainly, the research questions and hypotheses are examined. Then, the research design is described. Following this description, information on the sample, instrumentation, and procedure is provided. Finally, there is a description of the statistical analyses that were used in the study, as well as delimitations of the study.

Research Questions and Hypotheses

As was mentioned in the previous chapter there is a need for research to investigate the influence of several important factors in the PTG process. Thus, the goal for conducting this research was to investigate the impact of event stressfulness, core beliefs disruption, and perceived social support on PTG in college students.

As stated in Chapter One, this study focused on the following primary research questions and hypotheses:

1. Do core beliefs disruption, event stressfulness, and perceived social support predict PTG?
 - HYP 1: Event stressfulness, core beliefs disruption, and perceived social support will be significant predictors of PTG.
2. Does perceived social support mediate the relationship between event stressfulness, core beliefs disruption and PTG?

- HYP 2: Perceived social support will mediate the relationship between each individual independent variable (event stressfulness, core beliefs disruption) and PTG.
3. Does perceived social support moderate the relationship between event stressfulness, core beliefs disruption, and PTG?
- HYP 3: Perceived social support will moderate the relationship between each individual independent variable (event stressfulness, core beliefs disruption) and PTG.

Perceived Social Support as a Mediator and Moderator

Researchers have identified the construct of social support as a mediator (Lincoln et al., 2003; Swickert & Hittner, 2009) and a moderator (Bozo et al., 2009; Ergh et al., 2002) in posttrauma outcomes. However, due to inconsistent findings regarding the possible mediating and moderating effects of perceived social support in PTG outcomes, this variable was examined as both a mediator and moderator in the present study. Also noteworthy, no other studies to date have simultaneously examined perceived social support as a mediator and a moderator in PTG outcomes.

Mediator. By definition, a mediator variable is one that accounts for the association among predictors and outcome variables, and explains why or how these associations occur (Baron & Kenny, 1986). In this study, perceived social support was selected *a priori* as a mediator. Theoretically, disruption of core beliefs following traumatic events may impact the way individuals view the world as well as themselves (Janoff-Bulman, 1992). If this is the case, it is likely that their shattered assumptions and distress may lead to them relying on the support of important individuals such as parents, peers, and spouses to help them process the

stressfulness of the trauma. As a result, one hypothesis in this study was that the increased perception of the quality of social support would likely contribute to PTG.

Prior research examining the mediating effect of perceived social support has also shown some support that this variable may act as a partial mediator (or account for some, but not all of the correlation; Baron & Kenny, 1986) in the association between independent variables and posttrauma outcomes (Swickert & Hittner, 2009). Specifically in partial mediation, inclusion of a mediator variable substantially reduces the association between predictor and outcome variables, though not down to zero (Swickert & Hittner, 2009). While it is plausible that the impact of core beliefs disruption and event stressfulness on posttrauma outcomes is likely present without any outside factors, examining the potential influence of a mediator variable on these relationships may better explain what exactly is taking place among these variables. Therefore, it was expected in the present study that perceived social support would partially mediate the association among event stressfulness, core beliefs disruption, and PTG. In other words, inclusion of the perceived social support variable would significantly reduce, but not completely eliminate the relationship between the dependent and independent variables. The possible mediating effect of perceived social support is represented in the model in Figure 1. In this model, perceived social support (PSS) is identified as the mediator, as it is shown to be correlated with the independent and dependent variables through uni-directional arrows. The independent variables, event stressfulness (ES) and core beliefs disruption (CBD) are also shown to predict the dependent variable, PTG, through uni-directional arrows.

Moderator. A moderator variable, on the other hand, is defined as a factor that acts on the association between predictor and outcome variables by changing its strength and/or direction (Baron & Kenny, 1986). For the purposes of this study, and due to the aforementioned

mixed findings in the research, perceived social support was also selected *a priori* as a moderator, wherein perceived social support would likely influence the strength of the relationship between event stressfulness, core beliefs disruption, and PTG. In general, moderator variables can serve as buffering factors (where higher levels of the moderator lessen the impact that the predictor has on the outcome variable), antagonistic factors (where the impact that the predictor has on the outcome variable is reversed due to an increase in the moderator), or enhancing factors (where the presence of the moderator boosts the magnitude in the association among the predictor and outcome variables; Baron & Kenny, 1986). While theoretical frameworks for the effect of social support in trauma suggest that this variable acts as a buffer against negative psychological and other health outcomes (Cohen & Wills, 1985; Janoff-Bulman, 1992), perceived social support was hypothesized to be an enhancing moderator in this study because of the focus on positive posttrauma outcomes. In other words, it was hypothesized that greater perceived social support would likely strengthen the effect of event stressfulness and core beliefs disruption on PTG.

In the case of an enhancing moderator, which is how perceived social support was viewed in this study, an observed increase in the moderator variable should strengthen the association between the dependent and independent variables. The hypothesis regarding the moderating effects of perceived social support is depicted in the model in Figure 2. Here, perceived social support is identified as a moderator. This variable is shown to be acting on the relationships between the independent variables, event stressfulness (ES) and core beliefs disruption (CBD), and the dependent variable, PTG, via uni-directional arrows.

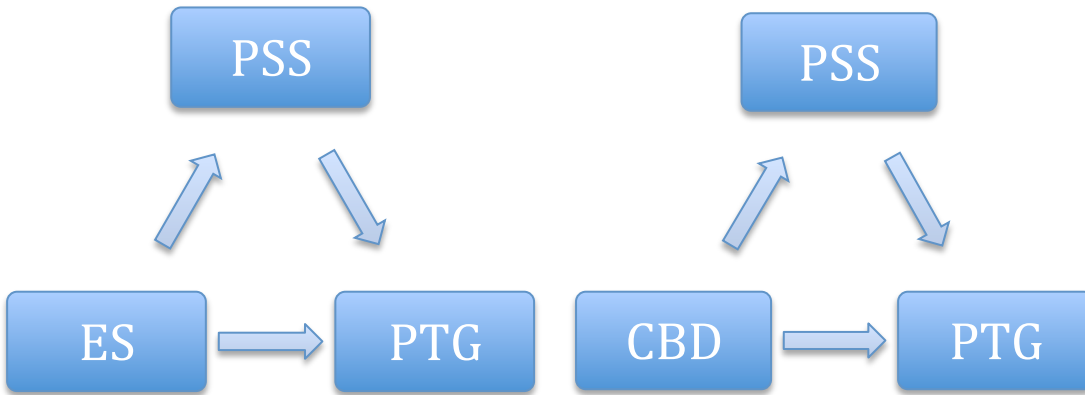


Figure 1. Perceived Social Support (PSS) as a Mediator. This conceptual model depicts the hypothesis that perceived social support (PSS) mediates the association between event stressfulness (ES) and PTG, as well as the association between core beliefs disruption (CBD) and PTG

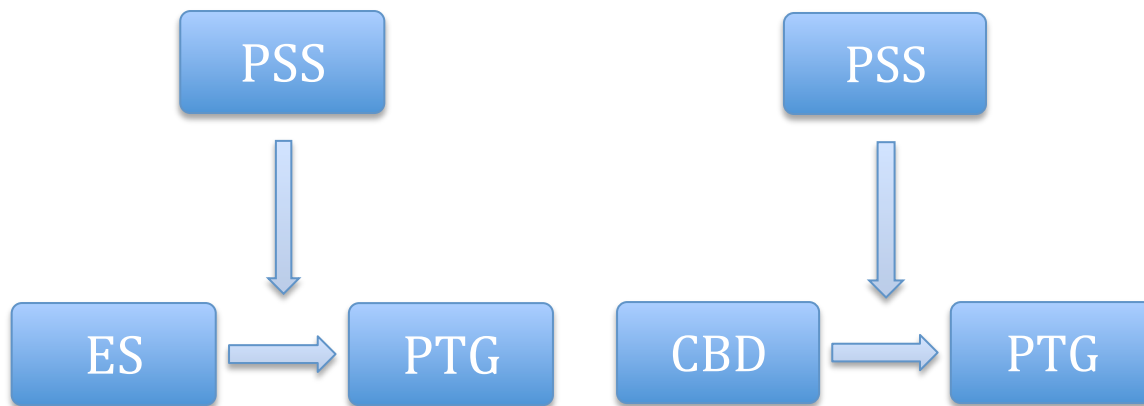


Figure 2. Perceived Social Support (PSS) as a Moderator. This conceptual model depicts the hypothesis that perceived social support (PSS) moderates the association between event stressfulness (ES) and PTG, as well as the association between core beliefs disruption (CBD) and PTG

Research Design

The present study utilized a correlational design given that participants were not randomly assigned to the variables of interest and the variables were not manipulated. Additionally, the independent and dependent variables are continuous and in nature and reflect attitudes and beliefs.

Participants

Participants included in this study were students enrolled at various U.S. colleges and universities. The age range of participants was 18 to 25 years old, excluding younger or older individuals. This exclusionary criterion allowed for the focus of the study to remain solely on the impact of trauma in a population of young adults, thereby making findings generalizable to individuals in this age range and developmental juncture (i.e., young adulthood). Additionally, another exclusion criterion in this study required that endorsement of trauma be at an established threshold of 4 or above on the Event Stressfulness scale. This threshold is used in prior research and considered to be an appropriate marker for significant trauma and distress (Groleau et al., 2013; Joseph et al., 2012).

The initial source of participant recruitment was the College of Education (COE) Research Pool at Florida State University. Individuals in the pool are enrolled in participating courses within the college. As an incentive for their participation, students received assignment credit in their respective courses and were entered into a raffle for one of five \$10 gift cards. Five study participants were chosen as raffle winners. These participants were contacted and were each awarded one of the gift cards by mail.

The COE Research Pool was comprised largely of female participants during the time period that this study was active, and thus an effort was made to recruit more males and participants in general. Specifically, recruitment for the study also took place through social media outlets (e.g., Facebook), as well as through advertisement at Baruch College located in the northeastern United States. Participants recruited through these additional outlets were also entered into the raffle, but they were ineligible for the course credit that the participants from COE received. This study received approval from the Institutional Review Boards at Florida

State University (Human Subjects Committee) as well as Baruch College. Though no participants requested additional information regarding seeking counseling, one participant did express concern regarding the focus of the study solely on positive outcomes following trauma. The researcher reached out to the participant to explain the rationale for the research study and offered to answer any additional questions or concerns. No further communication occurred following the researcher's response.

Power Analysis

Two *a priori* power analyses were conducted, through use of G*Power 3.1.3 (Faul et al., 2007), to estimate an adequate study sample size. Specifically, an *a priori* analysis was conducted for bivariate correlation, with medium effect size ($r = .2$) and α at .05. It was determined that a sample of 153 participants would be necessary to produce a power of .80. Additionally, an *a priori* analysis was conducted for linear multiple regression with medium effect size ($f^2 = .1$) and α at .05. From this analysis, it was determined that a sample of 100 participants would be needed to produce a power of .80. Given that the bivariate correlation produced the largest sample size to establish adequate power, obtaining a sample of 153 participants was a goal of this study. Additional participants were recruited as described in an effort to increase representation of males in the sample.

Procedure

Information for this study was collected through an online survey comprised of questionnaires that have been shown to be valid and reliable in assessing the variables of interest, as discussed in greater detail below. Mainly, measures of trauma exposure (THQ; Green, 1990), event stressfulness (Cann et al., 2010), core beliefs disruption (CBI; Cann et al., 2010), perceived social support (MSPSS; Zimet et al., 1988), and posttraumatic growth (PTGI; Tedeschi &

Calhoun, 1996) were administered. These questionnaires were accessed in Qualtrics, an online survey system available through the University. Additionally, participants were able to provide an electronic signature on an informed consent form before beginning the survey. For individuals who did not wish to provide informed consent to participate in the study, there was an option to decline consent and terminate the survey. Those who did provide consent were taken to the beginning of the survey and given directions for completing the measures.

