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An exploration of the relationships between Posttraumatic Growth, Sense of Coherence and Meaningfulness, in the South African context.

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Abstract

Aim: The objective of this study is to undertake research regarding Posttraumatic Growth and its relationship with Sense of Coherence, within the South African context. In addition, the associations between the three domains of SOC, in particular Meaningfulness, and the five domains of PTG, will be investigated. A further aim of this study is to explore whether the relationship between posttraumatic stress symptoms and Posttraumatic Growth is moderated by Meaningfulness. ***Sample:*** The sample consisted of tertiary education students, 18 years and older, and who have experienced a traumatic event as defined by the Traumatic Stress Schedule (N=79). ***Measures:*** In addition to a demographic questionnaire, the following measures were administered: the Sense of Coherence Scale (SOC), the Posttraumatic Growth Inventory (PTGI), the Impact of Event Scale - Revised (IES-R), and the Traumatic Stress Schedule (TSS). ***Results:*** Participants reported moderate scores on overall PTG with lower SOC scores relative to similar samples in the literature. Age was found to be associated with PTG, and PTG was associated with subjective distress as measured by the IES-R. In addition, those reporting PTG, particularly in the areas of Relating to Others, New Possibilities and Appreciation of Life, evidenced lower levels of Comprehensibility, and those low on Comprehensibility tended to report higher levels of subjective distress. High levels of subjective distress also appeared to be associated with lower levels of Manageability. Findings further suggested that participants who had been exposed to multiple traumas, as well as those who reported higher subjective distress, generally evidenced lower SOC. Multiple trauma exposures were strongly associated with increased subjective distress. Implications of the findings and recommendations for future research are discussed.

Keywords: Posttraumatic Growth, Sense of Coherence, Meaningfulness, Comprehensibility, posttraumatic stress symptoms, multiple traumas.

DECLARATION

I hereby declare that this research report is a result of my original and unaided work, and that to the best of my knowledge have recognised all sources that were used in the course of this research. This thesis has been submitted in partial fulfillment of the degree, Master of Arts (Psychology), at theUniversity of the Witwatersrand, and has not been submitted before for any other degree or examination at this or any other university.

Signed _____

Samantha Jane Walsh

Date 12th December2011

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1 INTRODUCTION

1.1 Rationale

South Africa has one of the highest crime rates in the world with recent estimates suggesting that approximately 80% of people will report experiencing at least one traumatic event in their lifetime (Seedat, Nyamai, Njenga, Vthilingum & Stein, 2004). Lifetime trauma exposure rates of up to 94% have also been reported (Carey, Stein, Zungu-Dirwayi & Seedat, 2003). However, estimates of prominent posttraumatic stress symptoms (sufficient to warrant a diagnosis of Posttraumatic Stress Disorder) in the same samples were as low as 10.8%. These South African statistics suggest that, while there are negative consequences in the aftermath of a traumatic event, it appears that an even larger portion of the sample seems to not report prominent posttraumatic stress symptoms (PTSS). Research has largely been preoccupied with elucidating the mechanisms that serve as resilience factors, hence enabling people to thrive in the face of adversities such as trauma, as well as the mechanisms that perhaps facilitate the process of coping with trauma in the aftermath, in less resilience-disposed individuals (Almedom, 2005; Chopko & Schwartz, 2009).

The idea that major life crises offer opportunities for self-growth is not a new idea. Clinicians, such as Frankl and Yalom, have pondered on this for many years (Joseph & Linley, 2008; Yalom, 1980). Nonetheless, much of the literature on trauma has focused on the pathological outcomes of trauma, such as posttraumatic stress disorder (PTSD). While pathological outcomes are a reality, there has also been a realisation that some individuals, in the aftermath of a traumatic event, are able to return to pre-trauma functioning, and in some cases seem to exceed the levels of previous functioning (Tedeschi & Calhoun, 1995). This concept of growing beyond pre-trauma functioning has been given many different names. For instance, Affleck and Tennen (1996) talk of benefit finding, and Epel, McEwen and Ickovics (1998) talk of thriving. However, the present study will be referring to Tedeschi and Calhoun's (2004a) concept of growth, namely Posttraumatic Growth (PTG).

The majority of research in Posttraumatic Growth has so far concentrated on establishing the construct (Tedeschi & Calhoun, 2004a), including validity studies that have attempted to establish construct validity using other growth measures (Joseph, Linley & Harris, 2005). However, recent research has tended to focus on identifying factors and mechanisms associated with PTG. Some thinking behind this new focus of research is that, if the factors that promote growth can be identified, they may then be used in new interventions in order to ameliorate stress symptoms and/or to promote growth (Almedom, 2005; Chopko & Schwartz, 2009). One such mechanism that seems to be related to whether or not people report PTG is the concept of Sense of Coherence (SOC). Waters and Van Wijk (2008) speak of Sense of Coherence as a general orientation that individuals have, in their cognitive and emotional appraisal of the world. And it is with this stable and enduring disposition that individuals confront stressors facing them. Sense of Coherence is comprised of three dimensions, namely Comprehensibility, which is the degree of confidence that individuals have that they will make sense of the stimuli from their internal and external environments (Anotonvsky, 1987). The second domain of the Sense of Coherence construct is Manageability,which isthe degree of confidence that an individual has that they have the resources available with which to respond to the demands placed on them. The third and final domain is Meaningfulness, which is the extent to which individuals perceive that their life, and the demands or challenges that are placed on them, have meaning and as such are worthy enough for them to be emotionally, cognitively and physically invested in them (Antonovsky, 1987). The field of trauma research has only recently begun to explore the relationship between Sense of Coherence and Posttraumatic Growth, especially with regards to the three dimensions of Sense of Coherence. There is a lack of literature exploring the Meaningfulness component of SOC, though one study was found that explored Posttraumatic Growth predictors in former child soldiers of World War II (Forstmeier, Kuwert, Spitzer, Freyberger & Maercker, 2009). This study found a positive linear association between Meaningfulness and Posttraumatic Growth. One of the limitations of this study however, is that the traumatic event(s) occurred 60 years ago. While this study indicates that growth occurs within a few years of a trauma and then remains stable, there are still six decades of various events and

