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# The Long-Term Effects of Posttraumatic Growth on Coping: The Roles of Self-Efficacy and Ruminative Thought

Jennifer Marcus  
*University of Windsor*

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The Long-Term Effects of Posttraumatic Growth on Coping: The Roles of Self-Efficacy  
and Ruminative Thought

by

Jennifer R. Marcus

A Thesis  
Submitted to the Faculty of Graduate Studies  
through Psychology  
in Partial Fulfillment of the Requirements for  
the Degree of Master of Arts at the  
University of Windsor

Windsor, Ontario, Canada

2010

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by

Jennifer R. Marcus

APPROVED BY:

---

Dr. D. Kane  
Faculty of Nursing

---

Dr. C. Thomas  
Department of Psychology

---

Dr. K. Cramer, Advisor  
Department of Psychology

---

Dr. J. Jarry, Chair of Defense  
Department of Psychology

September 16, 2010

## DECLARATION OF ORIGINALITY

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## ABSTRACT

Research shows that traumatic events occur frequently within the general population. Posttraumatic growth (PTG), defined as personal and interpersonal improvements following the experience of traumatic events, has been the focus of positive psychologists for more than a decade. Few studies have asked how experiencing growth post-trauma relates to coping with later life stressors. The current study tested this relation and aimed to discover whether self-efficacy and rumination acted as mediators within a path model. Undergraduate students completed surveys regarding reactions to past traumatic events and coping strategies used for current stressors. The hypothesized model was found to be an adequate fit for the data. PTG predicted task-focused coping related to current stressors as well as recent rumination about a past traumatic event. Self-efficacy also positively predicted task coping, but was negatively impacted by rumination. The present findings will guide future research on recovery from trauma and practical outcomes of growth.

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## CHAPTER I

### INTRODUCTION

Historically, psychology has had a strong tendency to focus on the negative: susceptibility to mental illness, the selfishness of individuals, and maladaptive reactions to stressful and traumatic events. More recently, researchers and practitioners have provided increasing support to the field of positive psychology. Here, the focus is on forming a complete picture of the individual. The strength of individuals, their ability to overcome difficult circumstances, and their capacity to grow as people exist alongside the pathology and stress prominent in past research. One interesting branch of research within positive psychology concerns individual reactions to the experience of traumatic events. Traumatic events are not uncommon within the general population. In fact, recent research has shown that over 75% of Canadians have experienced at least one traumatic event in their lives (Van Ameringen, Mancini, Patterson, & Boyle, 2008). Research on trauma has focused primarily on Post-Traumatic Stress Disorder (PTSD), which is estimated to occur in upwards of half of individuals within at-risk groups (American Psychiatric Association, 2000). Of interest to positive psychologists is the nature of the experience of the remainder of the at-risk population. Do these individuals experience sub-threshold levels of stress that are not diagnosable, do they simply incorporate traumatic events into their self-concept and move forward, or do they find meaning in their experiences that allows them to grow as individuals? It is this idea of growth and meaning making that has been the focus of positive psychologists and is the focus of the present study. This study aimed to explore the long-term potential benefits conferred by growth following traumatic events by assessing

reactions to current life stressors and the mechanisms through which growth exerts its influence.

## CHAPTER II

### REVIEW OF LITERATURE

#### Posttraumatic Growth

Growth following traumatic events has been assigned many labels within the literature. The terms “meaning making”, “benefit finding”, “stress-related growth”, and “posttraumatic growth” have slightly different connotations, but their general meaning is the same. They all imply that some sort of value has been added to the lives of the individuals by the trauma they have experienced. Consistent with the work of Tedeschi, Park, and Calhoun (1998), the term posttraumatic growth (PTG) will be used to describe this experience, and encompasses the following five domains: “greater appreciation of life and changed sense of priorities; warmer, more intimate relationships with others; a greater sense of personal strength; recognition of new possibilities or paths for one’s life; and spiritual development” (Tedeschi & Calhoun, 2004, p. 6). The prevalence of PTG tends to vary from study to study. For example, six months after being injured in the 2004 Southeast Asian tsunami, 88% of those surveyed by Tang (2007) had experienced some degree of growth related to their experience. Comparatively, Lelorain, Bonnaud-Antignac, and Florin (2010) found moderate to high levels of 18 out of 21 indicators of growth in the majority of 5 to 15 year breast cancer survivors surveyed. Milam, Ritt-Olson, and Unger (2004) found that 30% of high school students who had experienced traumatic events reported moderate PTG. Therefore while not all individuals achieve high level of personal growth after trauma, the experience of moderate growth is common and cannot be ignored among individuals who have experienced traumatic events.

Research on PTG has focused primarily on its definition and which factors influence the occurrence of PTG following events such as bereavement, chronic illness, abuse, and terrorist attacks. For Tedeschi, Park, and Calhoun (1998) PTG represents the experience of significant positive changes beyond pre-trauma levels in appreciation for, and outlook on, life, spirituality, personal strength, and interpersonal relationships following traumatic events. Important changes occur in individual perceptions of self through the process of growth. Often, individuals who survived a traumatic event will view themselves as vulnerable victims of the trauma. Through self-reflection characteristic of PTG, these negative perceptions of the self are transformed into a more positive view of the self as a survivor. Furthermore, this positive shift instils a sense of confidence and self-reliance in the individual, along with a sense of mastery over the present situation. Individuals who experience PTG come to feel that they have the confidence and competence to apply their personal strength to any situation (Aldwin, 2007). Individuals coping with a trauma are also prompted to seek out support from their peers, eliciting positive changes in number of and satisfaction with interpersonal relationships (Tedeschi et al., 1998).

It is important to note that while growth is ultimately a positive experience, it does not occur in isolation. According to Tedeschi and Calhoun (1995) traumas that facilitate growth have a number of important characteristics. The event is shocking, sudden, unexpected, and not within the realm of ordinary events. They lead individuals to experience powerlessness and a lack of control. Furthermore, an event is perceived as more traumatic when its consequences are irreversible and cause long-lasting problems for the individual. PTG cannot take place immediately following a trauma. Rather, individuals

experience a period of initial distress when all previously held assumptions about their lives are called into question and individuals may experience symptoms of PTSD. In fact, moderate levels of PTSD symptomology have been found to relate to PTG among Israelis threatened with ongoing terrorism (Hall, Hobfoll, Canetti, Johnson, & Galea, 2009), HIV-positive survivors of Hurricane Katrina (Cieslak et al., 2009), Holocaust survivors (Lurie-Beck, Lioassis, & Gow, 2008), and other samples. As described by Butler (2007):

Growth occurs in the context of great emotional upheaval due to a psychologically seismic event that seriously challenges or disrupts the individual's basic assumptions and modes of interpreting and adapting to experience, with the implication that, if anything, initial steps toward growth would be coupled with at least some distress. (p. 371)

The distress and depression caused by traumatic events act as a catalyst that pushes the individual forward to adapt to the traumatic event (Dolbier, Jaggars, & Steinhardt, 2010; Tedeschi et al., 1998). Therefore, PTG differs significantly from the concept of resilience, in which individuals experience minimal PTSD after traumatic events. Rather than being able to minimize the negative effects of trauma immediately, as with resilient individuals, those who experience growth use their extreme negative circumstances to spark change in their lives (Levine, Laufer, Stein, Hamama-Raz, & Solomon, 2009).

Though finding meaning within a stressful situation is an adaptive behaviour, not all individuals are able to experience the same degree of growth. A number of demographic factors play a role in growth after trauma. Gender is one variable that has been found to inconsistently affect PTG. Polatinsky and Esprey (2000) examined gender differences in PTG among mothers and fathers who had experienced the death of their child. Similar to

other researchers, no significant gender differences were found, in spite of mothers' tendency to report slightly higher levels of PTG than fathers. A meta-analysis performed by Vishnevsky and colleagues (2010) failed to replicate these results and instead found small to moderate gender differences with women reporting more PTG than men. This difference was found to increase with the age of respondents. There appears to be a curvilinear relationship between PTG and age across past research. Studies of younger adults and adolescents have found that PTG was more likely in older individuals (Lurie-Beck et al, 2008; Milam et al., 2004), whereas studies of older adults found PTG to decrease with age (Polatinsky & Esprey, 2000; Tang, 2007). Tedeschi and Calhoun (1995) indicate that the effect of a traumatic event is lessened if it occurs earlier in childhood. At this stage in life, a traumatic event can be more easily integrated into the self-concept and be perceived as less traumatic for the individual. Moreover, younger individuals may not have the maturity to grow from their stressful experiences (Milam et al., 2004). PTG appears to peak among middle-aged individuals and then decreases in older individuals who find it more difficult to change beliefs about themselves and the world around them (Polatinsky & Esprey, 2000).

Personality factors also affect the development of growth after trauma. Individuals high in openness, conscientiousness, agreeableness, and extraversion tend to experience more growth than those lower in these personality constructs. Conversely, neuroticism was found to be negatively related to PTG (Linley & Joseph, 2004). Among these personality factors, Wilson and Boden (2008) found extraversion to be the most important direct predictor of growth. Additional positive links with PTG have been found with such constructs as self-esteem (Dolbier et al., 2010), optimism (Prati & Pietrantonio, 2009),



spirituality and religion (Park, 2006), a disposition of positive affectivity (Lelorain et al., 2010), and attributing positive events to internal, stable, and global causes (Ho, Chu, & Yiu, 2008). Connections with these variables are logical based on the positive nature of both PTG and the personality variables, and the relations have gained empirical support.

### Self-Efficacy

Self-efficacy is one personality factor that has been implicated in the development, process, and outcome of PTG. Self-efficacy is defined as one's perceptions of his or her ability to perform across a variety of situations. According to social cognitive theory, self-efficacy is a series of beliefs about the self associated with specific domains of functioning. When individuals are high in self-efficacy, they feel as though they are competent to control their current situation in order to "better realize desired futures and forestall undesired ones" (Bandura, 2000, p. 17). When individuals do not feel that their actions will make a significant impact, they are unlikely to act on their goals.

Self-efficacy is also related to the development of growth after trauma. Research has shown that individuals who have high self-efficacy prior to experiencing trauma can better adapt to the event and experience more growth (Linley & Joseph, 2004). For example, Luszczynska, Mohamed, and Schwarzer (2005) found that initial reports of self-efficacy among cancer patients positively predicted benefits in personal growth, sensitivity to others, and acceptance of life's imperfections one year after surgery. It is speculated that high levels of self-efficacy encourage "individuals to try to master challenges" (Tedeschi, Park, & Calhoun, 1998, p. 74). Thus self-efficacious individuals will act in order to improve their situation during and after the trauma. Self-efficacy has also been found to

mediate the relationship between PTSD symptoms and PTG in that those with more symptoms and heightened self-efficacy experienced the most growth (Cieslak et al., 2009).

Many theorists believe that individual self-efficacy can change after personal mastery experiences by generalizing to situations and activities beyond the original target behaviour. Each experience of success or failure in a given situation will alter an individual's self-efficacy (Snyder & Lopez, 2007). Many forms of psychotherapy aim to increase self-efficacy as an important component of the intervention to assist in the decrease of symptoms such as depression and anxiety. For example, Lee and colleagues (2006) developed an intervention to help cancer patients cope with current stressful life circumstances. By addressing the existential issues that arise when diagnosed with cancer and exploring the meaning of the emotional and cognitive experiences of the individual in relation to their past life and future goals, significant increases were found for self-efficacy, self-esteem, and optimism compared to a no intervention control group. In particular, the intervention's focus on identifying past accomplishments and personal strengths that could assist with coping with the present situation was a key factor in the increase of self-efficacy across the sample (Lee et al., 2006). This study suggests that the process of finding meaning through deliberate personal reflection facilitates individual growth which builds positive personality factors, such as self-efficacy.

Researchers generally agree that increased self-efficacy is an important outcome of growth through changes in self perception. Individuals who have experienced PTG tend to exhibit "a greater sense of personal strength, resiliency or self-reliance, coupled with developing a new path or opportunities" (Taku, Cann, Calhoun, & Tedeschi, 2008, p. 158). It is this personal strength that allows individuals to feel more in control of their situations

and more able to perform and cope effectively. When measuring PTG, many inventories include items that specifically relate to self-efficacy, such as “I know better that I can handle difficulties” and “I have a greater feeling of self-reliance” (Taku, Cann, et al., 2008, p. 162) from the Posttraumatic Growth Inventory, and “I learned that I was stronger than I thought I was” from the Stress-Related Growth Scale (see Appendix A). Thus it is clear that individuals who experience growth also experience increases in self-efficacy as a small portion of the growth process that extend into the future. Yet, efficacy beliefs do not always translate into action in all situations. Little is known about whether PTG facilitates individuals to act on their efficacy beliefs in stressful situations.