All participants first completed the Demographic Questionnaire, THQ, and ES measures in the same order. The ES item was presented immediately following the THQ so that participants could first present a full trauma history before being asked to focus attention on the event the participant deemed the most impactful.. Following completion, the remaining measures (CBI, MSPSS, and PTGI) were counterbalanced for all participants to account for possible order effects. Participants were required to complete all items in each measure prior to moving on to subsequent measures. Data of the individuals who did not complete the items were removed from this study.

Instrumentation

Demographic form. The Demographic Form used in this study consisted of eight questions regarding age, gender, race, year in school, and marital status (see Appendix G). This instrument was created specifically for this study.

Trauma History Questionnaire (Green, 1996). The Trauma History Questionnaire (THQ) is a measure used to assess adverse life events that individuals experience and perceive as being traumatic, and measures frequency and type of trauma (Green, 1996; Hooper, Stockton, Krupnick, & Green, 2011). The THQ contains 24 items and has been used to assess for lifetime exposure of traumatic experiences in adults from clinical and non-clinical populations (Brunet et

al., 2001; Farley, Golding, Young, Mulligan, & Minkoff, 2004; Humphreys, Lee, Neylan, & Marmar, 1999; Sacks et al., 2008).

Scores on the THQ can be grouped and assessed according to the three categories of traumas examined: Crime-Related Events, General Disaster and Trauma, and Physical and Sexual Experiences. Specifically, there are four items associated with Crime-Related Events (e.g., “Has anyone ever attempted to rob you or actually robbed you, i.e., stolen your personal belongings?”), thirteen items for General Disaster and Trauma (e.g., “Have you ever experienced a natural disaster such as a tornado, hurricane, flood or major earthquake, etc., where you felt you or your loved ones were in danger of death or injury?”), and six items for Physical and Sexual Experiences (e.g., “Has anyone ever touched private parts of your body, or made you touch theirs, under force or threat?”). There is also an item that allows individuals to report an event not specifically mentioned in other items (“Have you experienced any other extraordinarily stressful situation or event that is not covered above?”). For this particular item, participants are asked to describe the event that they identify as traumatic. A total of 24 points (including the item regarding non-specified events) is possible on the THQ, and high scores on this measure reflect a great deal of exposure to highly stressful and traumatic life events. Completion time for the THQ is estimated to range from 10 to 15 minutes (Hooper et al., 2011).

The THQ was originally normed using 423 individuals in college and has demonstrated fair to excellent test-retest reliability, with coefficients ranging from $r = .51$ to $r = .91$ (Green, 1990; Hooper et al., 2011; Mueser et al., 2001). This spread in test-retest reliability was likely due to the range in types of events endorsed (e.g., being attacked, getting robbed, important individual in one’s life being killed) and to additional events being reported during re-administration. Test-retest-reliability was not assessed in the current study.

The THQ has also demonstrated sound construct validity in that it has shown agreement with other trauma measures such as the Stressful Life Events Questionnaire (SLEQ; Goodman et al., 1998), with a majority of items having good to excellent kappa coefficients (range $\kappa = .61-1.00$; Hooper et al., 2011; Miranda et al., 2003). Additionally, good content validity has been established with the THQ and measures such as the Potential Stressful Events Interview (PSEI; Falsetti et al., 1994). As well, an inverse relationship has been observed between the THQ and well-being outcomes, with correlation coefficients ranging from $r = -.56$ to $r = -.48$ (Pole et al., 2006). Though researchers have found the THQ to be a good predictor of PTSD (Golier et al., 2003; Lilly, Pole, Best, Metzler, & Marmar, 2009; Spertus et al., 2003), one study did not demonstrate a substantial association among PTSD symptomology and the THQ (Keogh et al., 2002). This may have been due to characteristics such as use of a small sample size ($N = 40$), however (Keogh et al., 2002). Thus, use of the THQ in this study provided additional psychometric information for this measure.

Event stressfulness item (Cann et al., 2010). Following completion of the THQ, participants were prompted to choose their most significant adverse life experience and respond to the remaining questionnaires with that event in mind. There was one separate question that assessed for stressfulness of the traumatic event. Specifically, this question asked, “How stressful was this event for you?” Participants were able to provide a response using a seven-point Likert Scale that ranged between one (not stressful at all) and seven (extremely stressful). This approach of assessing event stressfulness through a single item in PTG research has been used by Cann and researchers (2010) and has been found to be an acceptable method of assessment in other PTG studies (Lindstrom et al., 2013; Senol-Durak & Ayvasik, 2010; Taku & Cann, 2014).

Core Beliefs Inventory (Cann et al., 2010). The Core Beliefs Inventory (CBI) is a nine-item questionnaire that was developed by Cann and colleagues (2010) to measure disturbance in individuals' assumptive world beliefs following trauma. Individuals respond to questions regarding changes in their beliefs about others (e.g., "Because of the event, I seriously examined my assumptions concerning why other people think and behave the way they do"), themselves (e.g., "Because of the event, I seriously examined my beliefs about my own abilities, strengths, and weaknesses"), spirituality and religion ("Because of the event, I seriously examined my spiritual or religious beliefs"), and the future (e.g., "Because of the event, I seriously examined my beliefs about my expectations for my future;" Cann et al., 2010). Items are rated on a six-point Likert scale between zero (no change) and five (a large degree of change). A total of 45 points is possible on this measure, with high scores indicating major disruption of core beliefs following trauma. Additionally, an analysis has revealed a one-factor structure of the CBI.

Norms for the CBI were established across three different studies, with $n = 181$ in Study 1, $n = 297$ in Study 2, and $n = 70$ in Study 3 (Cann et al., 2010). Participants in Studies 1 and 2 included mainly college students, while a clinical sample of individuals with leukemia were included in the third study (Cann et al., 2010). Across these and later studies, the CBI was found to have sound internal consistency, with Cronbach's alpha coefficients between .82 and .93, as well as adequate test-retest reliability ($r = .69$; Cann et al., 2010; Groleau et al., 2013; Wilson et al., 2014). Internal consistency for the CBI was also assessed in this study, and found to be consistent with prior studies. This information is provided in the next chapter. Additionally, correlation patterns observed between the CBI and measures of posttraumatic growth ($r = .57$), stress ($r = .24$), as well as life satisfaction ($r = -.30$) provide emerging evidence for construct validity of this measure (Cann et al., 2010; Groleau et al., 2013). Though these findings indicate

sound psychometric properties of the CBI, this is a fairly new measure. A benefit of the CBI measure is that it assesses for disruption of core beliefs resulting directly from trauma, rather than for general world assumptions (Cann et al., 2010). Therefore, this measure was selected for this study to examine core beliefs disruption.

Multidimensional Scale of Perceived Social Support (Zimet et al., 1988). Zimet and colleagues (1988) developed the Multidimensional Scale of Perceived Social Support (MSPSS). This 12-item measure uses a Likert scale from one (denoting very strongly disagree) to seven (denoting very strongly agree) and looks at individuals' perceptions of the quality of support they receive from family (e.g., "My family is willing to help me make decisions"), friends (e.g., "My friends really try to help me"), and significant others (e.g., "I have a special person who is a real source of comfort to me;" Zimet et al., 1988). A total score of 84 is possible for this measure, indicating very high perceived social support (Zimet et al., 1988).

The MSPSS instrument was normed with 275 17- to 22-year-old college students ($M = 18.6$, $SD = .88$; Zimet et al., 1988) included in the sample, and has been shown to assess for perceived social support across various cultures, races, and ages (Misra, Crist, & Burant, 2003; Raffaelli, Andrade, Wiley, Sanchez-Armass, Edwards, & Aradillas-Garcia, 2013; Shokri, Farahani, Nouri, & Moradi, 2013; Zimet, Powell, Farley, Werkman, & Berkoff, 1990). Regarding reliability and validity, researchers have found the MSPSS to demonstrate good test-retest reliability (Cronbach's alpha coefficients between .72 and .85), and excellent internal consistency (Cronbach's alpha coefficients between .86 and .95; Edwards, 2004; Kazarian, & McCabe, 1991; Zimet et al., 1990). Sound internal consistency for the MSPSS was also observed in this study, and this information is included in Chapter 4.

Additionally, researchers have found substantial negative associations among the MSPSS and measures of depression ($r = -.35, p = .002$; Dahlem, Zimet, & Walker, 1991) as well as stress (correlation coefficients ranging from $r = -.28$ to $r = -.21, p < .05$; Raffaelli et al., 2013). There is also evidence for construct validity among this measure and assessments of family satisfaction as well as perceived family support in a sample of 290 adolescents with an average age of 15 years old (Edwards, 2004). It should be noted, however, that this sample consisted primarily of Latino adolescents (Edwards, 2004). Nevertheless, all of these findings suggest sound psychometric properties of the MSPSS.

Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996). Based on their previously discussed model, Tedeschi and Calhoun (1996) introduced a self-report assessment known as the Posttraumatic Growth Inventory (PTGI) to analyze PTG that focuses on self-perception of growth following trauma. This 21-item measure examines posttraumatic growth based on five domains: Relating to Others (e.g., “I have a greater sense of closeness with others”), New Possibilities (e.g., “New opportunities are available which wouldn’t have been otherwise”), Personal Strengths (e.g., “I discovered that I’m stronger than I thought I was”), Spiritual Change (e.g., “I have a stronger religious faith”), and Appreciation of Life (e.g., “I have a greater appreciation for the value of my own life”; Taku, Calhoun, Tedeschi, Gil-Rivas, Kilmer, & Cann, 2007; Tedeschi & Calhoun, 1996). Responses include a 6-point Likert scale that ranges between zero (not experiencing a specific change at all after a trauma) and five (experiencing the specific change to a large extent). Scores on this measure can be calculated for each domain and for overall PTG.

Originally normed with a sample of 604 undergraduate students ages 17 to 25 (Tedeschi & Calhoun, 1996), the PTGI has been established as a measure for PTG resulting from instances

of trauma such as divorce, automobile accidents, loss of loved ones, accidental pregnancy, and acts of violence (Hallam & Morris, 2013; Loiselle et al., 2011; Park et al., 2012; Salo et al., 2005; Schmidt et al., 2012; Shigemoto & Pyrazli, 2013). In terms of reliability, there is emerging evidence that the PTGI has good internal consistency as an overall measure (Cronbach's alpha coefficients ranging from .90 to .94; Loiselle et al., 2011; Schmidt et al., 2012; Tedeschi & Calhoun, 1996). Good internal consistency for the PTGI was also found in the current study, and information for this finding is provided in the following chapter. Acceptable to good internal consistency has also been found across all five domains of the PTGI for samples of college students as well as members of communities, with Cronbach's alpha coefficients between .67 and .85 (Loiselle et al., 2011; Schmidt et al., 2012; Tedeschi & Calhoun, 1996). Additionally, correlation coefficients have ranged from $r = .27$ to $r = .63$ between the five domains, as well as from $r = .62$ to $r = .83$ between each domain and the overall measure (Schmidt et al., 2012; Tedeschi & Calhoun, 1996).

In addition to adequate reliability, Smith and Cook (2004) found the PTGI to have good construct validity in their study with 276 participants ranging from ages 22 to 71 ($M = 37.7$, $SD = 12.4$) and representing various racial groups (67% Caucasian, 24% African American, 3% Asian/Pacific Islander, 6% from other groups; Smith & Cook, 2004). Specifically, these researchers randomly assigned participants to two experimental groups, where one group was asked to respond to questions on the PTGI regarding a specific traumatic event ("linked condition"), and the other group was asked to respond to the questions regarding growth to more general traumatic experiences over the last four years ("unlinked condition;" Smith & Cook, 2004). The researchers found the PTGI to be a good measure for assessing positive growth, in that both groups reported experiencing PTG, with participants in the unlinked condition

reporting higher PTG ($p < .05$). It is important to note, however, that individuals in this study were asked to only respond based on events that have occurred in adulthood, thereby possibly limiting the scope of traumatic events that were assessed.