stressors to which the Posttraumatic Growth could be attributed. As such, this research necessitates the exploration of the relation between Meaningfulness and Posttraumatic Growth in the recent aftermath of the traumatic event. Thus the present study seeks to explore whether or not the Meaningfulness component of the Sense of Coherence construct is associated with Posttraumatic Growth within the firstyears after a traumatic event, in the South African context. In addition, the present research will explore whether or not Meaningfulnessacts as a moderator of the relationship between posttraumatic stress symptoms and Posttraumatic Growth. Specifically, the construct of Meaningfulness will be explored in relation to each of the five domains of PTG in order to further explore if there is specific growth in specific areas that are especially related to the Meaningfulness component of SOC.

1.2 Aim

South Africa is a unique countrywith complex social conditions, in which trauma is a part of the fabric of society. This trauma includes a history of political violence, high crime rate, and high rates of road accidents (Williams et. al, 2007). The aim of this study is to undertake research regarding trauma within the South African context.

International research has turned its attention toward growth in the aftermath of trauma, in particular Tedeschi and Calhoun's (1995) concept of Posttraumatic Growth, and theimplications in terms of adjustment and recovery in individuals (Tedeschi & Calhoun, 2004b; Durkin & Joseph, 2009). Research is now beginning to investigatethe links between individual characteristics and growth, such as mindfulness (Chopko & Schwartz, 2009), cognitive appraisal and sense of belonging (Dekel & Nuttman-Schwartz, 2009), and dispositional optimism (Feder et. al, 2008), however literature reveals very little research into the relationships between Posttraumatic Growth and Antonovsky's (1987) global disposition, Sense of Coherence (SOC), or the domains of SOC and in particular Meaningfulness. As such the present study aims to undertake research relevant to the South African context,that will lead to a better understanding of the relationships between, Sense of Coherence and Posttraumatic Growth; Meaningfulness (as a domains of Sense of Coherence) and the five domains of Posttraumatic Growth.

In addition, trauma has been shown to be related to high levels of subjective distress (Williams et. al, 2007) and has been implicated in reports of Posttraumatic Growth (Feder et. al, 2008; Levine, Laufer, Hamama-Raz, Stein & Solomon, 2008), as such a further aim of this study is to further explorethe effect of Meaningfulness on the relationship between posttraumatic stress and Posttraumatic Growth.

2 LITERATURE REVIEW

2.1 Trauma

"The only two certainties in life are death and taxes." (Benjamin Franklin).

Franklin highlights that the human condition is permeated with uncertainty. Antonovsky (1987) speak of stressors as being 'omnipresent', where uncertainty speaks to a sense of 'being', stressors to occurrences that give rise to strain and tension, and trauma, which tends to refer to discrete incidents or episodes that evoke an intense response. Whilst uncertainty and stressors appear to be ever present there is an inclination to view trauma as a rare occurrence. However, South African studies (Jacobs, 2003; Roe-Berning, 2009) indicate high levels of exposure to trauma in relation to crime and violence, as well as road accidents. The Automobile Association (2008) cited there having been approximately 900,000 road accidents reported to the South African Police Service (SAPS) in 2008 with an estimated 150,000 individuals having been injured. Furthermore, the SAPS national crime statistics for the period of April 2009 to March 2010 (see Appendix A) show a total of 2,223,375 crimes nationally, of which 30.42% were contact crimes or crimes against persons, 11.54% residential burglary, and 16.53% were theft (SAPS, 2010). From these statistics it appears that there has been a decrease of approximately 16% in the national crime statistics for South Africa between 2003/2004 and 2009/2010 (see Appendix A). However, there is some doubt as to the veracity of these statistics and whether in fact there is an underreporting of crime at our police stations (CSVR, 2010). Despite this, South Africa still rates as having some of the highest crime figures in the world.

The word trauma derives from the Greek language meaning 'wound' (Oxford English Dictionary, 2005). The definition of trauma refers to either a physical, or to a psychological wounding, with 'wounding' implying a piercing or breaking of an external surface. This study is concerned with the psychological aspect and effects of a trauma that may or may not be accompanied by a physical injury or shock, in which the external world pierces the internal world of the individual (Tedeschi & Calhoun, 1995).