### Rumination

According to Tedeschi & Calhoun’s (2004) cognitive processing model of PTG, the process of growth following a trauma involves thinking about and processing the traumatic event. These thoughts of the event can take on a ruminative quality as they are often unwanted, intrusive, and can be disturbing. Recent research on the concept of repetitive thought and rumination has shown that ruminative thought plays a key role in both psychopathology and self regulation through its involvement in such constructs as worry, perseverative cognition, reflection, and mental simulation (Watkins, 2008). Within cognitive processing theory, rumination relates directly to PTG by assisting the “process of re-examining the beliefs that characterize one’s assumptive world in light of an unexpected trauma, and these processes are related to posttraumatic growth” (Tedeschi, Calhoun, & Cann, 2007, p. 398). Within this context, rumination is identical in concept to cognitive processing and cognitive engagement common after trauma. This form of rumination acts

as a mechanism “to cognitively process negative events to allow inclusion of positive appraisals” (Cryder, Kilmer, Tedeschi, & Calhoun, 2006, p. 66). In line with primary researchers of PTG, repetitive thought in all its forms will presently be referred to as rumination (Taku, Calhoun et al., 2008).

Tedeschi, Park, and Calhoun (1998) have theorized that shortly after the occurrence of a traumatic event, individuals primarily experience intrusive thoughts related to the trauma. As time passes, these individuals may begin to think about the event deliberately and work through their emotions related to the trauma. This process of rumination helps individuals to find meaning in their experiences and adapt their self-concept to include the drastic changes that have occurred in their lives. Some individuals are able to quickly fill in the gaps through ruminative thought. They experience growth and move on from that point. Others take considerably longer in order to fully find meaning from their trauma. These individuals may experience both deliberate and intrusive ruminative thoughts for quite some time after the event has occurred. While they do experience some aspects of PTG, their growth process is not yet complete and rumination promotes the formation of conclusions regarding how their traumatic event factors into their life and self-concept.

Park and Fenster (2004) found empirical evidence for the relationship between ruminative thoughts and PTG among undergraduate students. Intrusive thoughts related to a specific stressful event were strongly related to growth furthering the notion that “it is the *struggle* to integrate the information into one’s views and life that is the source of potential benefit” (Park & Fenster, 2004, p. 209). The benefits of rumination have also been exhibited within child and adolescent populations, for example after Hurricane Floyd (Cryder et al., 2006). Among this sample, ruminative thought was found to be significantly

positively related to competency beliefs, or the children's beliefs that they can handle problems that may arise related to the trauma or other experiences. These competency beliefs, a concept very similar to self-efficacy, were also found to be related to PTG ratings. Wadsworth and colleagues (2004) reported that young adults and adults ruminated less than adolescents in reaction to the September 11<sup>th</sup>, 2001 terrorist attacks in the United States, indicating that older adults may be able to cope with the trauma without excess rumination.

The adaptive outcomes of rumination do not exist in isolation, but rather can exist alongside feelings of guilt and depression related to the trauma. Various qualities of rumination have been found to differently facilitate adaptive and maladaptive outcomes. For example, Segerstrom, Stanton, Alden, and Shortridge (2003) identified two dimensions along which ruminative thoughts could be differentiated: content (negative versus positive) and purpose (searching versus solving). These dimensions were consistent across samples of undergraduate students and women at risk for breast cancer. Overall, when the thoughts lacked negative content and the goal of the thoughts was to explore feelings and cognitions, better mental health outcomes were expected. Therefore, thinking about past events can improve outcomes when the content and purpose are positive and reflective.

Taku, Calhoun, Cann, and Tedeschi (2008) differentiated rumination into four different categories based on whether the thoughts were intrusive or deliberate, and whether they occurred at the time of the trauma or recently. PTG was found to be significantly correlated with both forms of recent rumination and deliberate rumination soon after the event among an undergraduate population. Taku and colleagues went further to place these variables within a path model and found that only deliberate rumination soon

after the event predicted PTG. In spite of the inferred causality within this study, the analysis of Japanese university students was cross-sectional in nature and thus can be interpreted in a number of different ways. As well, this study looked only at individuals who had suffered the loss of a significant other in their lives, and for a large portion of the participants this loss occurred over five years prior to the study, possibly minimizing the amount of recent rumination within the sample.

A follow-up study by Taku, Cann, Tedeschi, and Calhoun (2009) examined the relationship in students from both the United States and Japan. Significant positive correlations were found between PTG and all of the rumination factors (intrusive soon after, deliberate soon after, intrusive recently, deliberate recently) in both samples. Time since the event was inconsistently related to the forms of rumination and PTG in the samples. A stepwise regression analysis was used to clarify the relationships and simulate the path from rumination soon after the event to recent rumination. While past and recent rumination were both significant predictors of PTG in the samples, recent deliberate rumination was consistently the strongest predictor of current PTG levels. Thus, recent ruminative thoughts were an incredibly important factor for identifying someone who now has more competency feelings, positive worldview, and strong interpersonal relationships. Yet, it is unclear how recently thinking about a traumatic event may affect the practical long-term outcomes of growth.

### Coping as an Outcome of Growth

The subject of coping is often discussed within the context of both traumatic and stressful life events. Coping, in a general sense, has been defined as the “thoughts and

behaviours that people use to manage the internal and external demands of situations that are appraised as stressful” (Folkman & Moskowitz, 2004, p. 746). An individual’s ability to cope depends on many factors, both situational and personal. As such, coping is not a single dimension, or as Park and colleagues succinctly stated, “all coping is not created equal” (2005, p. 298). When faced with an event perceived as stressful and personally significant, the individual chooses to utilize certain coping strategies over others (Folkman & Moskowitz, 2004). There is an endless array of actions and cognitive processes that each individual can utilize to cope. Factor analyses of coping scales have identified a variety of coping categories including seeking social support, religious coping, and an avoidance coping factor (Folkman & Moskowitz, 2004). Folkman and Lazarus (1980) proposed that coping strategies could be considered representative of two major categories: problem-focused or task-focused coping (addressing the problem that is causing the stress) and emotion-focused coping (addressing the distressing emotions themselves). Researchers have continued to support the existence of these two broad categories of coping and have found their use to be effective and adaptive (Endler & Parker, 1999).

Certain coping strategies have been found to be generally effective within particular situations, while others are not (Folkman & Moskowitz, 2004). For example, emotion-focused coping strategies are best used when there is little control over the negative situation. This form of coping encourages individuals to change their views and cognitions related to the distress caused by the event, rather than the event itself. When it is possible to improve the situation, it is generally better to adopt a problem-focused coping strategy or active coping in which the individual actively addresses the distressing situation and acts to improve it (Snyder & Lopez, 2007). Whereas both problem- and emotion-focused coping

are effective and can be positive in many situations, individuals also tend to cope by avoiding, increasing substance use, and utilizing self-blame. These behaviours and cognitions can help reduce the stress within a situation, but they are generally viewed as having maladaptive outcomes within a long-term context (Bryant & Harvey, 1995; Shnider, Elhai, & Gray, 2007).

Adaptive coping strategies have been linked to the experience of growth following a traumatic event. Individuals who reported growth tended to also report a high occurrence of emotion-focused coping strategies and problem-focused coping strategies. In one study of mothers who had recently lost a child, Riley, LaMontagne, Hepworth, and Murphy (2007) found that greater personal growth was related to higher incidences of active coping, positive reframing, and both seeking out social support and perceived social support. Lelorain et al. (2010) also found positive and active coping to be positively related to growth in breast cancer survivors. Among individuals with rheumatoid arthritis, problem-focused coping strategies were directly related to both changes in relationships with others and perceptions of the self, two important aspects of PTG (Dirik & Karanci, 2008). Overall, being able to positively and actively cope with a stressor appears to facilitate personal improvement.

Though coping strategies have been implicated in the occurrence of growth, research is lacking in what the practical outcomes of PTG are for individuals as they cope with later life stressors. The study of historical traumatic events has shed some light on the coping outcomes of individuals who have undergone a great deal of traumatic distress. The Holocaust is one tragedy that prompted much research related to PTG. Kahana (1992) asked Holocaust survivors to reflect upon their experiences and the perceived effects on



their current life. Practically all of the survivors reported that they had changed because of the Holocaust and over a third of respondents stated that they felt some positive and beneficial outcomes of their tragic past. When asked whether they felt their experiences assisted them in coping with general stressors later in life, over a quarter of respondents stated that because of their experiences they felt they could cope with anything. Of the individuals who described positive outcomes, between one quarter and one half of those individuals reported enhanced coping resources, stronger self-concept, greater appreciation for life, and having a better understanding of others. Lurie-Beck and colleagues (2008) replicated these findings with a different sample of Holocaust survivors and also found that the coping strategies survivors used to cope with their past traumas were generally adaptive and beneficial. Participants felt positive and competent after reflecting on their coping ability and Lurie-Beck et al. hypothesized that “this insight then leads to a more positive perception of their own abilities and may positively influence the way in which they deal with later experiences” (2008, p. 29). Case studies with this population indicate that while not all individuals experience growth, particularly from such a life-altering event, those that do tend to experience positive changes in their coping ability which extend far into the future (Aldwin, 2007).

One important study that looked directly at PTG’s relationship with later coping studied the relation among an elderly population in the United States. Park, Mills-Baxter, and Fenster (2005) studied the long-lasting effects of growth experienced after the most traumatic event experienced in the participants’ lives. Events included such things as death of a loved one, illness, relationship breakdown, combat experience, and other more common life problems. Park and colleagues (2005) found that experiencing PTG related to

a past traumatic event facilitated the use of more positive and adaptive coping strategies to deal with current life stressors (for example, illness, family problems, financial issues, and the prospect of death). In spite of these interesting findings, the researchers failed to shed light on why individual differences were seen in the amount of coping strategies used. As well, their focus on a specific age group, the elderly community, allowed their research to only be generalized to similar communities of individuals who are older and have a number of health related concerns. Benefits could be found by applying these research ideas to a sample with different characteristics. Moreover, an exploration of possible personality and cognitive mediators in the relationship between PTG and later coping style would extend the research significantly.

#### Self-Efficacy as a Mediator in the Path from Growth to Coping

Positive coping styles have been found to correlate with personality traits often viewed as beneficial. Carver and colleagues (1989), for example, found optimism, self-esteem, and hardiness to be positively related to active coping and positive reframing. Newer studies have clarified these relations stating, for example, that optimists tend to view events as under their control and expect positive outcomes from their actions. They are therefore more likely to use problem-focused coping strategies when faced with stress in order to identify a solution and act on it (Matthews & Cook, 2009). Sorlie and Sexton (2001) found that openness and extraversion were also related to goal-oriented coping and support seeking among individuals preparing for surgery. These findings indicate that those who possess more positive personality attributes tend to adopt more adaptive, and

specifically problem-focused, coping strategies. Moreover, many of these traits also help to facilitate PTG following trauma.

General self-efficacy and coping self-efficacy are key factors that contribute to feelings of mastery over particular coping skills. Coping self-efficacy specifically is related to one's ability to cope with stressors as they arise (Aldwin, 2007). When individuals experience stress, they can choose to act on the stressor in order to reduce distress or they can dwell on the stress and negative emotions. Individuals high in coping self-efficacy tend to "lower their stress and anxiety by acting in ways that transform threatening environments into benign ones" (Bandura, 2000, p. 20), characteristic of task-focused coping. For example, using a regression model, Shen (2008) found that self-efficacy directly contributed to the use of active and positive coping, suppression of competing activities and restraint coping, and seeking social support among Chinese school teachers. Trouillet, Gana, Lourel, and Fort (2009) found that self-efficacy significantly predicted the use of problem-focused coping strategies, but not emotion-focused coping, within the general population irrespective of age, life events, and perceived stress. Moreover, in accordance with social cognitive theory, individuals strive to be agents for change as they react to stressful events. As agency increases, "the bolder people are in taking on the problematic situations that breed stress and the greater their success in shaping them more to their liking" (Benight & Bandura, 2004, p. 1132). This theory has been supported by researchers such as Lowe et al. (2008) who found that self-efficacy affects not only the type of coping behaviour used, but also effectiveness of coping. Therefore, individuals high in self-efficacy are more confident in using many coping strategies and task-focused strategies in particular (Aldwin, 2007).

While individuals generally have a tendency toward a specific coping style, self-efficacy facilitates the generalization of new coping skills learned from experience or training to other situations. Mastery of coping strategies can strengthen efficacy feelings within individuals and encourage them to use similar coping strategies again, possibly in situations that are different from those in which the skills were originally acquired (Smith, 1999). Smith (1999) demonstrated these effects in two studies. In the first, students who were trained in test anxiety reduction were able to generalize their new skills to the general anxiety they experienced in their life. After the intervention, significantly lower global trait anxiety scores and higher self-efficacy scores were seen as compared to a control group. In the second study, women gained physical self-efficacy through a self-defense course and similar positive effects of the intervention were found.