As well, Shakespeare-Finch and colleagues (2013) reported good content validity of this instrument with a sample of 14 adults, ages 18 to 46 years old ($M = 29$, $SD = 9.97$), who experienced events such as a tsunami, physical or sexual abuse, motor vehicle accident, and serious illness (Shakespeare-Finch, Martinek, Tedeschi, & Calhoun, 2013). Mainly, participants were asked to provide detailed responses to the PTGI items. Through use of thematic analysis procedures, the researchers found that participants responded to questions in a manner consistent with the five PTGI domains, which added evidence for the validity of the subscales and overall content of the measure. However, these findings should be interpreted cautiously because the low number of participants ($N = 14$) and use of qualitative methods, though informative, did not allow for much statistical information to be provided (Shakespeare-Finch et al., 2013).

These findings provide evidence of reliability as well as validity of the PTGI measure in assessing for positive growth following various traumatic events and among different populations. However, additional research is warranted to continue examining the psychometric properties of this measure. Moreover, the PTGI appears to be an adequate measure to assess for PTG given its sound psychometric properties and usefulness with adult populations.

Analysis

Data collected through the Qualtrics online survey system was analyzed using SPSS statistical software (IBM Corp., 2013). Demographics such as age, gender, race/ethnicity, year in school, as well as socioeconomic status (salary range of household) were collected and presented in a descriptive data table to assess for generalizability. All questionnaires used in this

study were analyzed for internal consistency. Inter-correlational analyses were also conducted for all questionnaires. In addition, an inter-correlation matrix of variables allowed for the binary correlations between variables to be examined. Research questions and hypotheses were addressed through a series of linear multiple regression analyses.

Research question 1. The first research question of this study was: Do event stressfulness, core beliefs disruption, and perceived social support predict PTG? The aim of this first research question was to determine whether all of the continuous predictor variables (core beliefs disruption, event stressfulness, and perceived social support) would explain variance in the continuous outcome variable (PTG). This research question was addressed through use of multiple linear regression analysis, more specifically, simultaneous regression. Mainly, all of the continuous predictor variables were entered simultaneously and analyzed to determine the proportion of variance explained collectively by all variables, as represented by the R^2 value. The standardized slope values, or betas (β s), represented the importance of each predictor variable in explaining variance in PTG. It was hypothesized that the set of predictor variables would significantly predict PTG.

Research question 2. The second research question of this study was: Does perceived social support mediate the relationship between event stressfulness, core beliefs disruption, and PTG? This second research question was answered through a series of simultaneous regression analyses. First, PTG (outcome variable) was regressed on event stressfulness and core beliefs disruption (predictor variables) to ascertain the significance of the independent variables as predictors. Then, these predictor variables were re-entered and perceived social support was added as a predictor to ascertain the potential influence of perceived social support as a mediator. Mediation would result if the association among event stressfulness, core beliefs disruption and

PTG changed when adding perceived social support to the model. This change would occur in one or both of the predictors. If there was no change at all, no mediation occurred. It was hypothesized that perceived social support would mediate the association among event stressfulness, core beliefs disruption and PTG.

Research question 3. The third and final research question was: Does perceived social support moderate the relationship between event stressfulness, core beliefs disruption, and PTG? Hierarchical regression analysis was also used to answer this research question. Specifically, event stressfulness, core beliefs disruption, and perceived social support were input into block one as predictor variables of PTG. The assumption was that the variables and the complete model would be significant, as depicted by the R^2 value. Following this step, two interaction variables (event stressfulness x perceived social support and core beliefs disruption x perceived social support) were created and added in the second block with the previously entered variables. The predictors in block two were core beliefs disruption, event stressfulness, perceived social support, and the two newly created interaction terms. If moderation were to occur, the effect of the new interaction terms as well as the change in R^2 would be significant. A significant interaction term would indicate that perceived social support was a moderator for the relationship between that particular variable and PTG. It was hypothesized that a significant interaction effect as well as change in R^2 would occur, suggesting that perceived social support acted as a moderator in the association among event stressfulness, core beliefs disruption, and PTG.

CHAPTER 4

RESULTS

Results of the study are detailed in the present chapter. Sample characteristics and descriptive statistics are provided, followed by preliminary analyses and statistical results for each research question. Data were analyzed through use of SPSS (IBM Corp., 2013).

Sample Characteristics

Initially, 360 individuals were recruited for this study and 19 individuals declined to participate. Data were collected from 341 participants, well above the original goal of 153 participants. An additional 76 participants began the survey, but did not complete the measures. No identifiable pattern was observed for the points at which these participants discontinued the survey. Being that the online survey system did not allow for skipped items, these incomplete surveys were removed from the participant pool. The remaining sample included 265 participants who completed the entire survey, for a 74% completion rate. Of these 265 participants, 212 individuals endorsed their level of distress from an instance of trauma (i.e., event stressfulness) to be at a 4 or above on the 7-point Event Stressfulness scale. This standard cutoff has been utilized as a measure of trauma in prior research (Groleau et al., 2013; Joseph et al., 2012) and thus, only the 212 participants that met the criteria were included in the final statistical analyses.

Participants were students enrolled in a two- or four-year college or university located in the United States. Recruitment for the study primarily occurred through the Florida State University College of Education Subject Pool. Recruitment also occurred at Baruch College as well as through social media outlets in an attempt to have a wider representation of students. Participants ranged from 18-25 years of age, with an average age of 21.13 years old ($SD= 1.93$).

The final sample was comprised of 4.7% freshmen, 14.2% sophomores, 27.8% juniors, 34.9% seniors, 16% graduate students, and 2.4% students enrolled in other programs. Students were not provided with space to report specific programs.

In terms of gender, a majority of the sample, or 83.5%, identified as female and 16.5% identified as male. Participants were not provided with transgender or other gender identity categories. Regarding race and ethnicity, participants in the sample identified as White/Non-Hispanic (52.8%), Black/African American (17.5%), Hispanic/Latino (17%), Asian/Pacific Islander (9.4%), Mixed Race (2.8%), and Other (0.5%). There were no participants who identified as Native American in this sample. A majority of participants reported their marital status as Single (98.1%), while a small amount reported their status as Married (1.4%) and Divorced (0.5%). In addition, about half of the participants, or 48.1%, indicated that they were in a romantic relationship. Among those participants in a relationship, individuals reported the length of their relationship to be less than one year (33.65%), 1-3 years (42.31%), or more than 3 years (24.04%). Demographic information for the sample is provided in Table 1.

Regarding exposure to trauma, the most frequent types of traumatic experiences reported were receiving news that someone close to you had a life-threatening illness, serious injury, or unexpectedly died (62.3%), experiencing a natural disaster (e.g., tornado, hurricane, flood, major earthquake, etc.) and feeling you or your loved ones might be killed or seriously injured (31.1%), having a serious accident at work, in a car, or somewhere else (28.8%), and seeing someone seriously injured or killed (21.2%). In addition, 13.7% of the sample reported additional instances of trauma such as divorce, drug abuse by a loved one, living in poverty or financial hardship, verbal and emotional abuse, stalking, and having a loved one sent to prison. Table 2 provides additional information regarding types of trauma reported by participants.

Table 1
Sample Demographics

Variable	Frequency (<i>n</i>)	Percentage (%)
<u>Age</u>		
18	10	4.7
19	33	15.6
20	49	23.1
21	45	21.2
22	29	13.7
23	17	8.0
24	6	2.8
25	23	10.8
<u>Year in School</u>		
Freshmen	10	4.7
Sophomore	30	14.2
Junior	59	27.8
Senior	74	34.9
Graduate	34	16.0
Other	5	2.4
<u>Gender</u>		
Female	177	83.5
Male	35	16.5
<u>Race/Ethnicity</u>		
White/Non-Hispanic	112	52.8
Black/African American	37	17.5
Hispanic/Latino	36	17.0
Asian/Pacific Islander	20	9.4
Mixed Race	6	2.8
Other	1	.5
<u>Marital Status</u>		
Single	208	98.1
Married	3	1.4
Divorced	1	.5
<u>In a Relationship</u>		
Yes	102	48.1
No	110	51.9

Table 2
Rates of Reported Exposure to Trauma

	<i>n</i>	%
<u>Crime-Related Events</u>		
Has anyone ever tried to take something directly from you by using force or the threat of force, such as a stick-up or mugging?	15	7.1
Has anyone ever attempted to rob you or actually robbed you (i.e., stolen your personal belongings)?	40	18.9
Has anyone ever attempted to or succeeded in breaking into your home when you were <u>not</u> there?	30	14.2
Has anyone ever attempted to or succeed in breaking into your home while you <u>were</u> there?	11	5.2
<u>General Disaster and Trauma</u>		
Have you ever had a serious accident at work, in a car, or somewhere else?	61	28.8
Have you ever experienced a natural disaster such as a tornado, hurricane, flood or Major earthquake, etc., where you felt you or your loved ones were in danger of death or injury?	66	31.1
Have you ever experienced a “man-made” disaster such as a train crash, building collapse, bank robbery, fire, etc., where you felt you or your loved ones were in danger of death or injury?	25	11.8
Have you ever been exposed to dangerous chemicals or radioactivity that might threaten your health?	6	2.8
Have you ever been in any other situation in which you were seriously injured?	21	9.9
Have you ever been in any other situation in which you feared you <u>might</u> be killed or seriously injured?	39	18.4
Have you ever seen someone seriously injured or killed?	45	21.2
Have you ever seen dead bodies (other than at a funeral) or had to handle dead bodies for any reason?	41	19.3
Have you ever had a close friend or family member murdered, or killed by a drunk driver?	25	11.8
Have you ever had a spouse, romantic partner, or child die?	5	2.4
Have you ever had a serious or life-threatening illness?	20	9.4
Have you ever received news of a serious injury, life-threatening illness, or unexpected death of someone close to you?	132	62.3

Table 2- continued

	<i>n</i>	<i>%</i>
Have you ever had to engage in combat while in military service in an official or unofficial war zone?	1	.5
<u>Physical and Sexual Experiences</u>		
Has anyone ever made you have intercourse or oral or anal sex against your will?	39	18.4
Has anyone ever touched private parts of your body, or made you touch theirs, under force or threat?	41	19.3
Have there been any other situations in which another person tried to force you to have an unwanted sexual contact?	29	13.7
Has anyone, including family members or friends, ever attacked you with a gun, knife, or some other weapon?	10	4.7
Has anyone, including family members or friends, ever attacked you <u>without</u> a weapon and seriously injured you?	9	4.2
Has anyone in your family ever beaten, spanked, or pushed you hard enough to cause injury?	26	12.3
<u>Other Events</u>		
Have you experienced any other extraordinarily stressful situation or event that is not covered above?	29	13.7

Preliminary Analyses

Descriptive analyses. Descriptive statistical analyses were conducted to examine the variables of interest (trauma history, event stressfulness, core beliefs disruption, perceived social support, and posttraumatic growth) as assessed through the THQ, ES item, CBI, MSPSS, and PTGI, respectively. This information is depicted in Table 3. It should be noted that higher scores on each respective measure revealed greater levels of each variable. Responses from each study participant were summed in order to calculate total scores for each measure. Participants

in this study endorsed a mean score of 3.48 for the THQ ($SD = 2.20$), similar to prior findings of average reported traumatic events (Bernat et al., 1998; Smyth et al., 2008).