The act of defining trauma is a complex and difficult task. There has been much debate around the classification of trauma in regards to the nature and severity of the trauma, as well as the individual's subjective experience of the event. This is evident in the American Psychiatric Association (APA) proposed draft revisions for the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V), regarding the criteria of Posttraumatic Stress Disorder (APA, 2010). When speaking of a traumatic event in the course of this research, the various ideas of trauma will be taken into account. One of those being the DSM-IV-TR (APA, 2000, p. 467) offering where a traumatic event is such where "(1) the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others (2) the person's response involved intense fear, helplessness or horror". This definition incorporates the experiential aspect, whilst also considering the nature of the traumatic event itself. Traumatic events might include car accidents, violent assault on a person, natural or manmade disasters, or life-threatening illnesses, amongst other things. Tedeschi and Calhoun (1995) elucidate other qualities of trauma that should be borne in mind: the suddenness and unexpectedness of the trauma, the perceived lack of control, the extraordinary nature of the trauma, the possibility of irreversible serious consequences, blame of others, and the developmental stage of the individual at which the trauma occurs. The impact of the traumatic stressor is affected by a number of factors. Some of these factors include but are not limited to, the nature of the trauma, the response of society and social support systems, and personal characteristics of the individual (Regehr & Sussman, 2004).

2.2 Posttraumatic Stress Disorder (PTSD)

PTSD is a commonly acknowledged outcome of trauma. For PTSD to be diagnosed the DSMIV-R(APA, 2000) requires the above criteria of the event and the response of the individual be met, but also that symptoms resulting from the trauma itself include, a "persistent re-experiencing of the traumatic event (Criterion B), persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (Criterion C), and persistent symptoms of increased arousal (Criterion D)" (APA, 2000, p. 463). The traumatic event may be re-experienced in ways such as recurrent and intrusive memories of the trauma, flashbacks, recurring dreams, and physiological and psychological reactivity to any cues reminiscent of the trauma. In addition, the individual may try to avoid any stimuli associated with the trauma such as thoughts, feelings and talking about it, and possibly attempt to deaden responses to the trauma where the individual may report feeling detached from others and a decreased capacity to feel emotions (APA, 2000). The individual may also experience hyperarousal, which might manifest in disturbed sleeping patterns, exaggerated startle response, difficulties concentrating, hypervigilance and sudden displays of anger or irritability. For the diagnosis to apply these symptoms must have been present for more than a month and be causing considerable difficulties and impairment in areas such as social and occupational functioning (APA, 2000). The lifetime prevalence of PTSD in the general population is estimated as being 8 percent in the DSM-IV R (APA, 2000), with Sadock and Sadock (2007) estimating an additional 5 to 15 percent lifetime prevalence of subclinical forms in the general population. The lifetime prevalence, however, in high-risk groups that have experienced some traumatic event varies considerably, with Sadock and Sadock (2007) estimating a range of between 5 and 75 percent. As previously stated by Carey et. al (2003) and Seedat et.al (2004), whilst a large proportion of the study's samples did not exhibit prominent enough PTSS to warrant a diagnosis of PTSD, a small proportion of the sample did. It is with individuals such as these in mind, that post-trauma interventions are developed and used, which are intended to engender positive coping in such individuals (Chopko & Schwartz, 2009; Joseph, 2004). It has

been in the course of researching the effects of trauma that it has been revealed that some individuals experience positive psychological changes in the aftermath of a trauma, such as the study by Harms and Talbot (2007) with road trauma survivors where positive changes were reported by a vast majority of the respondents. Linley and Joseph's (2006) study indicated growth in an exploration of trauma exposure with disaster workers. This has led to a growing interest in individuals who have not only processed the trauma, and returned to pre-trauma levels of functioning, but also seemed to have exceeded these pre-trauma levels and have grown through this crisis. Whilst growth is not necessarily the preferred outcome, a Posttraumatic Growth perspective can be used to facilitate coping with a trauma, with the potential for growth (Tedeschi & Calhoun, 2004b). A review by Zoellner and Maercker (2006) of longitudinal studies revealed a positive relationship between perceived growth and adjustment. From the perspective of Tedeschi and Calhoun's (2004a) concept of Posttraumatic Growth, this study seeks to explore potential characteristics or common factors of individuals who report Posttraumatic Growth, and their relationship to PTG.

2.3 Posttraumatic Growth (PTG)

"The fruit of wisdom is not in the solution of mysteries, but in knowing how to live best under life's difficulties and uncertainties." (Tedeschi & Calhoun, 1995, p. 9)

Trauma by its very nature shatters basic assumptions about the world as being safe and benevolent, one in which individuals are sure of their place in it and which is taken for granted (Cann et. al, 2010). Through trauma this hold on life is shown to be fragile and tenuous, and it is this threat that illuminates the very need to hold on to it. In the face of such knowledge the individual can no longer maintain these assumptions, but at the same time needs to exist in the world. Intrinsic to human nature is the need to explain the unexplainable (Yalom, 1980). This is linked to survival instincts, in that individuals need to identify changes in order to formulate ideas and protection plans in order to ensure survival. Frankl (1984) speaks of the tragic triad, which relate to the experiences of suffering, guilt and transient nature of