Growth following a trauma and self-efficacy appear to have a similar impact on feelings of competency, mastery, and agency, prompting researchers to wonder how the combination of these variables relates to coping behaviour. Through the use of structural equation modeling in an undergraduate sample, Park and Fenster (2004) found that the path between mastery and PTG was mediated by a variety of coping strategies, such as disengagement, religiousness, restraint, and suppression. Intrinsic religiousness also had an indirect effect on PTG. These combined pathways predicted a significant amount of growth following a traumatic event. Similar results were found by Tang (2007) in the aftermath of the 2004 Southeast Asian tsunami. In this sample, the use of active problem-solving focused coping strategies was related to PTG, specifically items which pertained to personal competency. These studies indicate that self-efficacy, coping, and PTG are related and can impact one another in a number of ways, but lead to further questions about how

these factors are related to stressful events experienced post-trauma, particularly the use of task-focused coping strategies.

### Rumination as a Mediator in the Path from Growth to Coping

Rumination can assist in working through traumatic events in order to find meaning. Studies have indicated that rumination is also related to coping behaviour used in these traumatic situations. In response to the terrorist attacks of September 11<sup>th</sup>, 2001 in the United States, Wadsworth et al. (2004) found that rumination was found to be positively associated with problem-solving behaviours and positive thinking for participants in all age groups (adolescents, young adults, and adults). Burwell and Shirk (2007) also found certain coping strategies to be associated with different forms of rumination following a trauma. Among an adolescent sample, they found that two main factors existed within the Ruminative Response Scale, adapted from Nolen-Hoeksema & Morrow's (1991) Response Style Questionnaire: reflection and brooding. While reflection was significantly positively related to primary control engagement coping (problem solving, emotion regulation) and secondary control engagement coping (positive thinking, acceptance), brooding was significantly related to voluntary disengagement coping (avoidance, denial). Thus reflecting on traumatic events not only leads to less negative symptoms, it also helps individuals cope with their trauma in a more productive and proactive manner.

Similarly, ruminative thoughts have been found to be related to cognitive coping strategies such as rehearsal of coping skills, problem solving, and planning (Watkins, 2008). Rivkin and Taylor (1999), for example, found that undergraduate students who were asked to visualize an ongoing stressor in their lives adopted more problem-focused coping

strategies than both those asked to visualize resolving the stressor and those with no intervention. Rivkin and Taylor speculated that “event simulation may have encouraged problem-solving activities by facilitating cognitive processing of the stressful event, thus providing information on how the problem began and what one could do about it” (1999, p. 1460). This study shows that reflecting and ruminating on stressful events not only facilitates internal changes in well-being, but also translates into action-based changes for many individuals. The role of thinking about traumatic and stressful events in using adaptive coping behaviours is one that should not be ignored, yet has received little attention within past research. The present study aimed to strengthen the place of rumination within the context of PTG and coping.

### The Current Study

The present study aimed to clarify the existing research on PTG and its long-term benefits. Previous research indicates that active coping benefits are a common outcome of PTG (Lurie-Beck et al., 2008; Park et al., 2005), but details about the nature of this relationship are lacking. An examination of mediating variables was necessary to test whether PTG affected task-focused coping directly, indirectly, or both, and whether self-efficacy and rumination mediated this process. Variables that affect cognitive processing and self-beliefs are known to impact task-focused coping strategies and be positive action-based outcomes of growth following trauma (Luszczynska et al., 2005; Rivkin & Taylor, 1999; Taku et al., 2009; Trouillet et al., 2009). Whereas previous research has shown that these variables relate to one another, no studies have examined all four variables together in order to observe how self-efficacy and rumination may help explain the relation between

PTG and task-focused coping. The purpose of the current study was to test and confirm previous findings about the direct relations between variables, as well as further research by placing self-efficacy, rumination, PTG, and task-focused coping within path models. These models were used to test more complex interrelations within the process between growth following a trauma and task coping related to current life stressors.

A study design similar to Park, Mills-Baxter, and Fenster (2005) was used, in which participants identified a recent, common life stressor and the coping strategies they used to deal with it. Participants then described a traumatic event they had experienced and commented on their level of growth following the trauma and frequency of ruminative thoughts. Whereas this study design has been used with an elderly population, the present study hoped to find similar results within a sample of undergraduate students who had also experienced traumatic events. This group of participants was likely to have experienced different types of traumatic events due to cohort effects. Moreover, their current stressful events related more to school and interpersonal relationships, rather than health-related issues and loss. By focusing only on task-focused coping, subtle relations between predictor variables and specific coping strategies may be more prominent.

### Hypotheses

Based on previous research, the following direct relations were hypothesized to be significant:

*Hypothesis 1: PTG relates to more task-focused coping strategies.* The more individuals experience aspects of growth related to a past trauma, the more they report using task-focused coping strategies to deal with a current life stressor.

*Hypothesis 2: PTG relates to an increase in general self-efficacy.* Those who experienced growth following a trauma exhibit higher levels of general self-efficacy.

*Hypothesis 3: Self-efficacy relates to the use of more task-focused coping strategies.* Higher levels of self-efficacy allow individuals to adopt more task-focused coping styles when faced with stressful life events. Those with lower self-efficacy report using fewer of these strategies.

*Hypothesis 4: PTG relates to an increase in rumination.* As individuals experience PTG, the frequency of thoughts related to the traumatic event increases. These thoughts allow individuals to mentally and emotionally work through their trauma and help them view the event in a positive light.

*Hypothesis 5: Ruminative thought frequency decreases with time.* The more time that elapsed since the event, the less frequent are intrusive and deliberate thoughts related to the event.

*Hypothesis 6: Rumination relates to more task-focused coping.* More frequent intrusive and deliberate thought involving problem-solving and reflection on both their trauma and current stressor will develop confidence in coping strategies. This confidence will promote the use of task-focused coping strategies in relation to their current stressor.

*Hypothesis 7: Rumination relates to increased self-efficacy.* An increase in thoughts related to the positive interpretation of a traumatic event allows the individual to feel more control over their life and their trauma, creating increases in self-efficacy (Benight & Bandura, 2004)



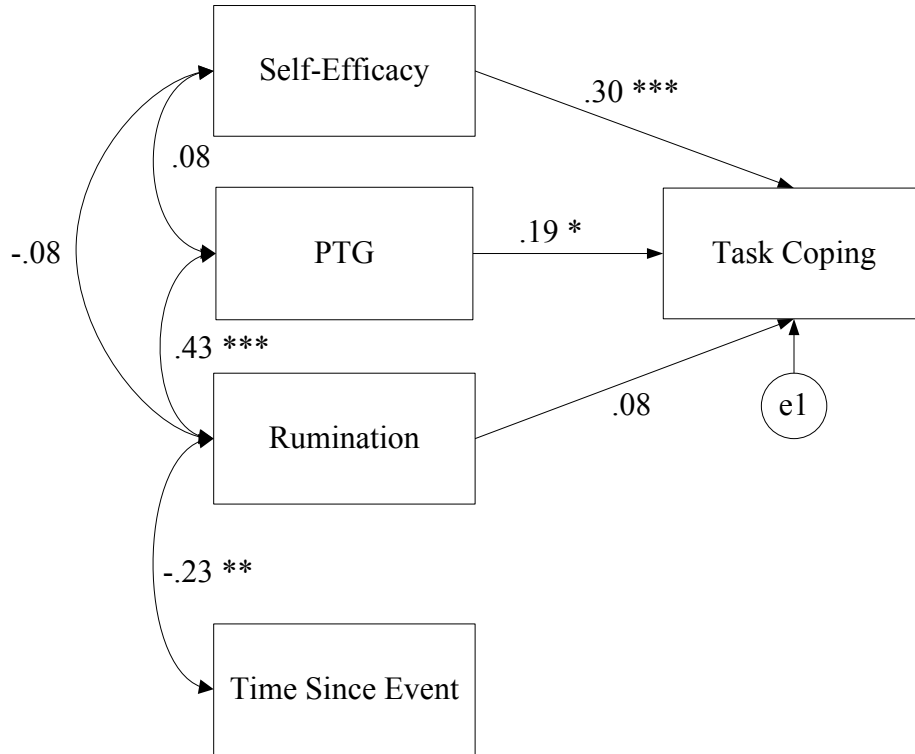
To test both the direct and indirect relationships described, four path models were derived. The following models were compared using path analysis in order to determine which model best described the relations between the variables.

*Model 1:* The null model represents zero correlations among PTG, self-efficacy, rumination, time since the event, and task-focused coping. In other words, no path model offered a significant fit to the data, and all the relevant variables were uncorrelated.

*Model 2:* This regression model (see Figure 1) advocated direct and independent relationships between the predictors (PTG, self-efficacy, and rumination) and coping. As well, a direct relation existed between time since the event and ruminative thoughts.

*Model 3:* The main hypothesized model (see Figure 2) predicted that individuals who experienced greater growth following a traumatic event will experience increases in both self-efficacy and rumination. These increases, as well as the experience of growth in and of itself, lead the individual to use more task-focused coping in response to current stressors. Ruminative thoughts were affected not only by the experience of PTG, but also by the amount of time that elapsed since the traumatic event.

*Model 4:* This model (see Figure 3) was identical to Model 3 with the added hypothesis that rumination had a positive impact on self-efficacy.

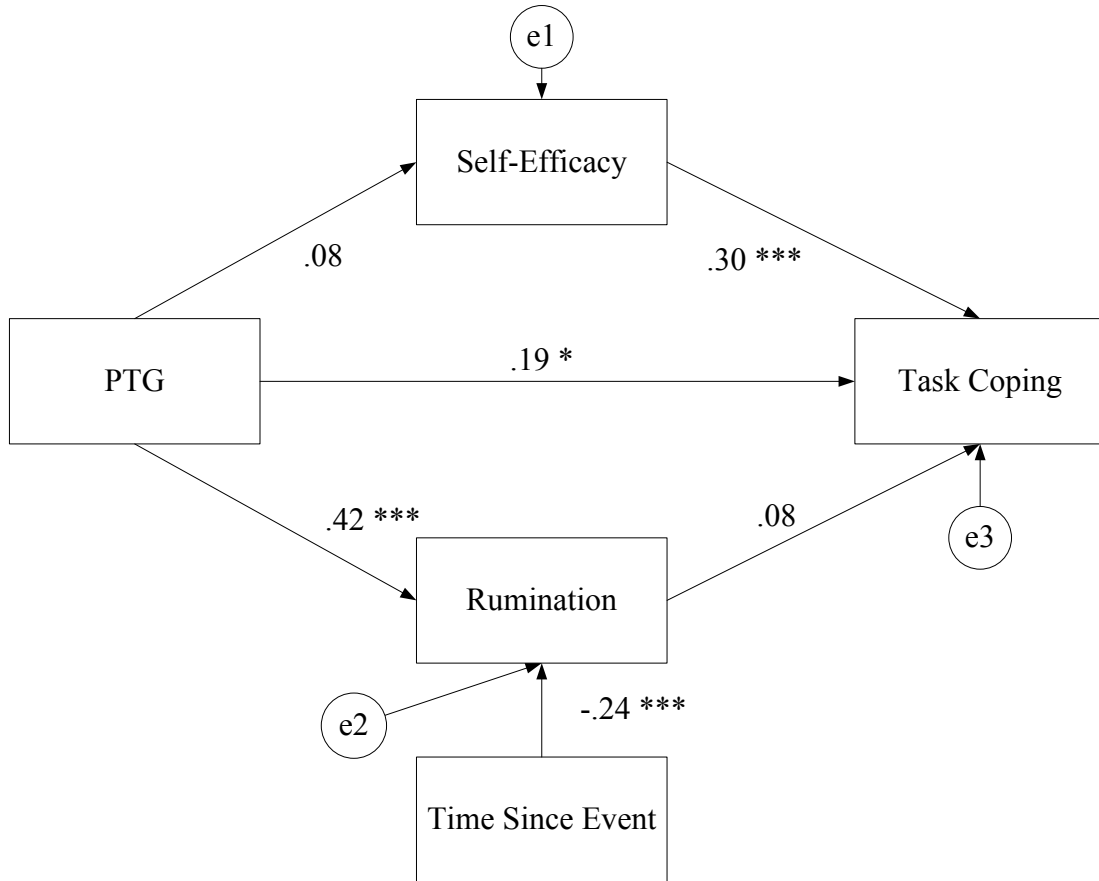


\* Significant at  $p < .05$

\*\* Significant at  $p < .01$

\*\*\* Significant at  $p < .001$

*Figure 1.* Regression model, including path coefficients obtained from data analysis, indicating hypothesized direct and independent relations between the predictors and coping.