Additional analyses (see Table 3) revealed mean scores of 6.00 for the ES item ($SD = 1.01$), 34.60 for the CBI ($SD = 11.69$), 67.85 for the MSPSS ($SD = 13.15$), and 75.83 for the PTGI ($SD = 26.25$). Mean scores of the measures used in this study are consistent with means reported by the instruments in prior research (Lindstrom et al., 2013; Senol-Durak & Ayvasik, 2010; Taku & Cann, 2014). Mean responses on the 24-item THQ included a range of adverse life events leading to trauma, thus indicating low trauma exposure for sample participants. The mean scores for the 1-item ES measure ranged from “Not at all stressful” to “Extremely Stressful,” thereby revealing a moderate to high level of event stressfulness in this sample. These results are consistent with findings of trauma and event stressfulness prevalence on college campuses (Lindstrom et al., 2013; Taku & Cann, 2014). Additionally, the 9-item CBI measure included mean responses ranging from “Not at all” to “To a very large degree,” suggesting a moderate level of core beliefs disruption in participants. The means scores of the 12-item MSPSS measure ranged from “Very Strongly Disagree” to “Very Strongly Agree,” and indicated a moderate level of perceived social support in the sample. The large standard deviation observed suggests that scores were dispersed in the sample and not clustered tightly around the mean. This implies that participants reported widely varying levels of perceived social support. Finally, the 21-item PTGI included mean responses ranging from “I did not experience any change as a result of my crisis” to “I experienced this change to a great degree as a result of my crisis,” suggesting a moderate level of posttraumatic growth for sample participants.

Use of independent samples t- tests revealed no significant observed differences in mean scores across gender for the measures used in this study. Table 3 provides additional information regarding male and female mean scores on the measures.

Table 3
Independent Samples T-Test Results for Primary Measures by Gender

	Gender			95% CI for Mean Difference			t	df	p-value	
	Male Mean	Male (SD)	n	Female Mean	Female (SD)	n				
THQ	3.89	(2.55)	35	3.40	(2.12)	177	-.31, 1.29	1.21	210	.23
ES	6.06	(1.00)	35	5.98	(1.02)	177	-.30, .45	.40	210	.69
CBI	37.34	(11.55)	35	34.06	(11.67)	177	-.96, 7.53	1.53	210	.13
MSPSS	66.11	(16.03)	35	68.19	(12.53)	177	-6.88, 2.72	-.85	210	.39
PTGI	78.91	(29.47)	35	75.22	(25.62)	177	-5.89, 13.28	.76	210	.45

Reliability of measures. Statistical analyses were conducted to determine reliability of the THQ, ES item, CBI, MSPSS, and PTGI. It was not possible to determine a Cronbach's alpha coefficient for ES since there was only one item included in this measure. Additionally, the THQ was used to take inventory of traumatic events experienced by participants and, therefore, was not assessed for internal consistency. Though the traumatic events are grouped in categories, it is not necessarily believed that one trauma is the same as another or that endorsing one type of trauma will lead to endorsement of another type of trauma (Hooper et al., 2011). Other reliability analyses are typically conducted for the THQ, including test-retest reliability and interrater reliability (Hooper et al., 2011). However, these analyses were not used in the present study due to the nature of the results and use of a one-time, online survey.

Results of the analyses demonstrated high internal consistency for each remaining measure, with Cronbach's alpha coefficients of .902 (CBI), .918 (MSPSS), and .955 (PTGI).

Prior studies have revealed similar coefficients for the CBI (Cann et al., 2010; Groleau et al., 2013; Wilson et al., 2014), MSPSS (Edwards, 2004; Kazarian, & McCabe, 1991; Zimet et al., 1990), and PTGI (Loiselle et al., 2011; Schmidt et al., 2012; Tedeschi & Calhoun, 1996). Given the high internal consistency of the measures of interest, subsequent statistical analyses were conducted with confidence for the reliability of the collected data. Information regarding internal consistency of the measures and subscales is shown in Table 4.

Table 4
Descriptive and Reliability Statistics for Preliminary Variables

Variable	<i>N</i>	Range	Mean (<i>SD</i>)	Skewness	Kurtosis	Cronbach's α
THQ	212	1-11	3.48 (2.20)	.883	.554	
ES	212	4-7	6.00 (1.01)	-.541	-.947	
CBI	212	9-54	34.60 (11.69)	-.378	-.614	.902
MSPSS	212	24-84	67.85 (13.15)	-.908	.557	.918
PTGI	212	21-126	75.83 (26.25)	-.193	-.702	.955

Correlation analysis. The correlations between the variables of interest were calculated and summarized in an intercorrelation matrix, as shown in Table 5. Specifically, Pearson's r values revealed small to moderate, significant positive correlations between the THQ and other variables of interest, including the ES item ($r = .26, p < .01$) and CBI ($r = .30, p < .01$). These results suggest that greater prevalence of trauma exposure leads to greater event-related stress and disruption of core beliefs. Interestingly, a small, insignificant positive correlation was observed between the THQ and PTGI ($r = .09, p = .18$), suggesting a weak relationship between prevalence of trauma exposure and positive growth outcomes following trauma.

In addition, a small, significant negative correlation was observed between the THQ and the MSPSS ($r = -.19, p < .01$). There were no significant positive correlations found between the

MSPSS and any other variables of interest, however. Therefore, though more positively perceived social support appears to be associated with less exposure to traumatic events, there do not seem to be strong associations between perceptions of social support and level of event stressfulness, disruption of core beliefs, or posttraumatic growth in the study. Also, a large, significant positive correlation was observed between the CBI and PTGI ($r = .56, p < .01$). This supports the idea that the greater the impact of a traumatic event on an individual's core beliefs, the greater the propensity for that individual to experience PTG. Small to moderate, significant positive correlations were found between total scores for the CBI and ES item ($r = .44, p < .01$), as well as the ES item and PTGI ($r = .23, p < .01$). These findings suggest that greater reported stress from a traumatic event is linked to greater disruption of core beliefs and greater PTG. Use of regression analyses allowed for further investigation of the relationships among these variables.

Table 5
Intercorrelations among Preliminary Variables

	THQ	ES	CBI	MSPSS	PTGI
THQ	—				
ES	.26**	—			
CBI	.30**	.44**	—		
MSPSS	-.19**	.04	-.10	—	
PTGI	.09	.23**	.56**	.12	—

Note: **= correlation is significant at the .01 level

When analyzed separately, significant correlations were found between MSPSS subscales and the remaining variables of interest in the study. For example, there were small, significant negative correlations between the MSPSS Family subscale (MSPSS FAM) and the THQ ($r = -.29, p < .01$) as well as with the CBI ($r = -.19, p < .01$). Therefore, greater perceived social

support from family members leads to less exposure to trauma and less core belief disruption in college students. The MSPSS Significant Others subscale (MSPSS SIG OTH) was significantly positively correlated with the ES ($r = .24, p < .01$), CBI ($r = .55, p < .01$), and PTGI ($r = .93, p < .01$). These small to high correlations suggest that college students with greater event stressfulness, core beliefs disruption, and posttraumatic growth tend to have greater perceived social support from significant others. No significant correlations were observed between the MSPSS Friends subscale (MSPSS FRI) and any other variable, proposing that perceived social support from friends is not strongly linked to trauma exposure and the posttrauma outcomes observed in the study. This information is provided in Table 6.

Table 6
Intercorrelations among Preliminary Variables and MSPSS Subscales

	THQ	ES	CBI	MSPSS	PTGI
MSPSS FAM	-.29**	-.12	-.19**	.78**	.05
MSPSS FRI	-.07	.02	-.04	.79**	.06
MSPSS SIG OTH	.09	.24**	.55**	.11	.93**

Note: **= correlation is significant at the .01 level. *MSPSS FAM*= Family subscale, *MSPSS FRI*= Friends Subscales, *MSPSS SIG OTH*= Significant Others Subscales.

Regression analysis assumptions. Various assumptions were examined prior to exploring the statistical analysis findings. First, examination of a histogram revealed normal distribution of the data, thus demonstrating that the assumption of normality was met. Next, inspection of a residual scatter plot revealed a linear association between the dependent and independent variables, thereby suggesting that the regression model is a good fit for the data. Examination of the scatter plots also revealed a fairly even distribution of the residuals and no major differences in error variances across the independent variables, meeting the assumption of homoscedasticity (Tate, 1998).

To determine whether multicollinearity was impacting the data analyses and interpretation, correlations among the variables were examined. Multicollinearity concerns typically arise when Pearson correlations among variables are $r = .8$ or higher (Hair, Anderson, Tatham, & Black, 1995), which was the case with many variables in this study. To assess for multicollinearity, Tolerance as well as Variance Inflation Factor (VIF) values were calculated for all independent variables. Tolerance values were shown to be acceptable for all variables, with values from .700 to .996 (Keith, 2006). All VIF results were also determined to be acceptable, with values within an acceptable range from 1.01 to 1.25 (Abu-Bader, 2011; Hair et al., 1995).

Lastly, autocorrelation was addressed to ensure that the residuals are independent of each other. Use of the Durbin-Watson test in this study produced a value of 1.79, thereby revealing no concerns for autocorrelation. The recommended value for this test is 2 (acceptable values are between 1.5 and 2.5), which demonstrates no autocorrelation (Gujarati, 2003). Given that all assumptions were sufficiently met, results of the multiple regression analysis could be further examined.

Primary Analyses

Research question 1. Do core beliefs disruption, event stressfulness, and perceived social support predict PTG? The corresponding hypothesis to this question posited that this set of variables of interest would be significant predictors of PTG. SPSS was used to execute the multiple regression analysis in order to assess the relationship of each variable when accounting for all independent variables.

When examining the predictive power of event stressfulness (ES), core beliefs disruption (CBD), and perceived social support (PSS), all of these independent variables were simultaneously entered into a regression model and PTG was entered as the dependent variable.

A model summary and ANOVA table with values of $R = .58$, $R^2 = .34$, adjusted $R^2 = .33$, $F(3, 208) = 35.64$, $p < .001$, were observed for the entire model. In other words, 34% of the variance observed in PTG was accounted for by ES, CBD, and PSS, suggesting a modest overall relationship strength among PTG and the predictor variables. When accounting for the values of all independent variables in the model, CBD ($\beta = .59$, $t(208) = 9.29$, $p < .001$) and PSS ($\beta = .18$, $t(208) = 3.09$, $p = .002$) were found to be significant predictors. This suggests that these two variables had relative importance in the model, whereby an increase in core beliefs disruption as well as an increase in perceived social support led to an increase in PTG. However, ES was not a significant individual predictor in the model, ($\beta = -.03$, $t(208) = -.43$, $p = .671$), which is indicated by the insignificant beta (β) value. This finding suggests that a change in event stressfulness was not associated with a change in PTG. Additionally, the largest beta weight was illustrated in the CBD variable, indicating that for one unit increase in CBD, PTG increased by .59 units. The next largest beta weight was illustrated in the PSS variable, suggesting that for one unit increase in PSS, PTG increased by .18 units. This information is provided in Table 7.

Table 7
Simultaneous Regression Analysis for ES, CBD, PSS, and PTG

Variable	<i>b</i>	<i>SEb</i>	β	<i>R</i>	R^2	<i>p</i> -value
Step 1				.58	.34***	.000
Constant	10.72	12.00				.373
ES	-.69	1.63	-.03			.671
CBD	1.32	.14	.59***			.000
PSS	.35	.11	.18**			.002

Note: *** $p < .001$, ** $p < .01$. PTG is the dependent variable that is regressing on the independent variables ES, CBD, and PSS.