life. Tedeschi and Calhoun (1995) maintain that it is through challenging these issues that individuals have the opportunity for growth, growth through the process of finding and re-establishing a meaningful understanding of the world. Trauma provides an opportunity to face these issues, and as such can lead to meaning and growth. In this way growth is about transformation through struggle, not as a result of the trauma per se (Tedeschi & Calhoun, 2004b). Growth in the aftermath of trauma has many paths, whereby there is a "processing of trauma into growth" (Tedeschi & Calhoun, 2004, p. 7), which is inclusive of the process and the outcome of growth. It is important to note however, that this growth does not preclude the possibility of the individual continuing to experience distress (Tedeschi & Calhoun, 2004b).In a study by Solomon and Dekel (2007) it was found that Israeli ex-POW's displayed both pathological and salutary outcomes, namely Posttraumatic Stress Disorder as well as Posttraumatic Growth. Moreover, the ex-POW's displayed these outcomes to a greater degree than the control group of combat war veterans, suggesting that a greater degree of subjective distress is related to increased likelihood of PTG. This is consistent with findings from the study byDekel and Nuttman-Shwartz (2009), in which resultssuggested that higher levels of posttraumatic stress symptoms are associated with greater growth However, there is the question of what levels of distress being more facilitative of Posttraumatic Growth, with the study by Levine, Laufer, Hamama-Raz and Solomon (2008) suggesting moderate levels of distress being more positively associated with Posttraumatic Growth.

Peterson, Prout and Schwarz (1991) maintain that a traumatic event contains an enormous amount of information, of which the majority does not correspond to existing cognitive schemas. As a result there is an overload and the individual is initially not able to process the entirety of the event, which to a certain extent the individual compounds by attempting to repress it. However, Peterson et. al (1991) suggest that human nature has a tendency toward completion and as such the trauma moves into conscious thought so that it may be processed. This tendency toward completion has different names. For instance, Yalom (1980) suggests that human beings tend towards meaning-attribution. This means that individuals are

driven to make sense of their world by fitting any unpatterned and random events into familiar explanatory frameworks. Moreover Piaget speaks of assimilation and accommodation, whereby individuals adapt to the demands placed on them by the environment (Cockcroft, 2009). This tendency toward reformulating and integrating events necessitates a process whereby this can take place. Tedeschi and Calhoun (1995) suggest that rumination is the process whereby an individual works through the tasks of Manageability, Comprehensibility and Meaningfulness, which are inherent in the face of a traumatic event. There is a movement between denial and intrusive thoughts that gives the individual the opportunity to process the trauma in manageable doses. The need for rumination increases with the extent of the negative impact of the traumatic event. A study by Taku, Cann, Tedeschi and Calhoun (2009) distinguishes between four types of rumination, namely intrusive rumination soon after the event, intrusive rumination recently, deliberate rumination soon after the event, and deliberate rumination recently. The results of the study supported a positive relationship between all four types of rumination and Posttraumatic Growth, with the strongest predictor of current levels of Posttraumatic Growth in the sample being recent deliberate rumination. This study highlights not only the importance of rumination in the cognitive processing of a traumatic event but also elucidates Posttraumatic Growth as a process rather than purely an outcome.

Rumination is a feature of the main tasks facing an individual having experienced a traumatic event. Tedeschi and Calhoun (1995) elucidate these tasks as falling into three categories: Manageability, Comprehensibility, and Meaningfulness, which the authors derived from the constructs that underpin Antonovsky's (1987) global orientation of Sense of Coherence. In the task of Manageability, Tedeschi and Calhoun (1995) suggest that the individual is faced with determining firstly, whether it is possible to return to a pre-trauma state of being, and in most cases where this is not possible, assesses to what extent the impact of the traumatic event is manageable. Intrinsic to this task is primary and secondary control. Primary control can be seen as active attempts at reversing or improving the effects of the traumatic events. Positive effects can result in an increased sense of self-efficacy and control

with regards to future outcomes. However, negative effects are likely to produce a decreased sense of self-efficacy, and can lead to the individual abandoning this course. An alternative response to the experience of negative effects may be of the individual adjusting expectations, with this 'acceptance' being a form of secondary control. In addition, there is also an element of emotion-focused coping in the task of Manageability(Tedeschi & Calhoun, 1995). Individuals tend to live with basic assumptions about the world and themselves, which are referred to as schemas. These overall schemas allow individuals to view the world as comprehensible. These schemas can be undermined by trauma (Tedeschi & Calhoun, 2004a). In the aftermath of a trauma it is not unusual for the individual to view the event as incomprehensible and in a sense deny it. With reaching some understanding of the trauma it becomes in a sense accepted and comprehensible (Tedeschi & Calhoun, 1995). The task of Meaningfulness entails essentially two possible tasks, finding meaning in the occurrence of the traumatic event, and that of maintaining the belief that life is meaningful despite the traumatic event. The finding or maintaining of meaning is shown to be positive in some way and is associated with better adjustment post trauma (Tedeschi & Calhoun, 1995). Overall, it is the working through of the foregoing tasks that the individual experiences a sense of having benefited in some positive way. According to Tedeschi and Calhoun (2004a), there are five broad areas in which benefits or growth can be reported, namely a sense of new possibilities for one's life, improvements in relating to others, a greater sense of personal strength, spiritual change, and a greater appreciation of life.

To sum up, in the event of a trauma where assumptions about the world may have been shattered, the individual searches for patterns, explanations and meaning. These patterns, explanations and meanings are used to rebuild the individual's worldview and in this way their sense of the world is coherent, meaningful and comprehensible once again (Tedeschi, 1999).It is in the rebuilding of the worldview that growth occurs, which has been shown to have positive long-term outcomes for adjustment. Durkin and Joseph (2009) found that posttraumatic growth is associated with greater well-being, and more specifically psychological well-being.