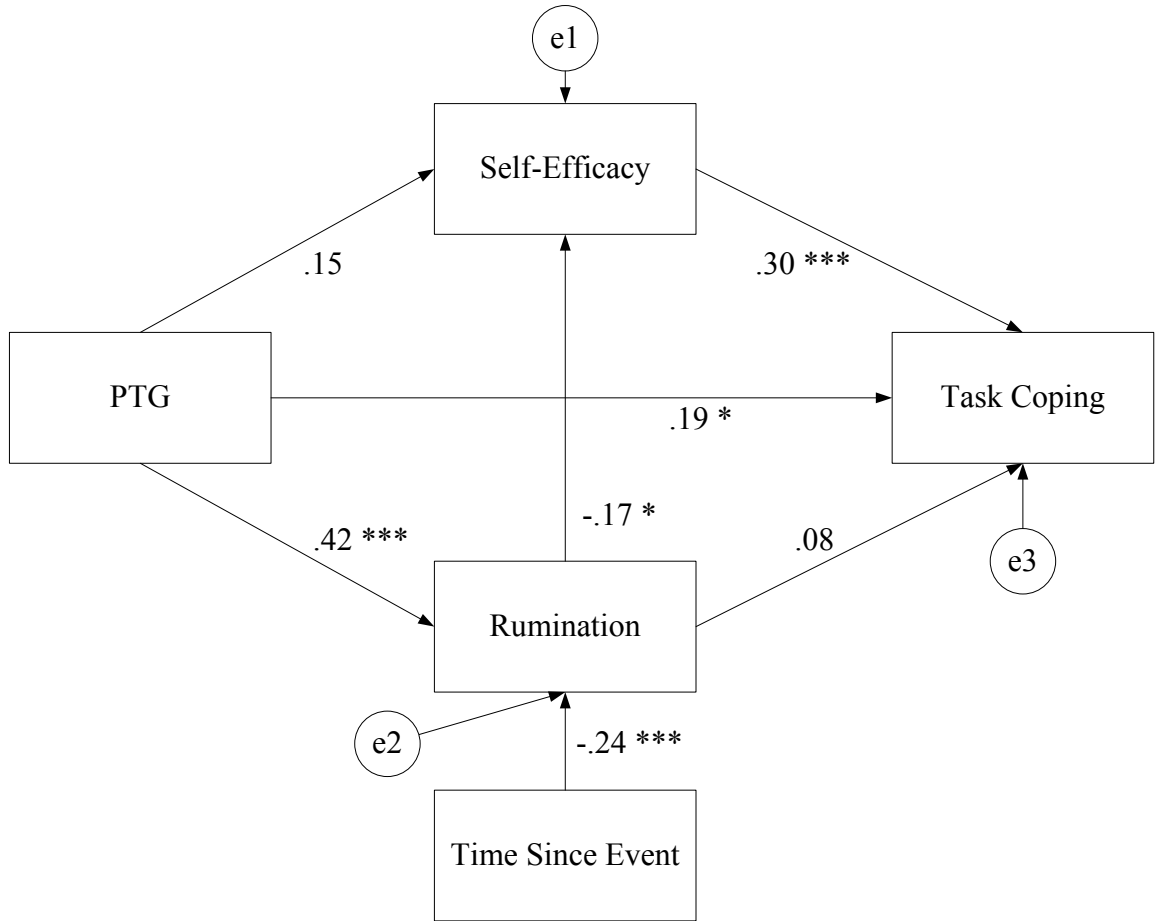


\* Significant at  $p < .05$

\*\* Significant at  $p < .01$

\*\*\* Significant at  $p < .001$

*Figure 2.* The hypothesized model, including path coefficients obtained from data analysis, indicating both direct effects of PTG on coping and indirect effects as mediated by self-efficacy and rumination.



\* Significant at  $p < .05$

\*\* Significant at  $p < .01$

\*\*\* Significant at  $p < .001$

Figure 3. The alternative model, including path coefficients obtained from data analysis, indicating both direct and indirect effects of PTG on coping with the addition that rumination also impacts self-efficacy.

## CHAPTER III

### DESIGN AND METHODOLOGY

#### Participants

Participants for the study were 175 University of Windsor undergraduate students. This sample size was adequate for the analyses performed. Kline (2005) recommends having a minimum of 10 cases per parameter, and ideally 20 cases per parameter. The maximum number of parameters across the four models being tested was 15, allowing over 11 cases per parameter. Although this sample size did not reach the ideal 20 cases per parameter guideline, it is sufficient for the analyses.

Of the 175 participants included in the analysis, 141 (80.6%) were female, 29 (16.6%) were male, and 5 (2.9%) did not indicate gender. The mean age of participants was 21.81 ( $SD = 5.08$ ,  $N = 172$ ), and ranged from 18 to 45 years. Age was positively skewed as expected among an undergraduate population. Approximately half of the participants (51.5%) indicated a household income above \$50 000, the other half of participants were distributed fairly evenly across the other income brackets (between 7.1 and 10.7 percent of participants indicating each bracket). All participants were enrolled in a psychology course, and most (57.1%) indicated psychology as either a major or minor.

The psychology participant pool was used as the primary source of participants. Using this tool, students enrolled in psychology courses can register, view, and participate in research studies that are currently underway within the department of psychology. If students qualify for a particular study they can sign up for a time slot. The present study was posted on the participant pool website. Students who signed up for the study were

presented with the website where the study could be completed. Participants were rewarded for their participation by receiving 0.5 bonus marks for a psychology course of their choice.

A brief description of the study on the participant pool website notified potential participants whether or not they qualified for inclusion and was used as way to screen participants. The description stated that participants would be answering questions about a current life stressor as well as reactions to a past traumatic event. Participants were told that they “must have experienced an event that was personally very stressful or traumatic within the past five years, but not within the past six months”. Lists of events that do and do not qualify as traumatic events were also included. For example, very stressful/traumatic events could include robbery, abuse, war, assault, natural disaster, sudden or non-sudden death of a loved one, serious problems related to work, school, or relationships, parental divorce, or diagnosis with illness. In contrast, qualifying events did not include minor problems related to work, school, or relationships, everyday usual stressors, or events that did not cause high levels of prolonged stress. These examples acted as a way to deter individuals who experienced more minor life stressors that they thought might be a trauma. A review of the traumas described within the study confirmed that these descriptions and examples were effective in screening for true traumatic events.

Research has indicated that there is no set timeline in which posttraumatic growth occurs (Tedeschi & Calhoun, 2004). In this way, PTG is both an outcome of growth and an ongoing process that continues long after the traumatic event itself. Moreover, certain aspects of growth may develop faster than others on an individualized basis. The time limit used in this study excluded individuals who had experienced very recent traumatic events in order to allow time to overcome the initial impact of the trauma and begin to work

through their experience. Those who experienced trauma more than five years prior to completing the study were also excluded to ensure that the details of the traumatic event were relatively fresh within the minds of the participants. As well, since rumination was hypothesized to decrease with time in most individuals, those who experienced a trauma more than five years ago should not be significantly impacted by current ruminative thought.

### Measures

*The Stress-Related Growth Scale (SRGS)* was developed by Park, Cohen, and Murch (1996) to assess growth following a specific traumatic event experienced by the participant. This scale was used by Park, Mills-Baxter, and Fenster (2005) to assess the growth experienced by the elderly population within their study as well as in a variety of other studies and populations (for example, Abraido-Lanza, Guier, & Colon, 1998; Pargament, Koenig, & Perez, 2000; Roesch, Rowley, & Vaughn, 2004). The scale consists of 50 items (included in Appendix A) describing different experiences that are associated with growth. Some examples of items include: “I learned to respect others’ feelings and beliefs, I rethought how I want to live my life, and I learned not to let hassles bother me the way they used to”. Participants respond to each statement on a 3-point scale: ‘0’ indicates not having experienced this at all, ‘1’ indicates experienced this somewhat, and ‘2’ indicates that the individual experienced this a great deal. The measure consists of one scale and scores are calculated as a sum of the items scores. Scores on the SRGS can range from 0 to 100, with higher scores indicative of more posttraumatic growth. Author permission to use the SRGS is included in Appendix I.

The validity and reliability of the SRGS was tested by Park et al. (1996) using a large undergraduate sample. Through their analysis, they found that the retest reliability of the SRGS at a two-week follow-up was in a suitable range ( $r = .81$ ). As well, the scale was significantly, though moderately, correlated with a single-item question about the extent of the individual's believed event-related growth ( $r = .46, p < .001$ ). The internal consistency for the undergraduate population was .94. The internal consistency of the scale did fluctuate somewhat when the scale was used in different populations. In the analysis of elders by Park et al. (2005), internal consistency was found to be .91. Cronbach's alpha for the current sample was .97 indicating high reliability for the scale.

*The Coping Inventory for Stressful Situations: Situation Specific Coping (CISS: SSC)* developed by Endler and Parker (1999), measures coping strategies used in specific situations. The measure was adapted by the developers from the earlier Coping Inventory for Stressful Situations, which measures an individual's general coping style. The items included on the CISS: SSC are the CISS items that obtained the highest item-total correlations when tested in a large normative sample of college students. The CISS: SSC consists of 21 self report items that describe various coping strategies, such as: "Think about how I have solved similar problems (. . .) Analyze the problem before reacting (. . .) Phone a friend" (Endler & Parker, 1994, p. 60). Respondents indicate how much they use each coping strategy on a 5-point frequency rating scale ('1' indicating "not at all", and '5' indicating "very often") in relation to a specific event or situation. Instructions on how to complete the CISS: SSC can be found in Appendix B. Endler and Parker (1999) developed comparison norms related to a variety of stressors. Due to the fact that each



participant in this study was experiencing a different current stressor, the sum of the item scores was used in the present analysis.

Items on both the CISS and the CISS: SSC have been found to consistently represent three factors: task-focused coping, emotion-focused coping, and avoidance coping (Endler & Parker, 1994). On the CISS: SSC, 7 items represent each of the factors. For the present study, data was analyzed only related to the task-focused coping subscale of the CISS: SSC. The model of growth presented hypothesizes that growth will lead to more task-focused and problem-focused coping through increases in agency and feelings of control over their present situation (Benight & Bandura, 2004). Rumination also facilitates problem solving that is adaptive when coping with stressors (Watkins, 2008). Items from the CISS: SSC pertaining to emotion-focused and avoidance coping were also administered in order to complete a preliminary comparison of the coping variables. Data from these scales will also be used in future research. Moreover, by allowing respondents to indicate maladaptive coping strategies as well as adaptive ones, they were unlikely to be swayed to indicate using more task-focused coping.

Reliability and validity appears to be quite strong for the task-focused subscale. Within undergraduate populations, alpha coefficients for the task-focused subscale ranged from .78 to .87 (Endler, Kantor, & Parker, 1994; Endler & Parker, 1994; Endler, Speer, Johnson, & Flett, 2000; Reed, 2006). Within the current sample, Cronbach's alpha was found to be .81. Similar results were found for emotion-focused coping (Cronbach's alpha ranged from .80 to .86), but the avoidance coping subscale tended to have poorer reliability with values from .70 to .80 (Endler et al., 1994; Endler & Parker, 1994; Reed, 2006). Internal consistency in the present sample was .80 for emotion-focused coping and .69 for

avoidance coping. The first item on the avoidance coping subscale (Take some time off and get away from the situation) appeared to have the lowest correlation with the sum of the other item scores ( $r = .16$ ). When this item was removed from the subscale, reliability increased to .72, an acceptable value for Cronbach's alpha. All further analyses were completed using the more reliable 6-item scale. Moderate to high correlations were found when the three scales of the CISS: SSC were compared to the three scales of the original CISS, after removing overlapping items (Endler & Parker, 1994). Additionally, nonsignificant correlations were found between noncongruent coping styles. Whereas significant gender differences had been uncovered in the raw scores and reliability of the CISS, no such gender differences exist for the CISS: SSC (Endler et al., 1994).

*The New General Self-Efficacy Scale (NGSES)* developed by Chen, Gully, & Eden (2001) measures individuals' perceptions of their ability to perform across a variety of situations. The scale consists of eight items, each on a 5-point Likert scale (see Appendix C). Items include statements such as: I will be able to achieve most of the goals that I have set for myself, and when facing difficult tasks I am certain that I will accomplish them. Participants rate these statements from 1 (strongly disagree) to 5 (strongly agree). Scores on the NGSES can range from 8 to 40, with higher scores indicating greater self-efficacy for the individual.

The developers' analysis of the reliability and validity of the NGSES produced acceptable results. They found that internal consistency over three administrations (two of which included undergraduate participants, one of which used a sample of business managers) was between .85 and .90. In the present sample, internal consistency was higher than in previous samples with an alpha value of .93. Retest reliability ranged from  $r = .62$

to  $r = .67$  within the undergraduate samples after a lapse of between 20 and 67 days. These values are lower than expected but may reflect changes in self-efficacy based on learning and mastery experiences (Snyder & Lopez, 2007). The sample of business managers obtained more consistent results, with a retest reliability of  $r = .86$  after a period of two weeks. Furthermore, the scale consistently yielded a single self-efficacy component through principle components analysis, with alpha values between .85 and .87 (Chen et al., 2001). The psychometric properties of the NGSES were also analyzed by Scherbaum, Cohen-Charash, and Kern (2006). They compared three of the leading tests of self-efficacy and found the NGSES to be more valid and reliable than both the General Self-Efficacy Scale and the General Perceived Self-Efficacy Scale. The NGSES was significantly correlated with the two respective measures:  $r = .61$  with the GSES, and  $r = .66$  with the GPSES.