Research question 2. Does perceived social support mediate the relationship between event stressfulness, core beliefs disruption and PTG? It was hypothesized that perceived social

support would mediate the relationship between event stressfulness, core beliefs disruption, and PTG. This question was examined through use of simultaneous regression analysis, where mediation would occur if there was a change in significance levels for the beta weights of event stressfulness and core beliefs disruption, when controlling for perceived social support. This regression model for mediation is illustrated in Figure 3.

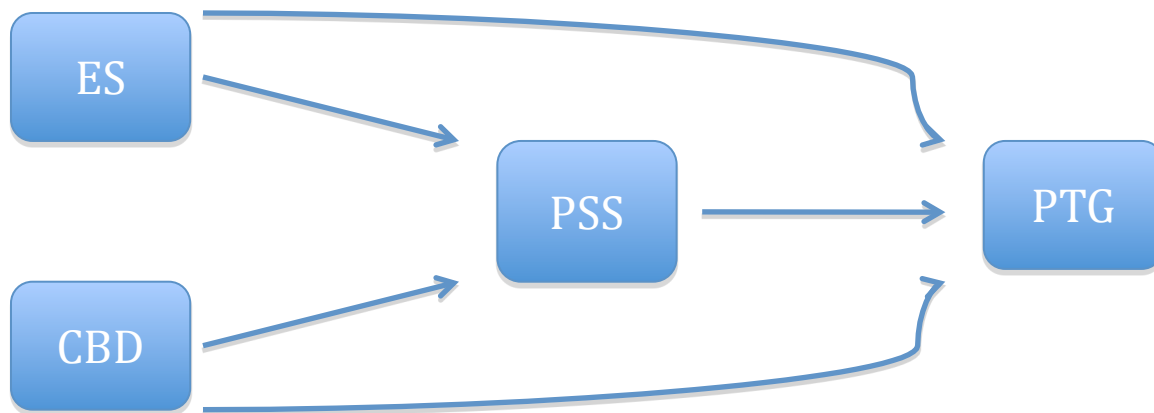


Figure 3. Regression Model for Perceived Social Support (PSS) as a Mediator. This figure depicts the regression model for mediation

Prior to examining the potential mediating effects of PSS on the other variables of interest, several steps needed to be addressed. Specifically, Baron and Kenny (1986) proposed that four regression analysis steps should be met to determine the occurrence of mediation: 1) the independent variable significantly predicts the dependent variable; 2) the independent variable significantly predicts the mediator variable; 3) the mediator variable significantly predicts the dependent variable; and 4) the independent and mediator variables significantly predict the dependent variable. Step 1 yielded significant results in this study, whereby ES ($\beta = .23$, $t(210) = 3.34$, $p = .001$) and CBD ($\beta = .56$, $t(210) = 9.68$, $p < .001$) were both individual, significant predictors of PTG. Step 2 revealed that neither ES ($\beta = -.04$, $t(210) = -.53$, $p = .596$) nor CBD (β

= -.10, $t(210) = -1.51$, $p = .131$) were significant individual predictors of PSS. Analyses also showed that PSS did not have individual, significant predictive power on PTG ($\beta = .12$, $t(210) = 1.68$, $p = .094$), and therefore step 3 was not met. For step 4, results from the regression model in the first research question revealed that ES, CBD, and PSS significantly predicted PTG (see Table 7). When PSS was removed from the model, however, there was no change in significance of ES ($p = .700$) and CBD ($p < .001$) as predictors. Therefore, the addition of PSS into the model did not change the significance of the relationship between ES, CBD, and PTG. PSS did not appear to act as a mediator on the relationship between ES, CBD, and PTG. Information for the additional regression analyses can be found in Table 8.

Researchers such as MacKinnon and Fairchild (2009) have argued that the mediation steps outlined by Baron and Kenny (1986) are rather limited in that they usually require fairly large sample sizes and a significant relationship between the independent and dependent variables for mediation to be detected. They also highlight that these steps do not produce an actual value for mediation strength, and that partial mediation might still be occurring despite insignificant results (MacKinnon & Fairchild, 2009). Therefore, additional analyses including a bootstrapping method (Shrout & Bolger, 2002) and the Sobel Test (Sobel 1982; 1986) were utilized to further examine the results and determine whether partial mediation might be detected. Results of the bootstrapping method, using 5000 bootstrap samples and a 95% confidence interval (Preacher & Hayes, 2008), revealed that the indirect effects of ES on PTG ($B = -.12$, $CI = -.92$ to $.25$) and CBD on PTG ($B = -.04$, $CI = -.15$ to $.01$) were nonsignificant. The Sobel Test also demonstrated nonsignificant results for the indirect effects of ES on PTG ($Z = -.45$, $p = .650$, $\kappa^2 = .01$) and CBD on PTG ($Z = -1.31$, $p = .192$, $\kappa^2 = .03$), further supporting the finding that PSS did not mediate the relationship between ES, CBD, and PTG.

Table 8
Separate Regression Analyses for ES, CBD, PSS, and PTG

Variable	<i>b</i>	<i>SEb</i>	β	<i>R</i>	<i>R</i> ²	<i>p</i> -value
<u>PTG Regressed on ES</u>	5.82	1.74	.23**	.23	.05**	.001
<u>PTG Regressed on CBD</u>	1.25	.13	.56***	.56	.31***	.000
<u>PSS Regressed on ES</u>	-.48	.89	.04	.04	.00	.596
<u>PSS Regressed on CBD</u>	-.12	.08	-.10	.10	.01	.131
<u>PTG Regressed on PSS</u>	.23	.14	.12	.12	.01	.094

Note: ****p* < .001, ***p* < .01

Research question 3. Does perceived social support moderate the relationship between event stressfulness, core beliefs disruption, and PTG? It was hypothesized that perceived social support would moderate the relationship between event stressfulness, core beliefs disruption, and PTG. Sequential (or hierarchical) regression analysis was used to examine this research question. Independent variables were centered on their means and used to calculate interaction terms ESxPSS and CBDxPSS (Baron & Kenny, 1986). The regression model for moderation, including all predictors, interaction terms, and the outcome variable, is illustrated in Figure 4. An additional histogram and scatterplot were produced for the regression model with the newly included interaction terms, and revealed that assumptions were met for normality as well as homogeneity.

For the initial regression step, ES, CBD, and PSS were entered as predictors. As was previously stated, results showed that this first step was significant and at least one of the predictor variables explained 34% of the variance observed in PTG. Though it was already

determined that ES was not a significant predictor of PTG in the initial model, this variable remained in the model in order to observe whether the ESxPSS interaction term was significant.

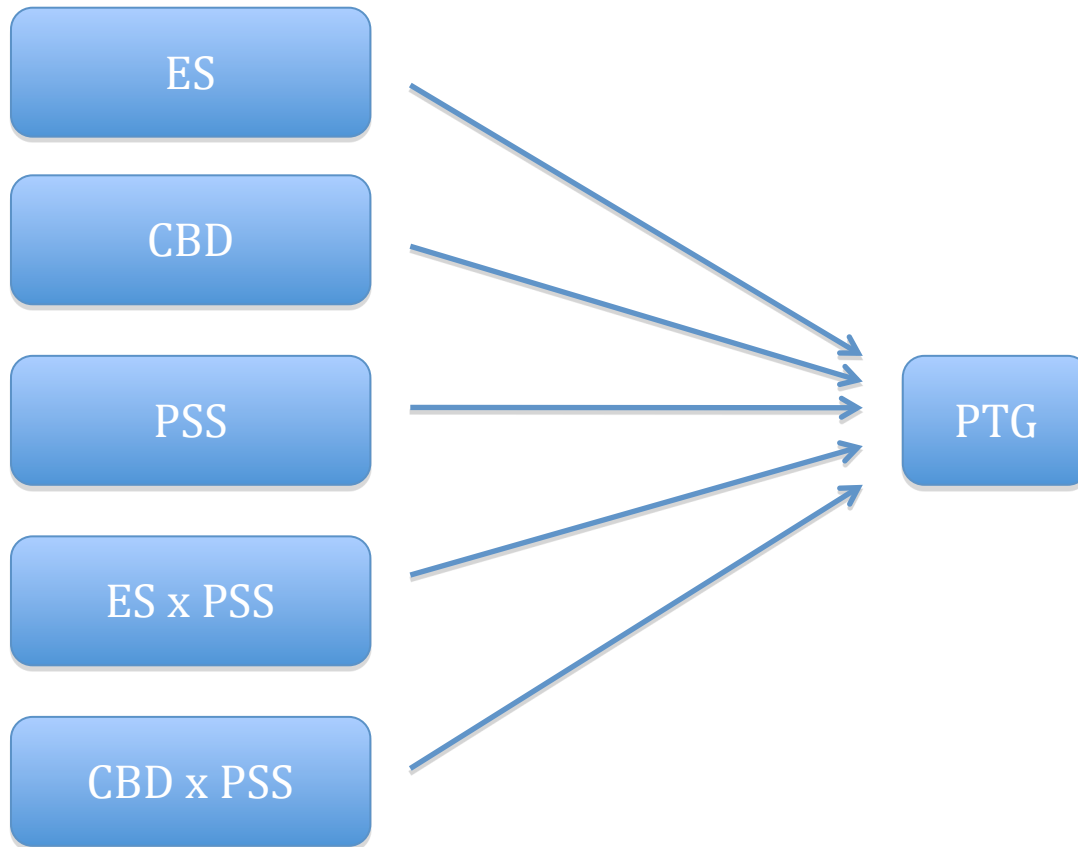


Figure 4. Regression Model for Perceived Social Support (PSS) as a Moderator. This figure depicts the regression model for moderation

In the final step of the regression model, the two interaction terms were added. As a result, the overall model was found to be statistically significant, ($R^2 = .43$, adjusted $R^2 = .42$, R^2 change = .09, $F(5, 206) = 16.11$, $p < .001$). In other words, adding the two interaction variables led to a 9% increase in predictive power for PTG. Additionally, both the ESxPSS ($\beta = .17$, $t(206) = 2.90$, $p = .004$) and CBDxPSS ($\beta = .20$, $t(206) = 3.28$, $p = .001$) interaction terms were significant. This suggests that PSS acted as a significant moderator on the relationship between ES, CBD and PTG. The interactions positively predicted PTG. Upon further examination of the

interaction graphs, higher levels of perceived social support strengthened the relationships, or increased the correlations, among event stressfulness and PTG, and among core beliefs disruption and PTG. Therefore, the nature of the relationship between ES and PTG, as well as between CBD and PTG, changes as a function of PSS. Information for these steps is depicted in Table 9.

Table 9
Hierarchical Regression Analysis for ES, CBD, PSS, and PTG

Variable	<i>b</i>	<i>SEb</i>	β	<i>R</i>	<i>R</i> ²	ΔR^2	<i>p</i> -value
<u>Step 1</u>				.58	.34***	.34***	.000
Constant	10.72	12.00					.373
ES	-.69	1.63	-.03				.671
CBD	1.32	.14	.59***				.000
PSS	.35	.11	.18**				.002
<u>Step 2</u>				.66	.43***	.09***	.000
Constant	23.15*	11.57					.047
ES	-.33	1.52	-.01				.830
CBD	1.24	.13	.55***				.000
PSS	.19	.11	.09				.095
ES*PSS	.34	.12	.17**				.004
CBD*PSS	.03	.01	.20**				.001

Note: ****p* < .001, ***p* < .01, **p* < .05. PTG is the dependent variable that is regressing on the independent variables ES, CBD, and PSS.