2.4 Sense of Coherence (SOC)

In 1970 Aaron Antonovsky (1979), a medical sociologist, was conducting a study on the adjustment of women in different ethnic groups to menopause. What emerged from the data was that out of the women who were survivors of the concentration camps, nearly 30% had good emotional well-being. This inspired Antonovsky to begin questioning the medical model and set him on the path towards his model of salutogenesis. Whilst the medical model advocates categorising individuals as either sick or healthy, the salutogenic model places individuals on a continuum of health and disease and suggests understanding why in the face of stressors some individuals maintain health. Antonovsky (1987, p 8) maintains that "thinking salutogenically opens the way for studying the consequences of demands made on the organism to which there are no readily available or automatic adaptive responses – a generally accepted definition of a stressor – when there is good theoretical reason to predict positive health consequences." This suggests that stressors are not necessarily pathogenic and that the resolution of tension arising from the presence of stressors may even result in salutary outcomes such as growth. The salutogenic model led to Antonovsky's concept of Sense of Coherence.The study into personal growth following the death of a child by Znoj (2004) found that personal growth, as defined in this study as posttraumatic growth, was mediated by Sense of Coherence. In addition to which it was found that Sense of Coherence moderated grief symptoms and social support.

Antonovsky (1987) suggested that the need for a coherent worldgives rise to a global orientation, operationalised by his construct of Sense of Coherence (SOC), which is the way in which one makes sense of the world. Sense of Coherence is comprised of three dimensions, namely Comprehensibility, Manageability and Meaningfulness.

Comprehensibility is the degree of confidence an individual has that he will make sense of the stimuli from his internal and external environments (Antonovsky, 1987). The individual who is high on Comprehensibility has an expectation that events in

the future will be predictable and understandable, even when unpleasant or harmful. The second domain of the Sense of Coherence construct is*Manageability*,which isthe degree of confidence that an individual has that they have the resources available with which to respond to the demands placed on them. The availability of resources could mean within the immediate control of the individual, but also within the control of another party, for example family or friends. The third and final domain is *Meaningfulness*, which is the extent to which individuals perceive that their life, and the demands or challenges that are placed on them, have meaning and as such are worthy enough for them to be emotionally, cognitively and physically invested in them (Antonovsky, 1987). While all three aspects contribute to the Sense of Coherence, the Meaningfulness aspect is perhaps the most important as it represents the motivational element. This motivational capacity is exhibited in the extent to which the individual engages with life's dilemmas. And it is this willingness, the engagement of individuals, and a search for meaning in the face of trauma that suggests a capacity for growth in the face of adversity (Antonovsky, 1987).

Sense of Coherence develops over time, and could be considered 'fixed' by early adulthood (Antonovsky, 1987). However, it is during the time of adolescence, moving into early adulthood that the Sense of Coherence developed during childhood is either reinforced or reversed (Antonovsky, 1987; Hutchinson, 2005). The Sense of Coherence develops as a result of consistent experiences, experiences that provide an underload-overload balance, and whereby the individual has participated in socially valued decision-making. Sagy and Antonovsky (2000) found that participation in decision-making that shapes outcomes was the most relevant childhood experience that is related to adult SOC. Consistent experiences form the basis for the Comprehensibility component, underload-overload balance for the Manageability component, and participation in shaping outcome for the Meaningfulness component (Antonovsky, 1987). A study by Ebina and Yamakazi (2008) with adolescents exposed to trauma during the 1991-5 Croatian war, found that self-reported childhood stability was best related to a strong Sense of Coherence. In addition to which they highlighted the importance of consistency by

suggesting that where circumstance makes consistency impossible, that managing the uncertainty could facilitate adaptation (Ebina & Yamakazi, 2008).

Underpinning the development of a Sense of Coherence are resources, which Antonovsky (1987) refers to as General Resistance Resources (GRR). The GRRs are essential to coping with life stressors. These resources can be physiological (immuno-potentiating mechanisms); material (food, clothing); cognitive (knowledge, intelligence); emotional (self-identity); coping processes (positive reappraisal); interpersonal-relational (social support); and macrosociocultural (culture, religion). Both self-identity and social support are crucial GRRs. In the study by Ebina and Yamakazi (2008) it was found that participants high on SOC tended to accept their ethnic identity, which it was maintained to be a positive coping mechanism. Stressors on the other hand are referred to by Antonovsky (1987) as Generalised Resistance Resources-Resources Deficits (GRR-RDs), which are delineated into three types, namely chronic stressors, major life events, and acute daily hassles. The chronic stressor is a persistent and enduring stressor that can be formative in as much as determining the strength of an individuals SOC. Major life events on the other hand are discrete events, such as a bereavement, to which there are no habitual adaptive responses, and whilst they produce tension they are not considered a determinant of the strength of an individual's SOC. Finally, daily life hassles are ever present, but are not considered to be a determinant in the strength of SOC (Antonovsky, 1987). The role of SOC and stressors is highlighted in the study by Kimhi, Eshel, Zysberg, Hantman and Enosh (2009), which found SOC to be a potential predictor for ability to cope with traumatic events.