*The Rumination Inventory (RI)*, developed by Calhoun, Cann, Tedeschi, and McMillan (2000), was used to assess the occurrence of ruminative thoughts related to the traumatic event. This scale is comprised of items from a variety of rumination and reflection inventories. The items reflect: intrusive thoughts related to the traumatic event, “Recently, thoughts about the event came to my mind and I could not get rid of them”; deliberate attempts to make sense of the event, “Recently, I have tried to make something good come out of my struggle”; and thoughts related to finding meaning in life. Of the 14 items within the scale, 7 items ask about thoughts shortly after the traumatic event, while 7 items focus on the occurrence of these thoughts within the past two weeks. Whereas thoughts about the traumatic at these two time points have been found to relate to posttraumatic growth, it is likely that only very recent thoughts would impact current

coping strategies. By thinking about the traumatic event in the context of a current life stressor, lessons learned from past coping experiences can be generalized and applied to the new stressor. Therefore, only those items related to recent rumination were administered (see Appendix D for inventory items and Appendix J for author permission). It has been hypothesized that recent rumination facilitates problem-solving for current stressful events (Rivkin & Taylor, 1999). Though rumination at the time of the traumatic event contributes to growth, it is unlikely to directly affect response to current stress. Each item is rated on a 4-point scale, with '1' indicating 'not at all' and '4' indicating 'often' (Taku, Calhoun, et al., 2008). In an undergraduate sample in which participants had all experienced a traumatic event, Calhoun and colleagues (2000) found Cronbach's alpha to be .88 for the recent rumination scale. Internal consistency of the scale decreased slightly within the present sample, but was in the acceptable range with an alpha value of .74.

*The Time Since Traumatic Event* was indicated by the participants in the form of how many months had elapsed since the traumatic event that they experienced.

*Demographic Information* was collected using a short questionnaire. Information included gender, age, and program of study. Many of the participants were psychology majors or minors. It is possible that confounding variables, such as psychological mindedness, that accompany program of study could skew results. Therefore, psychology majors/minors were compared to non-psychology students to test for differences in PTG. Participants also indicated their socio-economic status by choosing a range that best describes their yearly family income from the following options: less than \$10 000, \$10 000 – 19 999, \$20 000 – 29 999, \$30 000 – 39 999, \$40 000 – 49 999, more than \$50 000. The demographic information items can be found in Appendix E.

## Procedure

Individuals who were interested and eligible to participate in the study were directed to a website where they were first presented with a consent form. This form stated that all participation was voluntary and they were free to discontinue without penalty (see Appendix F). After the participant gave consent, he or she was first requested to think about a recent everyday stressful event and was asked to indicate what kind of event it was from a list provided (see Appendix B). He or she was presented with the CISS: SSC and asked to respond to the statements keeping this recent stressor in mind. After completion of this scale, participants were presented with the NGSSES.

In the next portion of the study, participants were asked to think about their traumatic event. Exact instructions used are included in Appendix G. Participants were presented with examples of traumatic events and events that do not qualify as traumas, similar to those seen in the participant pool description. They were asked to think about their own recent traumatic event and write a short description of the nature of the event. This slight retelling ensured that the event was fresh in their mind and the participants were not thinking of a compilation of events. Participants then indicated the number of months that had elapsed since the event and how much stress they experienced at the time of the trauma on a 7-point Likert scale. Participants completed both the Rumination Inventory and SRGS related to their experiences surrounding the traumatic event. Finally, participants responded to the demographic questions and indicated the extent of current stress due to thinking about their traumatic event. This analysis of current stress level was both to ensure that participants were not highly aroused at the completion of the study and to alert the participants to possible high stress levels related to their trauma.

Due to the sensitive nature of the experiences of participants, an increased effort was made through an information form (see Appendix H), presented at the completion of all measures, to ensure that participants did not feel long-lasting negative effects from the study. This form made participants aware of counselling services available to them in their area and at school that could assist them in coping with the traumatic events they have experienced and any ongoing problems that these events have caused. As well, the information form explained some of the important variables within the study, such as posttraumatic growth. Some interesting reading on posttraumatic growth was also recommended. These resources could assist individuals in their continued growth related to their difficult experiences.

## CHAPTER IV

### ANALYSIS OF RESULTS

#### Preliminary Review of Data

An initial review of the data was performed in SPSS version 17.0. A total of 204 cases were collected, but 11 were excluded casewise from the analysis due to incomplete or inadequate completion of the survey material. Incomplete cases comprised participants who completed less than 67% of the items on any given scale within the model. After these exclusions, there remained many participants with missing values for some scale items. In order to maximize sample size, summed averages were used for the scale scores instead of scale totals. In accordance with recent studies of PTG (Cann, Calhoun, Tedeschi, & Solomon, 2010), three participants who reported less than moderate stress levels at the time of the traumatic event (less than level 4 on the 7-point scale) were removed from the analysis. Since these individuals did not experience significant stress, any indication of growth following the trauma may be related to confounding factors.

Participants' responses on the time variable were analyzed at the onset of the data analysis. This value was extrapolated from and confirmed by the trauma description when possible. After extrapolation, an additional two cases were excluded from analysis because this variable was incomplete. It was found that 36 participants had experienced their trauma 6 months or less prior to completing the survey, whereas 4 had experienced their trauma more than 5 years ago. Of these latter 4 participants, one appeared to be an outlier having experienced their trauma 10 years ago. This case identified a multivariate outlier (Mahalanobis distance value was significant at  $p < .001$ ) and was excluded from the data set.

An ANOVA using the 187 remaining participants was conducted to determine whether the three time groups (less than, within, and beyond the designated timeframe) differed on any variable within the model. Results from this ANOVA were not significant with  $p > .05$  for all analyses. Since no significant differences were found, the researcher decided to include participants who had experienced their trauma two or more months prior to completing the survey. This division allowed some time for participants to reflect on their experiences while still including as many participants as possible in order to preserve power. Twelve participants who experienced traumas one month or less before completing the survey were excluded at this time. All further analyses were completed using 175 participants, an adequate sample size as discussed in Kline (2005).

Researchers stated that task-focused coping is related to PTG, self-efficacy, and rumination. Preliminary correlation analyses were performed in order to test whether task-focused coping would be a valid outcome of the models presented, as compared to other forms of coping. Relations among the variables within the path model were compared across the three types of coping strategies measured by the CISS: SSC: task-focused, emotion-focused, and avoidance coping. Results can be found in Table 1. As predicted, task-focused coping was the only coping strategy significantly related to PTG and at least of the proposed mediating variables. Moreover, of the three subscales, only task-focused coping and avoidance coping were significantly correlated with one another ( $r = .26$ ,  $p < .01$ ), indicating that a CISS: SSC total score would not be an acceptable outcome variable. As such, all subsequent analyses focused solely on the task-focused coping strategies used by participants.



Table 1

*Means, Standard Deviations, and Correlations With Model Variables by Coping Subtype.*

	Task Coping (7 items)	Emotion Coping (7 items)	Avoidance Coping (6 items)
Mean	22.36	21.95	17.08
Standard Deviation	5.05	5.67	4.80
Time	-.04	-.07	.21**
PTG	.24**	.13	.36**
Self-Efficacy	.31**	-.30**	.06
Rumination	.12	.13	.09

\* Correlation significant at  $p < .05$

\*\* Correlation significant at  $p < .01$

### Traumatic Event and Current Stressful Experience

Participants reported experiencing a wide variety of traumatic events. Similar to previous research, the largest proportion of participants had experienced the death of a loved one in recent years (31.4%). Large percentages of participants had also experienced family illness (13.1%), family issues (11.4%), and relationship breakdown (9.1%). Other traumatic events included the participant's own illness (6.9%), work or school problems (6.3%), motor vehicle accident (4.0%), robbery (3.4%), being the victim of violence (3.4%), and other events that did not occur at high frequencies (5.7%). Approximately 5% of participants did not provide a description of their traumatic event.

The stressful event that participants were currently coping with also varied across the categories given. As could be expected among an undergraduate sample, 26.3% of participants reported a school-related problem. Problems with family members (21.1%) and problems with spouses or significant others (17.1%) were also common. Other stressors included financial problems (10.3%), health problems (10.3%), problems with friends (5.7%), work-related problems (3.4%), and other experiences (5.7%). Participants who were experiencing financial problems used task-focused coping strategies the most ( $M = 25.45$ ,  $SD = 4.39$ ), whereas those citing experiences that did not fit into a major category used task-focused coping strategies the least ( $M = 18.60$ ,  $SD = 2.76$ ).

#### Descriptive Statistics and Statistical Assumptions

Participants indicated high stress levels at the time of the trauma (Mean = 6.39,  $SD = .79$ ,  $N = 175$ ). At the completion of the survey, stress levels were generally moderate (Mean = 3.61,  $SD = 1.50$ ,  $N = 171$ ). Because most participants were psychology majors or minors (57.1%), there was concern that these individuals would respond differently than students in other disciplines, such as business, engineering, biology, social work, and human kinetics. A two-tailed comparison of group means was performed and no significant differences were found on any of the variables within the path models ( $p > .05$  for all analyses). Therefore, psychology students did not respond differently than non-psychology students.

Means and standard deviations for the variables within the path models can be found in Table 2. Normality for each of the model variables was found to be within the normal range and skewness and kurtosis values were below the critical cut-off values (see

Table 2). Histograms were also analyzed and found to be acceptable in shape. The assumption of multivariate normality was found to be slightly violated, with a kurtosis value of 1.60 (critical value 1.27). It should be noted that multivariate normality was greatly improved after removing the multivariate outlier mentioned previously (previous kurtosis value = 3.40, critical value = 2.69).

Table 2

*Descriptive Statistics for All Model Variables (N = 175).*

Variable	Mean	Std Deviation	Skewness	Kurtosis
Time	25.95	17.97	.61	-.53
PTG	56.30	24.24	-.34	-.69
Rumination	19.40	3.92	-.26	-.12
Self-Efficacy	30.98	5.60	-.57	.45
Task Coping	22.36	5.05	-.14	-.15

The mean growth score across participants was in the moderate range. When PTG was divided into a low PTG group (scores less than 34), a medium group, and a high PTG group (scores greater than 67), most participants reported at least moderate levels of growth. Specifically, 42% indicated medium growth, 39% indicated high growth levels, and 19% indicated low growth. Among the sample, only one participant responded ‘not at all’ to all of the items on the SRGS.

A correlation matrix including the five variables within the model showed some significant correlations between variables at  $p < .05$ . None of these correlations exceeded  $r = .80$ , therefore it can be concluded that no multicollinearity or singularity exists within

the variables. All correlation values can be found in Table 3. The significant correlations indicated that the relations among variables were linear. For those variables that were not significantly correlated with one another, scatterplots were created so they may be examined for any relations. The scatterplots confirmed that the variables appeared to be unrelated to one another, rather than containing a curvilinear relation.

Table 3

*Correlations Between All Variables Within the Path Models.*

Variable	Time	PTG	Self-Efficacy	Rumination	Task Coping
Time	-----	.06	.12	-.21**	-.04
PTG		-----	.08	.41**	.24**
Self-Efficacy			-----	-.19	.31**
Rumination				-----	.12
Task Coping					-----

\*\* Correlation significant at  $p < .01$

The assumption of independence of observations may have been compromised during data collection. The researcher only had enough information from 187 out of the 204 participants to award them participation marks. Therefore it is unknown whether a small portion of the participants completed the survey more than once or whether some new participants simply did not provide information to receive credit. Given the small number of cases where this problem could have occurred, it was decided that independence of observations could be assumed for this study.

## Hypothesis Testing

The four path models were specified in AMOS 5 student version. All models were over identified, recursive, and included at least one exogenous variable. The individual hypothesized relations were then analyzed.

*Hypothesis 1: PTG relates to more task-focused coping strategies.* This direct relation was tested by models 2 through 4 and results were consistent across the three models ( $\beta = .19, p < .05$ ). Therefore PTG was a significant direct predictor of task-focused coping.

*Hypothesis 2: PTG relates to an increase in general self-efficacy.* Models 3 and 4 both indicated that the path between PTG and self-efficacy was not significant (Model 3:  $\beta = .08, p = .31$ ; Model 4:  $\beta = .15, p = .87$ ). Moreover, no significant correlation was found between the two variables ( $r = .08, p > .05$ ).