Additional data analyses. While PSS did not appear to mediate the relationship between ES and PTG, it seems that CBD had an impact on this relationship. Post hoc analyses were conducted to ascertain whether CBD acted as a mediator in the relationship between ES

and PTG (see Table 10). As was previously stated, ES was a significant predictor of PTG when entered alone in the model ($R = .225$, $R^2 = .05$, $\beta = .225$, $t(210) = 3.34$, $F(1, 210) = 11.16$, $p = .001$). After controlling for CBD, however, ES became insignificant ($R = .556$, $R^2 = .309$, $t(209) = 3.34$, $F(2, 209) = -3.386$, $p = .700$). All rules were met for this mediation (Baron and Kenny, 1986), whereby ES significantly predicted PTG (Step 1; see Table 7), ES significantly predicted CBD (Step 2; $\beta = .44$, $t(210) = 7.10$, $p = .001$), CBD significantly predicted PTG (Step 3; see Table 6), and both ES and CBD significantly predicted PTG (Step 4; $R = .56$, $R^2 = .31$, $F(2, 209) = 46.76$, $p = .001$). The bootstrapping method (using a 95% confidence interval and 5000 bootstrap samples) yielded significant results ($B = 6.46$, $CI = 4.32$ to 9.08), as did the Sobel Test ($Z = 5.52$, $p < .001$, $\kappa^2 = .25$), thus indicating full mediation. Information for the additional regression analyses is provided in Table 10. These findings will be further discussed in the next chapter.

Table 10
Additional Separate Regression Analyses for ES, CBD, and PTG

Variable	<i>b</i>	<i>SEb</i>	β	<i>R</i>	R^2	<i>p</i> -value
<u>CBD Regressed on ES</u>	5.07	.71	.44***	.44	.19***	.001
<u>PTG Regressed on ES and CBD</u>				.56	.31***	.001
<i>ES</i>	-.64	1.66	-.03			.700
<i>CBD</i>	1.27	.14	.57***			.001

Note: *** $p < .001$. PTG is the dependent variable that is regressing on the independent variables ES and CBD.

Power analysis. G*Power 3.1.3 (Faul et al., 2007) was used to help determine effect sizes and observed power in the study based on the final sample size ($N = 212$). Overall, medium to large effect sizes were detected and adequate power was achieved for the main

relationships examined. More specifically, post-hoc analyses were conducted for the bivariate correlations between PTG and other variables of interest. The main results were that medium to large effect sizes were found for the relationships between PTG and ES ($r = .23$) as well as PTG and CBD ($r = .56$), with α at .01 and .05, respectfully. Observed power was .86 and 1.0, respectfully, suggesting possible Type 1 error, though this is unlikely. Additionally, post-hoc analyses were conducted for the linear regression analyses and a large effect size was found ($f^2 = .51$), with α at .01. Effect size increased when accounting for the interaction terms ($f^2 = .75$), with α at .01. Observed power was 1.0, suggesting the unlikelihood of possible Type 1 error.

CHAPTER 5

DISCUSSION

The current study explored perceived social support as a possible mediator and moderator in the association among event stressfulness, core beliefs disruption, and PTG. Mainly, a goal of this study was to determine whether perceived social support would explain (mediate) and/or enhance (moderate) the positive effects of event stressfulness and disrupted core beliefs on PTG in college students. The research questions were addressed by first examining whether there were correlations among all variables of interest. Additionally, this study investigated potential mediating and moderating effects of perceived social support through separate statistical analyses. The aim of this chapter is to provide a discussion of results from all of the research questions examined in the study, implications of these results, limitations of the findings, as well as directions for future clinical practice and trauma research.

Preliminary Analyses

Bivariate correlation analyses revealed significant correlations among several variables in the present study. Specifically, event stressfulness and core beliefs disruption were found to be significantly associated with PTG, thus supporting prior empirical evidence for the link among these factors (Boals et al., 2010; Park et al., 2012). Individuals with greater perceived social support reported lower trauma exposure, supporting the claim that more positive perceptions of social support resources might be a protective factor for trauma-prone and distressed college students (Knutson & Woszidlo, 2014).

Perceived support from significant others, in particular, appeared to have a strong, significant correlation with PTG (see Table 6). This finding underscores the perceived importance of such relationships at this juncture of development and in the growth process

following trauma. The emphasis placed on relationships with friends has also been cited as an essential component for positive growth outcomes in trauma-exposed college students (e.g., Rodriguez et al., 2003), though this claim was not explicitly supported through findings from this study given that no significant correlation was detected among PTG and perceived social support from friends. Considering that about half of the sample in this study reported being in a romantic relationship, it is possible that emphasis placed on perceptions of social support from significant others may have overshadowed the importance of perceived support from friends. Therefore, these findings highlight the perceived importance of support from significant others in helping promote positive outcomes for emerging adults (Braithwaite et al., 2010).

Research Question 1

Multiple linear regression analysis, more specifically, simultaneous regression, was used to explore whether the predictor variables of interest (event stressfulness, core beliefs disruption, perceived social support) explained variance in the outcome variable (PTG). The running hypothesis was that this set of variables would significantly predict PTG. The results of the analysis for this research question supported the hypothesis in that the full model significantly predicted PTG.

When taken altogether, core beliefs disruption appeared to be the best predictor of PTG, followed by perceived social support. Event stressfulness, however, did not seem to significantly impact posttraumatic growth in the presence of these constructs. Prior studies have found core beliefs disruption to be a significant predictor of PTG and contribute to a great deal of the variance observed in this construct (Lindstrom et al., 2013), which was the case in this study. Mainly, it is believed that in order for growth to occur, a traumatic event must substantially disrupt one's core beliefs about themselves, their world, and others (Epstein, 1991; Janoff-

Bulman, 1992). The average moderate amount of core beliefs disruption illustrated in these findings suggest that participants were significantly impacted by a range of endorsed traumatic events. It is likely that this disruption potentially allowed them to make more positive meaning of their experiences, and ultimately experience greater PTG. Therefore, results from this study bolster this hypothesis and demonstrate the importance of core beliefs disruption in the PTG process for college students.

Similarly, studies have indicated that perceived social support significantly impacts PTG outcomes (Cormio et al., 2013; Senol-Durak & Ayvasik, 2010). Positive and high perceptions of social support resources are considered to be a greater determinant of posttrauma outcomes than the actual presence of these resources. As results from this study demonstrate, higher and more positive perceived social support offered a small but important increase in PTG in college students.

A potential justification for the insignificance of the event stressfulness variable in the model is the inclusion of only highly stressed individuals (i.e., event stressfulness levels of 4 or above) in the final sample. This likely contributed to tight variance and restricted ranges of scores around the mean. Nevertheless, findings from the additional analyses conducted in this study indicate that event stressfulness had a significant indirect effect on PTG. Specifically, higher levels of stress from a traumatic event were associated with greater disruption of core beliefs, which then attributed to greater PTG in college students.

Research Question 2

Simultaneous regression analysis was used to examine the second research question of whether perceived social support mediated the relationship among event stressfulness, core beliefs disruption, and PTG. The hypothesis was that perceived social support would act as a

mediator in this relationship. Findings revealed that perceived social support did not mediate the relationship between event stressfulness, core beliefs disruption, and PTG. Though these variables have been examined in prior mediation studies in PTG research (e.g., Swickert & Hittner, 2009), this exact relationship has not directly been studied before. However, perceived social support was examined as a mediator in the present study based on theoretical assertions of this variable's importance in posttrauma outcomes (Pennebaker & Susman, 1988; Rimé, Finkenauer, Luminet, Zech, & Philippot, 1998). Perceived social support did not appear to explain the observed relationships among the other constructs, yet it did offer small, but substantial influence as an individual predictor variable in PTG when controlling for these other variables (as depicted by a statistically significant beta weight in the full model, see Table 7). This reinforces the relevance of theoretical claims linking greater positive perceived social support to greater PTG, while accounting for event stressfulness and disruption of core beliefs.

Research Question 3

To explore the third research question of whether perceived social support would moderate the relationship among event stressfulness, core beliefs disruption, and PTG, the researcher utilized a hierarchical regression analysis. The hypothesis was that perceived social support would act as a moderator, specifically by enhancing the relationship among these variables. Results of the analysis demonstrated that PSS did enhance and strengthen the relationship between event stressfulness and PTG, as well as the relationship between core beliefs disruption and PTG. Mainly, significant interactions occurred between perceived social support and event stressfulness, as well as between perceived social support and core beliefs disruption. After adding the interaction terms in the second step of the hierarchical regression analyses, the model accounted for a significantly greater amount of the variance observed in

PTG as depicted by a significant change in the R^2 value (see Table 9). These findings suggest that the effect of event stressfulness and core beliefs disruption on PTG seems to vary based on one's perceptions of social support resources.

Prior studies have considered this construct to be a buffering moderator in trauma research (Bozo et al., 2013; Buckley et al., 1996; Ergh et al., 2002; Haden et al., 2007; Penninx et al., 1997). While the presence of social support resources serves to protect individuals from the potentially negative impact of trauma, it has not been well understood what influence the perceptions of these resources might have in trauma research. Therefore, this study sought to investigate the theoretical assertion that positive perceptions of social support resources may enhance the effects of event stressfulness and core beliefs disruption on PTG.

Based on findings from this study, perceived social support acted as an enhancing moderator on the relationship between event stressfulness and PTG. In other words, as perceived social support increased, the strength of the relationship between event stressfulness and PTG also increased. This further illustrates the importance of examining perceptions of social support to better understand the influence that this construct may have on the link between event stressfulness and PTG. Perceived social support also enhanced the relationship between core beliefs disruption also contributed to higher PTG in this study. In other words, the relationship between core beliefs disruption and posttraumatic growth was strongest for participants who reported high perceived social support. This suggests that perceived social support acted as an enhancing moderator on this relationship, providing support for the study hypothesis.

Implications

Several theoretical, empirical, and clinical implications arise from the present study's findings. These implications will be addressed in the following sections.

Theory and research. Results from this study have implications for theoretical and empirical works regarding trauma, posttraumatic growth, and outcomes for college students. Specifically, exploring the impact of perceived social support on positive growth outcomes following trauma is warranted. This area of trauma research is often overlooked in the literature, and overshadowed by negative posttrauma outcomes that tend to be more salient for individuals. However, highlighting areas in which growth may occur, as well as factors that might contribute to this growth, may help promote a more strengths-based approach to trauma research. Given that college students tend to have high rates of trauma exposure, emphasis on positive growth outcomes may especially shed more light on the posttrauma experiences of these individuals, and of emerging adults in general.

While theoretical claims highlight the importance of perceived social support in posttrauma outcomes, emphasis is often placed on how social support resources may protect individuals from negative outcomes, rather than on how they might enhance positive outcomes. Therefore, greater attention should be given to further understanding the influence of perceived social support in positive posttrauma outcomes. Additionally, research is warranted to examine the particular role of romantic relationships for individuals in college and young adulthood. Though relationships with family and friends have been shown to be important in helping alleviate negative posttrauma outcomes, findings from this study have implications for the significant relationship between positive growth outcomes and perceived support from significant others. This suggests that emerging adults might shift the level of importance they placed on relationships with family and friends, and direct this importance towards relationships with romantic partners, which might then lead them to rely more heavily on support from these individuals following a traumatic event (Braithwaite et al., 2010). Therefore, attention to

romantic partners and the perceptions of support from these important individuals in young adulthood may be warranted.

Additionally, the importance of including a range of trauma experiences is highlighted in findings from the present study. Specifically, participants were given the opportunity to report traumatic events that had not been specified in the trauma questionnaire. Several individuals included events that they perceived to be traumatic, but that are often not commonly examined in trauma research. Therefore, broadening the scope of traumatic events has implications for the manner in which researchers can better understand the level of subjectivity in trauma.

Clinical practice. Additionally, findings may have implications for clinicians serving the mental health needs of college students who have experienced trauma, whether or not they meet diagnostic criteria for PTSD. Overall, it is likely that this research will help inform intervention strategies and outreach efforts for these individuals. Outreach efforts for college counseling centers and other on-campus resources may also help students to more positively perceive these resources as a source of support in times of trauma and great distress. In addition, programs on college campuses that promote social connectedness (e.g., student-led organizations, cultural groups) can place particular emphasis on initiatives to help students that have experienced trauma to become better connected with others on campus and in their lives.