Antonovsky (1987) speaks of the importance or centrality of Meaningfulness as the motivational component of Sense of Coherence, and states that without it the effects of a strong sense of Comprehensibility and/or Manageability would be transitory. Tedeschi and Calhoun (1995) re-iterate when maintaining that the most traumatic of life circumstances may be tolerated if one is able to reach some understanding of it and retain a sense of life as meaningful. Forstmeier et. al (2009) study found Meaningfulness to be a significant predictor of posttraumatic growth.

A modest number of studies have to date explored the role of Sense of Coherence as a buffer against trauma and/or stressors (Ebina & Yamazaki, 2008; Hutchinson, 2005; Van der Hal-van Raalte, Van Ijzendoorn & Bakersman-Kranenburg, 2008). Aside from the study by Forstmeier et. al (2009), there seems to be a lack of research into the link between Sense of Coherence, Meaningfulness and Posttraumatic Growth.

2.5 Meaning

The significance of meaning is central to other bodies of work, such as that of Viktor Frankl (Shantall, 1989) and that of Yalom (1980). The main tenets of Frankl's approach is freedom of will where the individual is not a slave to heredity or environment; "will to meaning" where the individual is motivated by the search for meaning in life; and meaning in life, where there is meaning in all life experiences, even in the most desperate of circumstances. Frankl believed that being able to overcome the worst of life experiences depends on the individuals ability to find meaning in their suffering (Shantall, 1989).

Yalom (1980) suggests that the dilemma the individual faces, is firstly the need for meaning, meaning that is founded in absolutes, and where there is a lack of meaning this causes considerable distress. Secondly, that life and the world hold no absolutes. Therefore Yalom (1980, p. 423) posits, "how does a being who needs meaning find meaning in a universe that has no meaning?" Yalom suggests that meaning is a by-product of the search itself. So it is the engagement in the search for meaning that is important, that which allows the individual to process the various events in their life, and allows them to integrate these events in a way that is coherent or that makes sense to the individual. Tedeschi and Calhoun (1995) speak of rumination as a process of working through a traumatic event in order to try and make sense of it and to make it comprehensible, manageable and to give it meaning. Furthermore, Tedeschi and Calhoun (1995) maintain that the search for meaning in some event is part of the process that leads to benefit finding or growth. This growth through

search for meaning can be seen in the South African study (Polatinsky & Esprey, 2000) in which results show how parents perceived benefit from grappling with the loss of a child. In addition, Federet al.'s (2008) study of former Vietnam prisoners of war indicated the potential for long-lasting Posttraumatic Growth even in the event of an extremely traumatic experience.

In summary, it appears that Posttraumatic Growth is a desired outcome in the aftermath of trauma, as it tends to be associated with better outcomes in the long term (Joseph, Linley & Harris, 2005). Research has shown Posttraumatic Growth to be associated with greater psychological well-being, where psychological well-being "refers to existential engagement with life, purpose, autonomy, and mastery" (Durkin & Joseph, 2009, p. 228). In addition, Sense of Coherence has been proposed as a potential buffer for distress after the experience of a traumatic event (Ebina & Yamazaki, 2008; Hutchinson, 2005; Van der Hal-van Raalte, Van Ijzendoorn & Bakersman-Kranenburg, 2008). However, the link between Sense of Coherence, particularly Meaningfulness, and whether or not individuals report PTG is poorly understood, yet it is theoretically inferred. The present study will thus, investigate whether Meaningfulnessmoderates the relation between levels of PTSS andPosttraumatic Growth in a sample of South African trauma survivors. It is hoped that if there is such a relation, perhaps the Meaningfulness component of SOC could be incorporated into treatments for posttraumatic stress disorder with the aim of facilitating Posttraumatic Growth, which is associated with more positive adjustment post-trauma.

2.6 Hypotheses

The following hypotheseswill be tested in order to fulfill the present study's aims:

HI: There will be a positive relationship between Sense of Coherence and Posttraumatic Growth.

H2: There will be a positive relationship between Meaningfulness and the five domains of Posttraumatic Growth.

H3: The relationship between posttraumatic stress symptoms and Posttraumatic Growth will be moderated by Meaningfulness.

3 METHODOLOGY

The study sought to investigate the relationships between Posttraumatic Growth, Sense of Coherence and Meaningfulness in a sample of South African young adults who have been exposed to potentially traumatic events. As such the study is a quantitative one in which the responses of a large group are analysed in order to statistically explore the nature and extent of the relationships between Posttraumatic Growth and Sense of Coherence, and to explore whether or not Sense of Coherence, particularly Meaningfulness, facilitates the development of Posttraumatic Growth. Furthermore, this study sought to investigate whether Meaningfulness moderates any potential interaction between posttraumatic symptoms and the five domains of Posttraumatic Growth.