*Hypothesis 3: Self-efficacy relates to the use of more task-focused coping strategies.* Self-efficacy was a significant and relatively stable predictor of coping strategies across models 2, 3, and 4 ( $p < .001$ , see Figures 1 through 3 for exact standardized regression weights).

*Hypothesis 4: PTG relates to an increase in rumination.* Both models 3 and 4 found the direct relation between PTG and rumination to be significant ( $\beta = .42, p < .001$ ). Model 2 also indicated that the correlation between these variables was quite strong (see Figure 1).

*Hypothesis 5: Ruminative thought frequency decreases with time.* Models 3 and 4 indicated that the relation between rumination and time since the trauma was significant with  $\beta = -.24, p < .001$ . The combination of the influence of time since the trauma and amount of PTG presented in models 3 and 4 accounted for 23.6% of the variance in rumination.

*Hypothesis 6: Rumination relates to more task-focused coping.* This direct relation between rumination and coping was found to be nonsignificant among models 2, 3, and 4 with standardized regression weights for all three models of  $\beta = .08, p > .05$ .

*Hypothesis 7: Rumination relates to increased self-efficacy.* When the path between rumination and self-efficacy was added in model 4, it was found to be significant ( $\beta = -.17, p < .05$ ). Contrary to the hypotheses, this significant relation was inverse, indicating that increases in rumination predicted decreased self-efficacy.

Further direct analysis of the mediating roles of self-efficacy and rumination were not completed. The nonsignificant relations between self-efficacy and PTG and between rumination and task-focused coping indicated that neither variable could significantly mediate the relation between PTG and task-focused coping. Therefore, evaluation of the roles of these variables in the process from growth to coping depended primarily on results from model comparison and analysis.

The four models were compared with one another using fit indices, results of which are presented in Table 4. Hoelter's critical  $N$  confirmed that the sample size was adequate to test all models but the null model, as the value obtained for models 2 through 4 exceeded the recommended value of 200 (see Table 4 for exact values). Model 1 (the null model) was easily rejected considering its significant chi-square value and fit indices well outside the appropriate range. The three remaining models fairly consistently predicted 15.0-15.6% of the variance in task-focused coping. Models 2, 3, and 4 all had adequate values on the fit indices. Model 4 appeared to have the best performance across all fit indices, followed by model 2 and then model 3. These values indicate that model 4 was superior to the other

models, but this advantage may not be large enough to warrant the dismissal of the other models, model 2 in particular.

Table 4

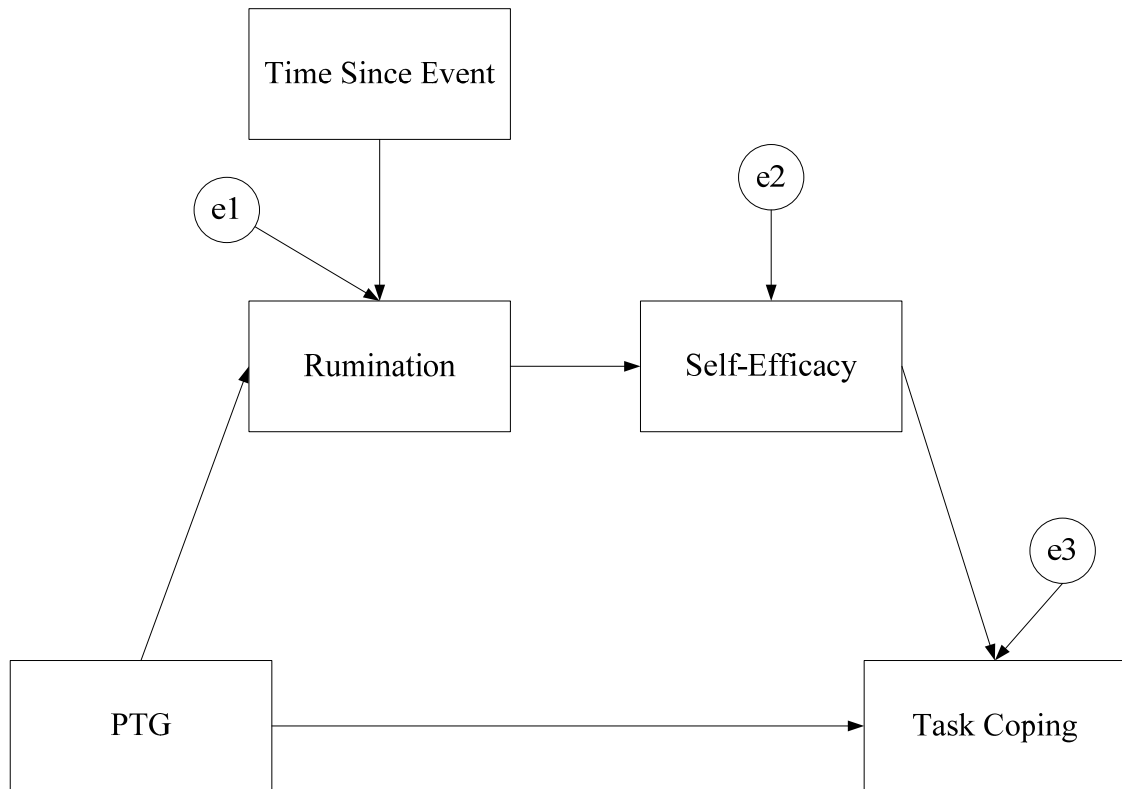
*Fit Indices for Four Path Models (Including Fit Criteria).*

Model	$\chi^2$ ( <i>N</i> = 175)	df	$\chi^2/df$ ( <i>&lt;</i> 2.0)	NFI ( <i>&gt;</i> .90)	CFI ( <i>&gt;</i> .95)	AGFI ( <i>&gt;</i> .90)	RMSEA ( <i>&lt;</i> .10)	Hoelter ( <i>p</i> = .05)
1	81.022*	10	8.1			.78	.20 (90%CI: .16-.24)	40
2	4.181	3	1.4	.95	.98	.95	.05 (90%CI: .00-.14)	326
3	7.064	4	1.8	.91	.96	.94	.07 (90%CI: .00-.15)	234
4	2.907	3	1.0	.96	1.00	.97	.00 (90%CI: .00-.13)	468

\* Significant at *p* < .001

### Exploratory Analyses

Based on the significant paths that were found during data analysis, an exploratory model was created. Direct paths that were consistently found to be nonsignificant were removed from the path model. A visual representation of the model is included in Figure 4. Further research is needed to test the fit of this model with different samples and populations.



*Figure 4.* Exploratory model based on significant relations within the hypothesized models.

Results from the initial analysis of the impact of rumination indicated both positive and negative effects. An exploratory analysis was performed by separating items on the rumination scale in two subscales: deliberate rumination (4 items) and intrusive rumination (3 items). Correlations between these two rumination scales and the other model variables were computed to examine the differential effects of each type of rumination. Consistent with the full scale, both intrusive and deliberate rumination were positively related to growth and negatively correlated with time since the event (see



Table 5). Moreover, deliberate rumination was positively correlated with task-focused coping ( $r = .20, p < .01$ ), while intrusive rumination was not ( $p = .87$ ). Intrusive rumination was found to be negatively correlated with ratings of self-efficacy ( $r = -.17, p < .05$ ). No such significant relation existed with deliberate coping ( $p = .65$ ). All correlation values and significance can be found in Table 5.

Table 5

*Means, Standard Deviations, and Correlations With Model Variables by Rumination Subtype.*

	Intrusive Rumination	Deliberate Rumination
Mean	8.68	10.72
SD	1.95	2.51
Time	-.23**	-.15*
PTG	.27**	.44**
Self-Efficacy	-.17*	-.04
Coping	-.01	.20**

\* Correlation significant at  $p < .05$

\*\* Correlation significant at  $p < .01$

The two rumination scales were correlated with one another at a significance level of  $p < .001$ . Yet, the correlation was not high enough to conclude that the two scales measured a single construct ( $r = .54$ ). While this may lend support for the idea that the rumination scale should be divided into deliberate and intrusive ruminative thoughts, the internal consistency of each of these subscales was quite low (.58 and .66 respectively). Combined, the scales elicited an acceptable Cronbach's alpha of .74. Therefore, there is

not sufficient consistency among the items on the intrusive subscale and the deliberate subscale to allow for their separate use in complex analyses.

## CHAPTER V

### DISCUSSION

#### The Current Study

The purpose of the present study was to explore the relation between growth following a traumatic event and the use of task-focused coping strategies when faced with stressful life events months and years after the trauma. Many studies have shown that benefits are possible following trauma and extremely high levels of stress, but few have focused directly on the practical outcomes that growth can incur. The current study looked specifically at this relationship among undergraduate students who had experienced traumatic events within recent years. The goal of this study was not only to confirm past findings about the relation between these two variables, but also to explore mediating variables that may explain the mechanisms through which growth affects coping behavior. Self-efficacy and rumination were proposed as mediators due to their associations with active coping attempts and problem-solving behavior respectively.

#### Preliminary Analyses

Traumatic events appear to occur at a consistent rate among undergraduate students and these events cause high levels of stress. Of the participants who completed the study, only three had to be excluded due to low stress levels at the time of the trauma. Moreover, the high stress levels found within the present sample were consistent with studies of similar populations (Cann et al., 2010). The undergraduate sample also exhibited mean rates of PTG comparable to studies by Park, Mills-Baxter, and Fenster (2005) and Roesch, Rowley, and Vaughn (2004). Over 80% of participants indicated at least moderate levels of

growth, indicating that the sample in this study was more open to experiences of growth than many previous samples (e.g. Milam, Ritt-Olson, & Unger, 2004). Rumination rates within the past two weeks for participants were slightly higher than in past research (Calhoun et al, 2000). More rumination within this sample could be related to the amount of time that has elapsed since the trauma, in that on average this sample experienced their trauma just over two years prior to completing the study. The study sample could also still be in the process of working through their traumatic events and they may continue to experience growth after completing the study. Participants appear to have similar levels of self-efficacy as the samples used by Chen and colleagues (2001) when validating their scale. As well, participants used task-focused coping strategies at a similar rate as participants in studies by Endler, Kantor, and Parker (1994) and Reed (2006). Overall, the participants within the study appear to be similar to samples used in past research and results may be generalizable to the larger population of undergraduate students who have experienced traumatic events.

#### Direct Relations between Variables

Contrary to previous research, variables within the path models were not all found to be correlated, and overall correlations were quite low. Research by Park, Mills-Baxter, and Fenster (2005) and others have examined the direct relationship between PTG and coping strategies. The present study confirmed this link, yet the relation was not as strong as originally expected. It appears that there are many other factors that influence what types of coping strategies are used when faced with stress. For example, the present study did not control for the type of stressor that participants were currently coping with. It is possible

that some participants failed to use task-focused coping strategies because they would not have been adaptive in their present stressful situation. According to theories of coping-environment fit (Folkman & Moskowitz, 2004), if individuals felt that they had little control over the situation, they would be unlikely to use task-focused coping strategies. Instead, emotion-focused coping would be more adaptive as it would change one's views about the situation, rather than the situation itself. Therefore, situation-coping fit may have overshadowed the impact that PTG had on the use of task-focused coping strategies.

The positive changes experienced as part of PTG were hypothesized to be related to the personal benefits associated with high self-efficacy. This relation had been found to be significant in previous research (see Linley & Joseph, 2004; Tedeschi et al., 1998), but these findings were not corroborated in the current study. It was thought that after individuals experienced some personal growth, they would have a more positive view of themselves and what they are capable of doing, but this may not be the case. It is possible that the 'positive view of self' aspect of PTG is closer to a 'better understanding of the self' that includes acceptance of both strengths and weaknesses (Roesch et al., 2004). Therefore, increases in self-efficacy would not necessarily be tied to this personal growth. Some individuals may realize that they have little control over their environments and begin to come to terms with this fact while incorporating it into their self-concept. It is questionable then how beneficial PTG is in making individuals feel better about themselves and their lives. Moreover, an improved sense of self may not be the mechanism through which individuals are able to feel more confident in their coping strategies in order to use more action-based coping.

The present study was able to confirm previous research that self-efficacy independently impacts the use of task-focused coping strategies. This finding is consistent with work by Shen (2008). It is logical that as one feels more control over the environment and his or her own life, as is the case with high self-efficacy, they would be more willing to employ strategies that require them to take action within their surroundings (Benight & Bandura, 2004). These findings are consistent with the agentic model of adaptation offered by Benight and Bandura (2004). According to this model within social cognitive theory, “individuals play a proactive role in their adaptation, rather than simply undergo experiences in which environmental stressors act on their personal vulnerabilities” (Benight & Bandura, 2004, p. 1133). Individuals are not reactive, but rather proactive and use their personal and situation resources to increase agency within stressful situations.