As well, findings from this study can lend support to strengthening the therapeutic alliance among clinicians in college counseling centers and the students in which they treat. Positive perceptions of the therapeutic relationship can lead to greater trust and openness in therapy, and may serve to promote more positive growth outcomes for these students. Mainly, clinicians may be able to help trauma-exposed students to process their experiences and manage stress experienced as a result of the traumatic event. Also, clinicians may help students identify

and address core belief disruptions they may have experienced following trauma, and reframe their negative experiences in order to make more positive meaning of the trauma.

Given the findings in this study regarding the link between perceived social support and trauma exposure, it is possible that the therapeutic relationship with a clinician might also serve as a protective factor for students. Specifically, students that favorably perceive this particular source of support may feel more equipped and empowered in dealing with stressful events, and this might lead to them potentially being exposed to less trauma in college.

Findings from the present study also have clinical implications for promoting strong social connections among trauma-exposed college students and important individuals in their lives, such as family members, peers, and significant others. Individuals with positive perceptions of these particular resources may seek support during times of trauma and distress. Improving these social connections may also lead individuals to feel supported and empowered to make meaning of their traumatic experiences. Mental health professionals treating trauma-exposed college students can help promote the importance and usefulness of these particular social support resources, particularly by focusing on the therapeutic relationship and allowing it to serve as a model for a positive interpersonal connection. Clinicians treating college students might also be able to help these individuals explore their ideas and beliefs about their relationships with others, in order to help them process any negative perceptions they might have and possibly perceive these relationships more positively. Considering the importance of perceived support from significant others in this study, clinicians may specifically help support healthy romantic relationships between college students and significant others by helping students explore the possible benefits of confiding in their romantic partners and being open to receiving support from these individuals.

Limitations and Delimitations

Despite the aforementioned implications, there are several aspects of the present study that make it difficult to generalize findings. Mainly, only 18- to 25-year-old college students from the United States were asked to participate. Therefore, findings from this study may be limited to samples of comparable age and demographics who might have access to greater resources than a non-college population. It is also likely that these types of cultural factors may have contributed to the manner in which participants in this study perceived their social support resources and trauma experiences. Specifically, the social structure and climate of colleges and universities may lead students to be exposed to more potentially traumatic events such as sexual assault, and also lead them to rely more heavily on relationships with friends and romantic partners. However, the inclusion of this limited age range removed the possibility for age to be a confounding variable in the study. It also allowed for inspection of the impact of trauma and related variables in a young adult sample. While all participants indicated that they were attending a two- or four- year college or institution, online recruitment through social media outlets and lack of space to provide program details, make it difficult to determine accuracy of this information . Also noteworthy, participants were only able to choose between two gender identity categories (male and female), thereby limiting generalizability of the findings to individuals who fall into these specific categories.

In addition, data collection was based on self-report measures and participation was voluntary. Though power was achieved with the sample, it is likely that the sensitive nature of some of the survey questions (e.g., those asking about different types of traumatic events experienced) impacted participation in this study. Nevertheless, the ability for participants to complete the survey online rather than in person, may have allowed them to answer questions

more openly. The inclusion of a largely female sample is another limitation of the study, thus limiting generalizability to mainly collegiate females. Despite this limitation, no significant differences were observed between mean scores on any of the questionnaires for male and female participants (see Table 3). Similarly, about half of the sample identified as White/Non-Hispanic, while additional racial groups (e.g., Black/African American, Hispanic/Latino, Asian/Pacific Islander, Mixed race) were represented by a small number of individuals. Therefore, findings from this study may not accurately reflect posttrauma experiences of college students belonging to these racial groups.

Additionally, concerns regarding assessment and methodology should be addressed. Specifically, only a few variables (e.g., core beliefs disruption, event stressfulness, and perceived social support) that likely contribute to PTG were examined in this study. Also noteworthy, not every existing measure of these constructs was included in this study and questionnaires were completed electronically. Participants were not asked to specify the time in which they experienced traumatic events; therefore, it is likely that the timeframe for these events may vary across the sample. This limitation makes it difficult to interpret applicability of findings to individuals with more recent trauma (e.g., within one month of study) or past experiences (e.g., ten years prior to the study). As well, only three specific kinds of social support resources were examined in this study (family, friends, significant others), thereby making these findings ungeneralizable to perceptions of additional support resources (e.g., community support). Also, it is possible that format changes may have occurred after transferring questionnaire items into an online format.

Furthermore, hypotheses for many of the research questions were based on theoretical claims that have not been extensively examined in empirical studies. Specifically, the

investigation of the potential mediating and moderating effects of perceived social support in posttrauma outcomes is an emerging area of research. Similarly, the concept of posttraumatic growth is a fairly recent phenomenon and merits further empirical support.

Directions for Future Research

Trauma research has greatly advanced, specifically with more examination of positive posttrauma outcomes emerging within the last few decades. Research regarding posttraumatic growth, in particular, has provided insight for researchers, clinicians, and professionals serving the needs of trauma-exposed individuals. Though much has been learned about this construct, additional empirical support is warranted.

More research is needed on the impact of perceived social support on the posttrauma variables identified in this study, as well as additional variables not included in the present study (e.g., type of trauma experienced, personality factors, attachment styles). Specifically, separate studies have shed some light on how optimism can promote PTG outcomes (Bozo et al., 2009; Prati & Pietrantonio, 2009; Taku & Cann, 2014), and how more securely attached individuals might have a greater tendency to utilize social support resources in times of trauma, thus contributing to more positive outcomes (Salo et al., 2005; Schmidt et al., 2012). Therefore, it would be beneficial to have a broader understanding of how these and other different factors might impact one another and influence the likelihood for PTG. Having a larger conceptual model of the potential influence of these constructs in PTG, along with the support of additional empirical findings, would offer further advancement in the trauma literature.

While the present study did not explicitly focus on examining type of trauma, prior research has highlighted the varying impact of different traumatic events on individuals. Additionally, the inclusion of a range of traumatic experiences in the present study allowed for

greater investigation of individuals' subjective interpretation of trauma. Though certain events tend to receive greater attention in the literature, findings from this study suggest that trauma can result from various experiences, including divorce, stalking, and having a loved one be incarcerated. There is also a growing body of literature regarding racial trauma, or the type of trauma experienced by individuals from racial minority groups following instances of racism and negative race-related incidents (e.g., microaggressions, discrimination; Bryant-Davis & Ocampo, 2005; Truong & Museus, 2012; Tummala-Narra, 2007). Therefore, further investigation of these and other kinds of trauma and how they might be linked to PTG is warranted.

Conclusions

The present study sought to investigate the role of perceived social support in the association between event stressfulness, core beliefs disruption, and PTG. Results demonstrated that perceived social support strengthened the relationship among these variables. In addition, perceived social support from significant others was shown to be more significantly associated with PTG than perceived support from family or friends. Core beliefs disruption contributed to most of the variance observed in PTG, thereby underscoring the importance of this construct in trauma experiences.

Findings from the present study offer a better understanding for the factors contributing to the PTG process in college students. These results also suggest that there is much to be learned from individuals who experience growth following trauma, mainly in how they manage the stress experienced as a result of a traumatic event, make meaning of their experiences, and perceive the quality of available social support resources. As well, this study sheds light on the role of perceived social support in this process. Specifically, perceptions of social support resources appear to enhance the relationship among event stressfulness, core beliefs disruption,

and PTG. Additional empirical evidence is necessary to determine whether these findings can be replicated. It is also necessary to reiterate that all potential contributing factors to PTG were not included in the present study. Therefore, it would be beneficial for subsequent studies to further investigate the importance of additional constructs in the PTG experience.

APPENDIX A

IRB APPROVAL MEMORANDUM

The Florida State University
Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673, FAX (850) 644-4392

APPROVAL MEMORANDUM

Date: 4/13/2015

To: Vanessa Dabel [REDACTED]

Address: [REDACTED]

Dept.: EDUCATIONAL PSYCHOLOGY AND LEARNING SYSTEMS

From: Thomas L. Jacobson, Chair

Re: Use of Human Subjects in Research
The Impact of Perceived Social Support on Event Stressfulness, Core Beliefs Disruption, and Posttraumatic Growth in College Students

The application that you submitted to this office in regard to the use of human subjects in the proposal referenced above have been reviewed by the Secretary, the Chair, and one member of the Human Subjects Committee. Your project is determined to be Expedited per 45 CFR § 46.110(7) and has been approved by an expedited review process.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals, which may be required.

If you submitted a proposed consent form with your application, the approved stamped consent form is attached to this approval notice. Only the stamped version of the consent form may be used in recruiting research subjects.

If the project has not been completed by 4/11/2016 you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the Committee.

You are advised that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol

change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report, in writing any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chair of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is FWA00000168/IRB number IRB00000446.

Cc: Angela Canto, Advisor
HSC No. 2015.14388

APPENDIX B
INFORMED CONSENT

Study Title: The Impact of Perceived Social Support on Event Stressfulness, Core Beliefs Disruption, and Posttraumatic Growth in College Students

You are invited to participate in a research study examining the role of perceived social support on positive growth outcomes in college students that have experienced adverse life events. This study is being conducted by Vanessa Dabel, a Doctoral Candidate in the Department of Educational Psychology and Learning Systems (EPLS) at Florida State University. The study is also being supervised by Dr. Angela I. Canto, Assistant Professor in EPLS. To be eligible to participate in this study, you must be a male or female college student between the ages of 18 and 25 years old who is enrolled full time at a two- or four-year postsecondary institution.

As part of the study, you will be asked to complete several brief questionnaires regarding experience with adverse life events. Questionnaires will be accessible through a secure online survey system known as Qualtrics. Participation in this study is voluntary and will take approximately 20 minutes. You can discontinue participation at anytime or decline to participate in general.

Information collected from this study will be kept anonymous and confidential, as allowed by law. You do not have to put your name on any materials in this study. Instead, the researcher will assign each survey with an identification code to ensure anonymity of participants. Also, data collected from this study will be stored in a password-protected computer for three years. After this time, the data will be destroyed.

Some participants in this study will receive course credit to satisfy research participation requirements for your course. In addition, participants will be entered into a raffle to win one of five \$10 Visa gift cards. After completing the study, you will be directed to click on a link where you will see an email address. Send your name and email address to the given address. A random raffle will be conducted with all of the names submitted once all data has been collected. In order to maintain anonymity, an individual other than the researchers will conduct the raffle. If you are a winner, you will be contacted via email and asked to submit a mailing address to where your gift card will be sent.

There are no major risks to participating in this study; however, some of the issues being investigated might make participants feel uncomfortable. If you have any questions about this study or you would like to report any issues, please contact the Principal Investigator, Vanessa Dabel at [REDACTED]. You can also contact the Faculty Supervisor, Dr. Canto, at [REDACTED].

If you have any concerns about your rights as a participant in this research study, or if you believe you have been placed at risk as a result of your participation, please contact the chair of

the Human Subjects Committee, Institutional Review Board, through the Florida State University Office of the Vice President for Research at (850) 644-9694 or at gary@fsu.edu.

Statement of Consent

I have read the above information and agree to participate in this study. I understand that I may discontinue participation at any time and that I may contact the researchers if I have any questions or concerns.

Yes

No

APPENDIX C

TRAUMA HISTORY QUESTIONNAIRE (GREEN 1996)

(Permission was obtained by the author to use and reproduce this measure)

The following is a series of questions about serious or traumatic life events. These types of events actually occur with some regularity, although we would like to believe they are rare, and they affect how people feel about, react to, and/or think about things subsequently. Knowing about the occurrence of such events, and reactions to them, will help us to develop programs for prevention, education, and other services. The questionnaire is divided into questions covering crime experiences, general disaster and trauma questions, and questions about physical and sexual experiences.