3.1 Sampling

Whilst this study specifies that the participant must have experienced a trauma, it is the subjective experience of an event that is traumatic and not necessarily some objective classification of an event, based on the nature and severity, that determines it as traumatic. However, there are events that the individual will typically experience as traumatic (Norris & Hamblen, 2004), for example crime victimization, and this study is inclusive of all. As such the foremost criteria in the selection of the sample was the participant having experienced a traumatic event as defined by the Traumatic Stress Schedule (Norris, 1990). This was assessed in the information sessions with prospective participants, as well as by utilizing the Traumatic Stress Schedule (Norris, 1990) and the Impact of Events Scale-Revised (Weiss & Marmar, 1996), which together, assess for both the nature and severity of an event that may be traumatic, as well as the subjective experience of an event as traumatic. When it comes to being exposed to potentially traumatizing events, young adults are not exempt and in some instances, such as being exposed to crime, young adults are at greater risk than older populations (Brown, Esbensen & Geis, 1998). The study by Jacobs (2003) focused on violent crime experienced by a sample

of first year university students and it was found that 35% of the sample reported direct exposure to violent crime and 62% indirect exposure to violent crime. Furthermore, 19% of the sample reported high levels of posttraumatic stress symptoms. As such a target sample population consisting of young adults is ideal in order to explore potential protective processes and mechanisms in such a potentially vulnerable sample. Taking this into account, as well as financial and time constraints where a random sample was not viable, convenience sampling was used to identify the target population of tertiary education students. Specifically, students at one particular university, namely the University of the Witwatersrand, were approached for this purpose. Students from the Faculty of Humanities and Commerce, Law and Management, were approached. Only students over the age of eighteen were invited to participate, as it is in early adulthood that an individual's Sense of Coherence becomes relatively stable (Antonovsky, 1987).

3.2 Participants

The final sample consisted of 84 participants, of which four participant responses were excluded from the sample due to incomplete responses. In addition, one further participant was omitted due to having reported no traumatic event exposure on the Traumatic Stress Schedule (TSS) (N=79). As trauma was a participation criterion, it is not possible to extrapolate the percentage of participants who have experienced a traumatic event. The participant's ages ranged from 18 to 26 years old, with a mean age of 20.5 years. Gender was specified on the biographical questionnaire with responses indicating more female participants than males. Females consisted of 81% of the final sample with 19% of the sample consisting of males. The biographical questionnaire, the Sense of Coherence Scale (Antonovsky, 1987), the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996), the Impact of Event Scale - Revised (Weiss & Marmar, 1996), and the Traumatic Stress Schedule (Norris, 1990) are all English language questionnaires. However, as all participants are students at an English medium tertiary institution, it was determined that the participants were sufficiently competent to complete the questionnaires in English.

3.3 Procedure

3.3.1 Permission and Access

The necessary ethics clearance from the Humanities Research Ethics Committee (Non-Medical) was obtained in regards to conducting this study(Appendix H). The relevant faculties as well as heads of school were approached via an email letter requesting permission to collect data. Once permission was granted, lecturers were approached with the aim of gaining access to students. First year, second year, third year and honours level students were approached and invited to participate in the study.

3.3.2 Administration

The researcher presented a five-minute information session before the break of scheduled double-lectures. In this session, students were informed as to the nature of the study and of other issues such as consent, the voluntary nature of participation, the risks and benefits of participating, confidentiality and anonymity. All this information was contained in the participant information sheets that were distributed to the students (Appendix B). In order to maintain confidentiality and anonymity, participants were asked to refrain from recording any identifying information such as name, surname, student number or identity number on the questionnaires. Moreover, a box was provided in the venue so that the participants could return the questionnaires anonymously once completed. The researcher was available to collect the box at the end of the lecture. Whilst all ethical considerations had been taken to reduce risk of distress due to the participation, there still remained the risk, albeit minimal, of distress as a function of the nature of the questions in some of the questionnaires. As such the researcher was available at the data collection venues in order to assist in any way. In addition, participants were provided with contact details for free counselling services on a tear-off participant information letter (Appendix B). Participants were also provided with the contact

details of the researcher in the event that they are interested in the outcome of the results of the study. If students consented to participating they were handed a set of self-report questionnaires (Appendices C to G) that they were requested to complete during the break of the double-lecture, and which took approximately 15 minutes. If the participants had not completed filling in the questionnaires by the end of the break they were able to do so at the end of the lecture. The participants then placed the questionnaires in the drop-off box at the venue or at the Department of Psychology's office, which were then removed by the researcher.

3.4 Measures

Four measures were utilised, namely the Sense of Coherence Scale (Antonovsky, 1987) (Appendix G), the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996) (Appendix F), the Impact of Event Scale - Revised (Weiss & Marmar, 1996) (Appendix E), and the Traumatic Stress Schedule (Norris, 1990) (Appendix D). Most of the foregoing measures have been used in the South African context and have been shown to be reliable and valid (Hutchinson, 2005; Waters & van Wijk, 2008). The variables have been identified as follows. The independent variables, Sense of Coherence and Meaningfulness, are measured by the Sense of Coherence Scale (Antonovsky, 1987). The independent variable Posttraumatic Stress Symptoms is measured by the Impact of Events Scale – Revised (Weiss & Marmar, 1996). And the dependent variables are the five domains of Posttraumatic Growth, as is measured by the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996). Furthermore the following variables were accounted for through various measures; the nature of the traumatic event, which was measured by the Traumatic Stress Schedule (Norris, 1990), as well as gender, age and language which were identified through the demographic questionnaire (Appendix C). In addition, the study has taken into account the length of time from which the trauma occurred. The reasons for this are twofold. Firstly, whilst Sense of Coherence is stable, an individual who experiences a traumatic event will in all likelihood experience the world as incoherent, and as such the global disposition of Sense of Coherence will temporarily be in a state of flux (Antonovsky, 1987). Thus, individuals who have experienced trauma within the last

two to three months are likely to have an unstable Sense of Coherence. Secondly, Tedeschi (1999) referred to how individuals need some time in order to perceive Posttraumatic Growth. It is suggested that Posttraumatic Growth is most stable between a few weeks to a year or two after the trauma. Time since event is controlled for in the questionnaires as it is requested in the Traumatic Stress Schedule (Norris, 1990), the Impact of Events Scale-Revised (Weiss & Marmar, 1996), and the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996).