The topic of rumination has been of interest to PTG researchers in recent years (Taku, Calhoun, et al., 2008). The present study found a strong relationship between experiences of personal growth following a trauma and thinking about the traumatic event. These findings support the cognitive processing model of PTG proposed by Tedeschi and Calhoun (2004). Within this model, rumination is necessary for growth to occur. Initially, ruminative thoughts have an intrusive quality. Individuals must work through and face these thoughts in order to manage their intrusive nature. Slowly, the emotional distress associated with the rumination decreases and individuals can ruminate deliberately and reflectively on their traumatic event. Self-concept and assumptions of the world are now able to adapt to the individual’s new reality.

Whereas researchers have cited that rumination can assist the process of growth, it appears that rumination does not lead to positive changes in self-efficacy or coping. The

present study found no relationship between rumination and task-focused coping. Whereas rumination has been linked to thoughts focused on problem solving (Watkins, 2008), these thoughts do not necessarily translate into coping behaviours in everyday life. Regarding self-efficacy, increased rumination was significantly related to decreased self-efficacy within the sample. Previous research has stated that those with lower self-efficacy have more difficulty experiencing growth following a trauma (Joseph & Linley, 2004). These individuals may therefore ruminate more about their traumatic event in order to find meaning within the event. Conversely, the act of rumination after trauma may take on qualities of habitual negative self-thinking (Watkins, 2008). These thoughts may then focus individual attention on negative aspects of self which inhibit efficacy feelings. It is impossible to confirm these causal relations based on the current research, but future research may help to clarify the inverse relations between rumination and self-efficacy.

Recent research has indicated that the positive and negative outcomes of rumination are difficult to separate. Cann and colleagues (2010) have attempted to further differentiate the effects of deliberate and intrusive rumination related to a past trauma. While deliberate thoughts were related to increased growth, intrusive thoughts had the inverse relation. Preliminary analyses of the different forms of rumination in the present sample indicated that both deliberate and intrusive rumination were positively related to PTG. Yet, only intrusive thought was negatively related to self-efficacy ratings. Therefore, the intrusive rumination described in the current study was the primary aspect of rumination impacting self-efficacy. Once the different forms of rumination were separated, a significant relationship was also seen between deliberate rumination and task-focused coping. These results must be interpreted with caution due to the poor reliability of the separate

rumination subscales. The benefit of different aspects of ruminative thought must be researched further and weighed against any negative consequences that focusing on a negative event may bring. Future research should also aim to create a rumination scale with improved reliability and validity. It is positive to note that rumination did decrease with time, providing support for the idea presented by Tedeschi, Park, and Calhoun (1998) that as individuals come to terms with their trauma they focus on it less and it consumes less of their energy on an everyday basis.

#### Comparison of Path Models

The relations between PTG and task-focused coping were evaluated by creating and testing four path models. The hypothesized models predicted PTG to positively influence the use of task-focused coping in later stressful events. This relationship was expected to be mediated by self-efficacy and rumination about the traumatic event. The alternative hypothesis (model 4), in which rumination was also hypothesized to impact self-efficacy, was found to adequately fit the data collected, though not all paths were significant. Individuals who experienced personal growth following a traumatic event utilized more task-focused coping strategies when faced with stressful life events. These individuals also experienced an increase in rumination about the traumatic event, though this rumination decreased with time. Rumination was negatively related to feelings of self-efficacy, increases in which led to greater use of task-focused coping.

When comparing models, the model described performed best on all fit indices, but both models 2 and 3 also exceeded critical cut-off points for these indices. The inclusion of a relation between rumination and self-efficacy as seen in model 2 and model 4 did



improve model fit, warranting the rejection of model 3. Yet, the minimal difference between models 2 and 4 made it difficult to reject model 2 in favour of model 4. As indicated by the many nonsignificant paths within the models, it is probable that the addition of new variables and the restructuring of the models based on these results would elicit clearer information about the relationship between PTG and coping and allow for the creation of a superior model. Based on the significant relations found between variables, a new model was proposed (see Figure 4). Future researchers are encouraged to test this exploratory model with both undergraduate samples and the general population in order to evaluate its validity.

#### Limitations and Future Directions

Previous research has shown that undergraduate students experience PTG at the same rate as adults in a non-university setting (Park, Cohen, & Murch, 1996), yet the use of this population may have skewed results and restricts the generalizability of results to other populations. More women than men participated in the study, accurately reflecting the proportion of females to males in undergraduate psychology courses, and the average age of participants was quite low. Gender differences have been inconstant among research on PTG, but women generally experience slightly higher PTG than men, and this difference tends to increase with age (Vishnevsky et al., 2010). As well, all participants were enrolled in a psychology course at the time of survey completion, which could have created a sample of psychologically minded individuals. Information was not collected regarding ethnicity of the participants. Though PTG appears to exist within many varying cultures, measures of PTG and the theories surrounding the benefits of growth are based in Western

culture and beliefs. Therefore, participants raised in collectivist societies may view growth in different ways and growth may relate differently to later behaviour (Splevins, Cohen, Bowley, & Joseph, 2010). Future research should look into how culture affects the relations shown in the present study.

Data were collected from 204 participants, but the data analysis was completed using only 175 of those participants. It is possible that by excluding 29 participants that data were altered in some way. As well, by reducing the number of participants in the study, there may have been a reduction in power for the analyses performed. Participants in this study experienced many different kinds of both current stressors and traumatic life events. Many previous studies have looked at specific traumas in order to analyze a more cohesive sample, for example bereaved parents (Polatinsky & Esprey, 2000), hurricane survivors (Cieslak et al., 2009; Cryder et al., 2006), or breast cancer patients (Lelorain et al., 2010). Research on the relationship between PTG and coping within victims of only one form of trauma would be interesting, particularly if only one form of current stressor was also used. This research could highlight event characteristics that may mediate or moderate the relationships found in the current study as well as control for coping-environment fit.

The models being tested were all very similar to each other in that they included the same variables and many similar paths between those variables. By comparing models with varied paths, researchers may be able to more clearly define which variables have a significant impact on task-related coping behaviour. These models represented only a small portion of the possible models that could be created using PTG, self-efficacy, rumination, time since the event, and task-focused coping behaviour. Whereas this study found two

models that adequately fit the data, there could be other untested models that more efficiently and accurately predict coping behaviour post-trauma. Further studies testing different models with the same variables would be valuable. Moreover, though the statistical design used within this study implied causality, causality cannot be inferred from the results due to the correlational nature of the research. An experimental design would be beneficial to test for causality, yet may be unethical if the infliction of trauma was part of the design. Conversely, longitudinal research could better examine causality without additional negative effects.

The addition of other variables may help to further clarify the relations discussed within this study. For example, personality variables beyond self-efficacy may moderate the relation between PTG and coping. It would be beneficial to see whether adding optimism or self-esteem to the model would add any predictive value. Recovering from trauma has also been found to be related to religion and spirituality (Tedeschi & Calhoun, 1995). These constructs could explain some variance in coping as well. As previously mentioned, recent research on rumination has found both positive and negative relations with PTG. Research should be performed to see which aspects of rumination impact self-efficacy and coping behaviour. For the present study, task-focused coping in particular was used as the outcome variable due to its significant relation to self-efficacy and similar aspects of growth (Aldwin, 2007). It would be interesting to discover how the hypothesized model would perform if it were used to predict other forms of coping such as emotion-focused coping and avoidant coping and what changes to this model would improve fit.

### Implications

This study presents many implications for individuals who have faced traumatic events. Though PTG is beneficial for the individual and can reduce stress, it only has weak relationships with the ability to confidently and actively cope with later life stressors. When victims of trauma also gain a sense of efficacy surrounding their actions and their ability to cope, their positive feelings about themselves are more likely to translate into action-based cognitions and behaviours in the real world. Therapists and counsellors who work with victims of trauma should keep these relationships in mind and work towards instilling agency and efficacy beliefs within their clients above and beyond the improved perceptions of self that occur during PTG. For example, by focusing on previous mastery experiences in which individuals have coped successfully, either with a trauma or with other stressors, counsellors can strengthen positive beliefs about the self and encourage adaptive coping in the future.

Therapists should also be aware that increases in growth can occur alongside increases in ruminative thought following a trauma. While this rumination can help to work through the traumatic event, it can also be related to reduced self-efficacy. Steps must be taken to ensure that rumination after trauma maintains a positive and reflective nature and does not lead to global and general negative self thoughts, particularly as time since the trauma elapses. By receiving support and positive feedback about reactions to the past trauma, individuals may also learn to adopt more adaptive and active coping strategies when dealing with current stressors, at the same time feeling confident in their ability to cope with stress.

## Conclusion

After experiencing a traumatic event, some individuals can undergo a process of growth called posttraumatic growth (PTG). This study explored the practical benefits of growth in terms of its relation to task-focused coping after the trauma. Among undergraduate students, this type of personal growth was related to the use of more task-focused coping strategies when faced with everyday stressful events. Increases in PTG were associated with increases in ruminative thought related to the traumatic event, which had a negative association with feelings of efficacy and agency. In spite of the negative impact of rumination, self-efficacy beliefs encouraged individuals to utilize active, task-focused coping during stressful situations. Health care professionals must understand the complex associations between personal growth following trauma and both positive and negative correlates. Though traumatic events can be overwhelmingly difficult, by working through the pain and seeking meaning individuals may experience benefits beyond their current situation for many years to come.

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## APPENDICES

## APPENDIX A

## Stress-Related Growth Scale

Please respond to each item on the following scale: "0" (not at all), "1" (somewhat), or "2" (a great deal).

- | 0          | 1        | 2            |
|------------|----------|--------------|
| Not at all | Somewhat | A great deal |
- Because of the event that I experienced...
1. I developed new relationships with helpful others.
  2. I gained new knowledge about the world.
  3. I learned that I was stronger than I thought I was.
  4. I became more accepting of others.
  5. I realized I have a lot to offer other people.
  6. I learned to respect others' feelings and beliefs.
  7. I learned to be nicer to others.
  8. I rethought how I want to live my life.
  9. I learned that I want to accomplish more in life.
  10. My life now has more meaning and satisfaction.
  11. I learned to look at things in a more positive way.
  12. I learned better ways to express my feelings.
  13. I learned that there is a reason for everything.
  14. I developed/increased my faith in God.
  15. I learned not to let hassles bother me the way they used to.
  16. I learned to take more responsibility for what I do.
  17. I learned to live for today, because you never know what will happen tomorrow.
  18. I don't take most things for granted anymore.
  19. I developed/increased my trust in God.
  20. I feel freer to make my own decisions.
  21. I learned that I have something of value to teach others about life.
  22. I understand better how God allows things to happen.



23. I learned to appreciate the strength of others who have had a difficult life.
24. I learned not to “freak out” when a bad thing happens.
25. I learned to think more about the consequences of my actions.
26. I learned to get less angry about things.
27. I learned to be a more optimistic person.
28. I learned to approach life more calmly.
29. I learned to be myself and not try to be what others want me to be.
30. I learned to accept myself as less than perfect.
31. I learned to take life more seriously.
32. I learned to work through problems and not just give up.
33. I learned to find more meaning in life.
34. I changed my life goals for the better.
35. I learned how to reach out and help others.
36. I learned to be a more confident person.
37. I learned not to take my physical health for granted.
38. I learned to listen more carefully when others talk to me.
39. I learned to be open to new information and ideas.
40. I now better understand why, years ago, my parents said/did certain things.
41. I learned to communicate more honestly with others.
42. I learned to deal better with uncertainty
43. I learned that I want to have some impact on the world.
44. I learned that it’s okay to ask others for help.
45. I learned that most of what used to upset me were little things that aren’t worth getting upset about.
46. I learned to stand up for my personal rights.
47. A prior relationship with another person became more meaningful.
48. I became better able to view my parents as people, and not just parents.
49. I learned that there are more people who care about me than I thought.
50. I developed a stronger sense of community, of belonging, that I am part of a larger group.

## APPENDIX B

## Coping Inventory for Stressful Situations: Situation Specific Coping

Think of a stressful event you are currently dealing with or have recently experienced. Please indicate which ONE of the following best describes the everyday stressful event that you are thinking of:

- Problem with spouse/significant other
  - Problem with family member
  - Problem with friend/acquaintance
  - Health problem
  - Financial problem
  - Work-related problem
  - School-related problem
  - Other (please describe):
- 

The following are ways people react to various difficult or upsetting situations. Please circle a number from 1 to 5 for each item to indicate how much you engaged in these types of activities during this specific stressful situation.

1	2	3	4	5
Not at all				Very often

*[For copyright purposes, items on the CISS: SSC have not been reproduced. As discussed in the Measures section, participants responded to the 21 items on the CISS: SSC by referring to the 5 point scale included above]*

## APPENDIX C

## New General Self-Efficacy Scale

For each item, indicate how much you agree that the statement is an accurate description of you using the following scale:

1	2	3	4	5
Strongly disagree				Strongly agree

1. I will be able to achieve most of the goals that I have set for myself.
2. When facing difficult tasks, I am certain that I will accomplish them.
3. In general, I think that I can obtain outcomes that are important to me.
4. I believe I can succeed at most any endeavor to which I set my mind.
5. I will be able to successfully overcome many challenges.
6. I am confident that I can perform effectively on many different tasks.
7. Compared to other people, I can do most tasks very well.
8. Even when things are tough, I can perform quite well.