For each event, please indicate (circle) whether it happened and, if it did, the number of times and your approximate age when it happened (give your best guess if you are not sure). Also note the nature of your relationship to the person involved and the specific nature of the event, if appropriate.

<i>Crime-Related Events</i>		Circle one		<i>If you circled yes, please indicate</i>	
		Number of times	Approximate age(s)		
1	Has anyone ever tried to take something directly from you by using force or the threat of force, such as a stick-up or mugging?	No	Yes		
2	Has anyone ever attempted to rob you or actually robbed you (i.e., stolen your personal belongings)?	No	Yes		
3	Has anyone ever attempted to or succeeded in breaking into your home when you were <u>not</u> there?	No	Yes		
4	Has anyone ever attempted to or succeed in breaking into your home while you <u>were</u> there?	No	Yes		
<i>General Disaster and Trauma</i>		Circle one		<i>If you circled yes, please indicate</i>	
		Number of times	Approximate age(s)		
5	Have you ever had a serious accident at work, in a car, or somewhere else? (If yes , please specify below) _____	No	Yes		

6	Have you ever experienced a natural disaster such as a tornado, hurricane, flood or major earthquake, etc., where you felt you or your loved ones were in danger of death or injury? (If yes , please specify below) _____	No	Yes		
7	Have you ever experienced a “man-made” disaster such as a train crash, building collapse, bank robbery, fire, etc., where you felt you or your loved ones were in danger of death or injury? (If yes , please specify below) _____	No	Yes		
8	Have you ever been exposed to dangerous chemicals or radioactivity that might threaten your health?	No	Yes		
9	Have you ever been in any other situation in which you were seriously injured? (If yes , please specify below) _____	No	Yes		
10	Have you ever been in any other situation in which you feared you <u>might</u> be killed or seriously injured? (If yes , please specify below) _____	No	Yes		
11	Have you ever seen someone seriously injured or killed? (If yes , please specify who below) _____	No	Yes		
12	Have you ever seen dead bodies (other than at a funeral) or had to handle dead bodies for any reason? (If yes , please specify below) _____	No	Yes		
13	Have you ever had a close friend or family member murdered, or killed by a drunk driver? (If yes , please specify relationship [e.g., mother, grandson, etc.] below) _____	No	Yes		
14	Have you ever had a spouse, romantic partner, or child die? (If yes , please specify relationship below) _____	No	Yes		
15	Have you ever had a serious or life-threatening illness? (If yes , please specify below) _____	No	Yes		

16	Have you ever received news of a serious injury, life-threatening illness, or unexpected death of someone close to you? (If yes , please indicate below) _____	No	Yes		
17	Have you ever had to engage in combat while in military service in an official or unofficial war zone? (If yes , please indicate where below) _____	No	Yes		
Physical and Sexual Experiences		Circle one		<i>If you circled yes, please indicate</i>	
				Repeated?	Approximate age(s) and frequency
18	Has anyone ever made you have intercourse or oral or anal sex against your will? (If yes , please indicate nature of relationship with person [e.g., stranger, friend, relative, parent, sibling] below) _____	No	Yes		
19	Has anyone ever touched private parts of your body, or made you touch theirs, under force or threat? (If yes , please indicate nature of relationship with person [e.g., stranger, friend, relative, parent, sibling] below) _____	No	Yes		
20	Other than incidents mentioned in Questions 18 and 19, have there been any other situations in which another person tried to force you to have an unwanted sexual contact?	No	Yes		
21	Has anyone, including family members or friends, ever attacked you with a gun, knife, or some other weapon?	No	Yes		
22	Has anyone, including family members or friends, ever attacked you <u>without</u> a weapon and seriously injured you?	No	Yes		
23	Has anyone in your family ever beaten, spanked, or pushed you hard enough to cause injury?	No	Yes		
24	Have you experienced any other extraordinarily stressful situation or event that is not covered above? (If yes , please specify below) _____	No	Yes		

APPENDIX D

EVENT STRESSFULNESS ITEM

(This measure can be accessed by the public)

Based on the events you reported experiencing, which event did you find to be the most significant?

How stressful was this event for you?

1	2	3	4	5	6	7
not			moderately			extremely
at all			stressful			stressful
stressful						

Please respond to the following questionnaires with this particular event in mind

APPENDIX E

CORE BELIEFS INVENTORY (CANN ET AL., 2010)

(This measure can be accessed by the public)

Some events that people experience are so powerful that they “shake their world” and lead them to seriously examine core beliefs about the world, other people, themselves, and the future.

Please reflect upon the event about which you are reporting and indicate the extent to which it led you to seriously examine each of the following core beliefs.

1. Because of the event, I seriously examined the degree to which I believe things that happen to people are fair.

1	2	3	4	5	6
not at all	to a very small degree	to a small degree	to a moderate degree	to a great degree	to a very large degree

2. Because of the event, I seriously examined the degree to which I believe things that happen to people are controllable.

1	2	3	4	5	6
not at all	to a very small degree	to a small degree	to a moderate degree	to a great degree	to a very large degree

3. Because of the event, I seriously examined my assumptions concerning why other people think and behave the way that they do.

1	2	3	4	5	6
not at all	to a very small degree	to a small degree	to a moderate degree	to a great degree	to a very large degree

4. Because of the event, I seriously examined my beliefs about my relationships with other people.

1	2	3	4	5	6
not at all	to a very small degree	to a small degree	to a moderate degree	to a great degree	to a very large degree

5. Because of the event, I seriously examined my beliefs about my abilities, strengths, and weaknesses.

1	2	3	4	5	6
not at all	to a very small degree	to a small degree	to a moderate degree	to a great degree	to a very large degree

6. Because of the event, I seriously examined my beliefs about my expectations for my future.

1	2	3	4	5	6
not at all	to a very small degree	to a small degree	to a moderate degree	to a great degree	to a very large degree

7. Because of the event, I seriously examined my beliefs about the meaning of my life.

1	2	3	4	5	6
not at all	to a very small degree	to a small degree	to a moderate degree	to a great degree	to a very large degree

8. Because of the event, I seriously examined my spiritual or religious beliefs.

1	2	3	4	5	6
not at all	to a very small degree	to a small degree	to a moderate degree	to a great degree	to a very large degree

9. Because of the event, I seriously examined my beliefs about my own value or worth as a person.

1	2	3	4	5	6
not at all	to a very small degree	to a small degree	to a moderate degree	to a great degree	to a very large degree

APPENDIX F

MULTIDIMENSIONAL SCALE OF PERCEIVED SOCIAL SUPPORT (ZIMET, DAHLEM, ZIMET & FARLEY, 1988)

(This measure can be accessed by the public)

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

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 go 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 G

POSTTRAUMATIC GROWTH INVENTORY (TEDESCHI & CALHOUN, 1996)

(This measure can be accessed by the public)

Indicate for each of the statements below the degree to which this change occurred in your life as a result of a crisis, using the following scale:

1. My priorities about what is important in life
 - 0- I did not experience this change as a result of my crisis.
 - 1- Experienced to a very small degree.
 - 2- Experienced to a small degree.
 - 3- Experienced to a moderate degree.
 - 4- Experienced to a great degree.
 - 5- I experienced this change to a very great degree as a result of my crisis.

2. My appreciation for the value of my own life
 - 0- I did not experience this change as a result of my crisis.
 - 1- Experienced to a very small degree.
 - 2- Experienced to a small degree.
 - 3- Experienced to a moderate degree.
 - 4- Experienced to a great degree.
 - 5- I experienced this change to a very great degree as a result of my crisis.

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

4. A feeling of self-reliance
 - 0- I did not experience this change as a result of my crisis.
 - 1- Experienced to a very small degree.
 - 2- Experienced to a small degree.
 - 3- Experienced to a moderate degree.
 - 4- Experienced to a great degree.
 - 5- I experienced this change to a very great degree as a result of my crisis.

5. A better understanding of spiritual matters
 - 0- I did not experience this change as a result of my crisis.
 - 1- Experienced to a very small degree.
 - 2- Experienced to a small degree.
 - 3- Experienced to a moderate degree.
 - 4- Experienced to a great degree.
 - 5- I experienced this change to a very great degree as a result of my crisis.

6. Knowing that I can count on people in times of trouble
 - 0- I did not experience this change as a result of my crisis.
 - 1- Experienced to a very small degree.
 - 2- Experienced to a small degree.
 - 3- Experienced to a moderate degree.
 - 4- Experienced to a great degree.
 - 5- I experienced this change to a very great degree as a result of my crisis.

7. I established a new path for my life
 - 0- I did not experience this change as a result of my crisis.
 - 1- Experienced to a very small degree.
 - 2- Experienced to a small degree.
 - 3- Experienced to a moderate degree.
 - 4- Experienced to a great degree.
 - 5- I experienced this change to a very great degree as a result of my crisis.

8. A sense of closeness with others
 - 0- I did not experience this change as a result of my crisis.
 - 1- Experienced to a very small degree.
 - 2- Experienced to a small degree.
 - 3- Experienced to a moderate degree.
 - 4- Experienced to a great degree.
 - 5- I experienced this change to a very great degree as a result of my crisis.

9. A willingness to express my emotions
 - 0- I did not experience this change as a result of my crisis.
 - 1- Experienced to a very small degree.
 - 2- Experienced to a small degree.
 - 3- Experienced to a moderate degree.
 - 4- Experienced to a great degree.
 - 5- I experienced this change to a very great degree as a result of my crisis.

10. Knowing I can handle difficulties

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

11. I'm able to do better things with my life

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

12. Being able to accept the way things work out

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

13. Appreciating each day

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

14. New opportunities are available which wouldn't have been otherwise

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

15. Having compassion for others

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

16. Putting effort into my relationships

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

17. I'm more likely to try to change things which need changing

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

18. I have a stronger religious faith

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

19. I discovered that I'm stronger than I thought I was

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

20. I learned a great deal about how wonderful people are

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

21. I accept needing others

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

APPENDIX H

DEMOGRAPHIC FORM

Please complete the following items to provide demographic information:

Age

1. 18
2. 19
3. 20
4. 21
5. 22
6. 23
7. 24
8. 25

Gender

1. Male
2. Female

Year in school

1. Freshman
2. Sophomore
3. Junior
4. Senior
5. Graduate Student
6. Other

Race/Ethnicity

1. White/Non-Hispanic
2. Black/African American
3. Hispanic/Latino
4. Asian/Pacific Islander
5. Native American
6. Mixed Race
7. Other

Marital Status

1. Single
2. Married
3. Divorced
4. Separated

If you are not married, are you involved in a romantic relationship with someone?

1. Yes
2. No

If yes, how long have you been a relationship with this person?

- 0- less than one year
- 1- 1-3 years
- 2- More than 3 years
- 3- Not in a relationship

With whom do you live?

- 1. Parents/Caregivers or other family members
- 2. Roommate with whom you are close
- 3. Roommate with whom you are not very close
- 4. Significant other
- 5. Other

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BIOGRAPHICAL SKETCH

Prior to beginning her doctoral studies at Florida State University, Vanessa received her Bachelor of Arts degree in Psychology with a minor in Italian Studies from the University of Pennsylvania, as well as her Master of Arts degree in Developmental Psychology from Teachers College at Columbia University.

Vanessa's clinical and research interests include working with individuals from various marginalized populations, as well as individuals with diverse social and cultural identities. She also has an interest in working with individuals that have experienced trauma due to adverse life events. Specifically, and under the guidance of Angela Canto, PhD, Vanessa has explored how perceptions of social support resources may impact posttrauma outcomes in college students.