(Chen, Gully, & Eden, 2001)

## APPENDIX D

## Rumination Inventory

Respond to the items by circling your response on the four point scale below each item.

1. Recently, I have thought about my traumatic experience when I didn't mean to.

1	2	3	4
Not at all	Rarely	Sometimes	Often

2. Recently, thoughts about the event came to my mind and I could not get rid of them.

1	2	3	4
Not at all	Rarely	Sometimes	Often

3. Recently, I decided to think about the experience to try and make sense out of what happened.

1	2	3	4
Not at all	Rarely	Sometimes	Often

4. Recently, I have tried to make something good come out of my struggle.

1	2	3	4
Not at all	Rarely	Sometimes	Often

5. Recently, I reminded myself of some of the benefits that came from adjusting to the traumatic experience.

1	2	3	4
Not at all	Rarely	Sometimes	Often

6. As a result of what happened, recently I find myself automatically thinking about the purpose of my life.

1	2	3	4
Not at all	Rarely	Sometimes	Often

7. As a result of what happened, recently I will deliberately think about and ask questions about whether or not life has a meaning or purpose.

1	2	3	4
Not at all	Rarely	Sometimes	Often

## APPENDIX E

## Demographic Information

Please answer the following demographic questions:

Gender: \_\_\_\_\_

Age (in years): \_\_\_\_\_

Program of study: \_\_\_\_\_

Yearly family income:

- less than \$10 000
- \$10 000 – 19 999
- \$20 000 – 29 999
- \$30 000 – 39 999
- \$40 000 – 49 999
- more than \$50 000

How much stress are you currently experiencing due to thinking about the traumatic event?

1                  2                  3                  4                  5                  6                  7  
No stress    Moderate stress    High stress

## APPENDIX F

### Consent to Participate in Research

#### The Long-Term Effects of Trauma and Stress

You are asked to participate in a research study conducted by Jennifer R. Marcus (M.A. Student), under the supervision of Dr. Ken Cramer (Professor), from the Department of Psychology at the University of Windsor. The results of this study will contribute to Ms. Marcus's M.A. thesis.

If you have any questions or concerns about the research, please feel free to contact Jennifer Marcus at [marcusj@uwindsor.ca](mailto:marcusj@uwindsor.ca) or Dr. Ken Cramer at [kramer@uwindsor.ca](mailto:kramer@uwindsor.ca) or (519) 253-3000, ext. 2239.

#### PURPOSE OF THE STUDY

This study is designed to assess the long-term effects of traumatic events on university students' perceptions and behaviours.

#### PROCEDURES

If you volunteer to participate in this study, we would ask you to do the following things:

- Fill out a series of questionnaires about yourself and current life stressors
- Think about the traumatic event that you have experienced and fill out questionnaires related to your reactions to the event
- Read a post-study information form

Location: Completed online

You will not be contacted for follow-up sessions.

#### POTENTIAL RISKS AND DISCOMFORTS

This study does not have any major risks, except that you may experience some negative feelings (e.g., anxiety, sadness, fear) in response to thinking about the traumatic event that

you have experienced. However, you do not have to answer any questions that you do not feel comfortable answering.

#### POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

This study will expose participants to ways in which people react to trauma and deal with stress. By responding to the questionnaire items, participants may learn about new ways to cope with stress more effectively.

Participants will gain experience being a part of the research process.

The results of this study will be used to inform future research about the long-term effects of experiencing a traumatic event. The results may be used to create interventions to assist individuals in finding meaning in their difficult experiences.

#### PAYMENT FOR PARTICIPATION

Participants will receive 0.5 bonus points for 30 minutes of participation towards the psychology participant pool, if registered in the pool and enrolled in one or more eligible courses.

#### CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified as connected to you will remain confidential and will be disclosed only with your permission. Your identity will be used only to allocate participation marks appropriately. Our data will be stored on a computer and coded with a random number so as to maintain anonymity. Data will be kept in a secure office to which only the researchers will have access. No information that discloses your identity will be released or published without your specific consent to disclosure. No confidential records will be consulted. The data being collected will be kept separate from potential identifiers like participant pool mark allocation. In accordance with the American Psychological Association, your data will be kept for 5 year.

## PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you do not want to answer and still remain in the study. Your participation in this study is completely voluntary. If you choose to participate, you have the right to discontinue your participation at any time during this experiment, even after providing consent, up until you have submitted all survey data. Should you choose not to participate or choose to stop once you have begun, you will still receive your credits. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

## FEEDBACK OF THE RESULTS OF THIS STUDY TO THE PARTICIPANTS

Research findings will be available to participants at the completion of the project at [www.uwindsor.ca/reb](http://www.uwindsor.ca/reb) under 'Study Results'. A user friendly, brief summary of the initial results will be available by October 15<sup>th</sup>, 2010.

## SUBSEQUENT USE OF DATA

This data will be used to inform subsequent studies, but no identifying information will be used.

## RIGHTS OF RESEARCH PARTICIPANTS

You may withdraw your consent at any time and discontinue participation without penalty. If you have questions regarding your rights as a research subject, contact: Mr. Mark Curran, Research Ethics Coordinator, University of Windsor, Windsor, Ontario, N9B 3P4; Telephone: 519-253-3000, ext. 3948; e-mail: [ethics@uwindsor.ca](mailto:ethics@uwindsor.ca)

## CONSENT OF RESEARCH SUBJECT/LEGAL REPRESENTATIVE

By clicking the button below, I indicate my understanding of the information provided for the study **The Long-Term Effects of Trauma and Stress** as described herein. My questions have been answered to my satisfaction, and I agree to participate in this study. I agree to print or request an email copy of this page for my records. To request an email



copy please email [marcusj@uwindsor.ca](mailto:marcusj@uwindsor.ca)

December 1, 2009

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Signature of Investigator

Date

I AGREE TO PARTICIPATE

I DO NOT AGREE TO PARTICIPATE

PRINT THIS DOCUMENT FOR YOUR RECORDS

## APPENDIX G

## Instructions for Description of Trauma

Traumatic events can take many forms. They can include robbery, sudden death of a loved one, abuse, war, assault, and natural disaster. Traumatic events can also include life events such as serious problems related to work, school, or relationships, non-sudden death of a loved one, diagnosis with illness, and parental divorce. These events do not include minor problems related to work, school, or relationships, everyday usual stressors, and events that did not cause you high levels of ongoing stress.

Think of a specific traumatic even that you have experienced within the past five years. In the space below, please write a brief description of the traumatic event that includes what kind of event it was and how you reacted at the time.



Indicate the number of months that have elapsed since the traumatic event:

 months

How much stress do you remember experiencing at the time of the traumatic event?

Choose one:

- |           |   |   |                 |   |   |             |
|-----------|---|---|-----------------|---|---|-------------|
| 1         | 2 | 3 | 4               | 5 | 6 | 7           |
| No stress |   |   | Moderate stress |   |   | High stress |

APPENDIX H  
Information Form

Thank you for completing this study on the long-term effects of trauma.

The topic of this research is posttraumatic growth, or the idea that one can experience benefits and find meaning in a traumatic event. Research has shown some individuals can in fact have more positive interpersonal relationships, have a more positive self-concept, and have a better outlook on life after they have experienced and coped with a traumatic event. This study aims to assess the long-term effects of posttraumatic growth on one's ability to cope with later events.

Sometimes the events you experienced can be difficult to think about. They can cause people to feel strong emotions related to anxiety, sadness, and fear. If you, a friend, or a family member have questions, would like someone to talk to, or need help with a problem, it is recommended that you take advantage of one of the following services available to individuals in your area.

<p><b>Student Counselling Centre</b> 293 CAW Centre, 401 Sunset Ave. Windsor, ON N9B 3P4 Tel: (519) 253-3000 Ext. 4616</p>	<p><b>Distress Centre of Windsor-Essex County</b> Crisis Phone: (519) 256-5000 For persons in distress</p>
<p><b>Sexual Assault Crisis Centre of Essex County</b> <b>(24 hours)</b> Email: <a href="mailto:sacc@wincom.net">sacc@wincom.net</a> Tel: (519) 253-9667</p>	<p><b>Amherstburg Community Services (ACS)</b> 400 Sandwich St. S, Unit 31 Amherstburg, ON N9V 3L4 Tel: (519) 736-5471</p>
<p><b>Lesbian Gay Bi Youth Line</b> Tel: 1-800-268-YOUTH (Can call from anywhere in Ontario)</p>	<p><b>Maryvale Adolescent &amp; Family Services</b> 3640 Wells Street Windsor, ON Tel: (519) 258-0484</p>

To find out more about posttraumatic growth and how it benefits the lives of those who experience it, the following articles and books are recommended:

Linley, P. A. & Joseph, S. (2004). Positive psychology following trauma and adversity: A review. *Journal of Traumatic Stress, 17*(1), 11-21.

Park, C. L., Mills-Baxter, M. A., & Fenster, J. R. (2005). Post-traumatic growth from life's most traumatic event: Influences on elders' current coping and adjustment. *Traumatology, 11*(4), 297-306.

Tedeschi, R. G., Park, C. L., & Calhoun, L. G. (Eds.). (1998). *Posttraumatic Growth: Positive Changes in the Aftermath of Crisis*. Mahwah: Lawrence Erlbaum Associates.

If you have any further questions or concerns about the research or would like an email copy of this document, please feel free to contact Jennifer Marcus at [marcusj@uwindsor.ca](mailto:marcusj@uwindsor.ca) or Dr. Ken Cramer at [kcramer@uwindsor.ca](mailto:kcramer@uwindsor.ca) or (519) 253-3000, ext. 2239.

PRINT THIS DOCUMENT FOR YOUR RECORDS

APPENDIX I

Author Permission to use Stress-Related Growth Scale

Hello Dr. Park,

My name is Jennifer Marcus and I am a Master's student at the University of Windsor in Windsor, Ontario. I have become very interested in your research on stress-related growth. In particular, I found your 2005 article on the long-term benefits of post-traumatic growth intriguing. It sparked a number of questions in my mind regarding the mediating variables between the experience of growth and later adjustment. I have decided to examine some of these mediators within my Master's thesis. As part of my study, I was hoping to administer the SRGS. Has this scale been published in the literature? As of now I have not been able to locate it. Is it possible to receive a copy of this measure for use in my thesis?

Thank you in advance for your assistance and I look forward to hearing from you,

Jennifer Marcus  
MA Candidate  
Adult Clinical Psychology  
University of Windsor  
marcusj@uwindsor.ca

\*\*\*\*\*

Hello Jennifer,

Thanks for your interest in our scale. I am attaching both versions of the measure (full and short form) here. A number of studies have been published that used each of these, and you are welcome to use either.

Please keep me posted on your research; sounds interesting!

Crystal

APPENDIX J

Author Permission to use Rumination Inventory

Hello Dr. Calhoun,

My name is Jennifer Marcus and I am a Master's student at the University of Windsor in Windsor, Ontario. I have become very interested in your research on posttraumatic growth. In particular, I have found your research on the relationship between rumination and posttraumatic growth intriguing. It sparked a number of questions in my mind regarding how rumination alters the long-term effects of psychological growth. I have decided to examine some of these questions within my Master's thesis. As part of my study, I was hoping to administer the rumination scale that you used in your article "A correlational test of the relationship between posttraumatic growth, religion, and cognitive processing" (2000). Have the items in this scale been published in the literature? As of now I have not been able to locate them. Is it possible to receive a copy of this measure for use in my thesis?

Thank you in advance for your assistance and I look forward to hearing from you,

Jennifer Marcus  
MA Candidate  
Adult Clinical Psychology  
University of Windsor  
marcusj@uwindsor.ca

\*\*\*\*\*

Jennifer,

Lawrence asked me to reply to your request, since I have become the 'rumination guy' in the research group. Attached you will find the original items from the 2000 study. Since then we have been working to revise the items to be able to more clearly separate 'intrusive' and 'deliberate' styles of rumination. A new set of items, based on some preliminary data have been created. We are in the process of collecting additional data to validate these items, but the initial analyses are promising. You are welcome to use either set of items.

You also might find some of the references below to be of interest. The 2 marked with asterisks are available as on-line publications, but if you cannot access them, and believe they might be of interest, we have pdf copies available.

Arnie

## VITA AUCTORIS

Jennifer R. Marcus was born in 1985 in London, Ontario. She graduated from A. B. Lucas Secondary School in 2003. She attended York University and graduated with an Honours B.A. in Psychology in 2007. With the submission of this thesis Jennifer will have completed her Master's degree in Adult Clinical Psychology at the University of Windsor. She hopes to graduate in Fall 2010.