3.4.1 Sense of Coherence Scale (SOC)

The Sense of Coherence Scale (Antonovsky, 1987) is a 29-item self-report scale, which measures the extent to which an individual has developed a Sense of Coherence, as indicated by the total score.

The scale is comprised ofthree subscales, namely the *Comprehensibility, Manageability* and *Meaningfulness*subscales. The *Comprehensibility* subscale is a measure of the extent to which an individual views life events as ordered, understandable and predictable (Antonovsky, 1987). There are 11 items on this subscale, namely items 1, 3, 5, 10, 12, 15, 17, 19, 21, 24 and 26. The subscale *Manageability* measures the degree of confidence an individual has that he or she had the necessary resources available to meet the demands made by life events (Antonovsky, 1987). There are 10 items on this subscale, namely 2, 6, 9, 13, 18, 20, 23, 25, 27, and 29. The *Meaningfulness* subscale measures the extent to which an individual perceives that his or her life, and the demands or challenges the individual is faced with, have meaning and as such are worthy enough to be emotionally, cognitively and physically invested in them (Antonovsky, 1987). There are 8 items on this subscale, namely 4, 7, 8, 11, 14, 16, 22 and 28. The responses to the SOC items are on a 7-point Likert scale. Thirteen of the items, namely items 1, 4, 5, 6, 7, 11, 13, 14, 16, 20, 23, 25 and 27 are formulated negatively and as such are to be reversed scored. For the purpose of this research project, the individual subscales will be considered separate independent variables, as will the overall measure of Sense of

Coherence. Van Wijk (2008) summarized various studies indicating mean SOC scores for South African samples, with mean scores ranging from 126.68 to 161.54. A study with university psychology students of mixed gender and culture by Mlonzi and Strumpfer (1998) indicated a mean SOC score of 131.91. International data (Antonovsky, 1998) with U.S. undergraduate students and undergraduates majoring in psychology indicated mean SOC scores that range between 132.40 and 139.71.

The Sense of Coherence Scale has sound psychometric properties with Antonovsky (1987) finding consistently high levels of Cronbach's alpha, with ranges from 0.84 to 0.93, indicating good internal consistency and reliability. Van Wijk (2008) cites several South African studies that also report high internal consistency and reliability with Cronbach alpha's ranging from 0.74 to 0.92.

3.4.2 Posttraumatic Growth Inventory (PTGI)

The Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996) is a 21-item scale that assesses the extent of self-reported positive outcomes as a result of the experience of a traumatic event.

Posttraumatic Growth is reflected in five areas of life as indicated by the following subscales of the PTGI namely, New Possibilities, Relating to Others, Personal Strength, Spiritual Change, and Appreciation of Life. The subscale New Possibilities is comprised of 5 items, namely 3, 7, 11, 14, and 17. The subscale Relating to Others is comprised of 7 items, namely 6, 8, 9, 15, 16, 20, and 21. The subscale Personal Strength comprises 4 items, namely 4, 10, 12 and 19. The subscale Appreciation of Life is comprised of 3 items, namely 1, 2 and 13. The subscale Spiritual Change comprises 2 items, namely 5 and 18. The items of the PTGI are on a 6-point Likert scale ranging from *I did not experience this change as a result of my crisis* to *I experienced this change to a very great degree as a result of my crisis*. The total PTGI score is obtained by adding all responses, and subscale scores by adding responses

to items comprising the subscale. The total PTGI score has a potential range of 0 to 126, with higher total scores indicating increasing levels of growth.

As noted by Tedeschi and Calhoun (1995) the PTGI has sound psychometric properties with a good internal consistency of $\propto = 0.90$, and for the subscales ranged from 0.67 to 0.85. Whilst the total PTGI score could be used, the multidimensional nature implies that PTGI is best explore within each subscale or dimension. The multidimensionality of PTGI has been supported by various studies (Morris, Shakespeare-Finch, Rieck & Newbery ,2005; Taku, Cann, Calhoun, & Tedeschi, 2008). Powell, Rosner, Butallo, Tedeschi and Calhoun (2003) summarized findings from various research studies with South African studies showing mean PTGI scores of 40.3 to 62.5, and international studies with mean PTGI scores ranging from 67.77 to 83.16.

3.4.3 Impact of Event Scale – Revised (IES-R)

The Impact of Event Scale - Revised (Weiss & Marmar, 1996) is a 22-item self-report measure that assesses subjective distress as a result of a traumatic stressor.

The IES-R provides an overall score as well as scores on each of its subscales, namely Avoidance, Intrusion and Hyperarousal. Participants are asked to indicate how distressing each difficulty has been for them in regards to a stressful life event. The participants are asked to do this by rating each item on a 5-point Likert scale that ranges from *Not at all* to *Extremely*. The Avoidance subscale score is the mean of 8 items, namely items 5, 7, 8, 11, 12, 13, 17 and 22. The Intrusions subscale score is the mean of 7 items, namely items 1, 2, 3, 6, 9, 16 and 20. The Hyperarousal subscale score is the mean of 7 items, namely items 4, 10, 14, 15, 18, 19 and 21. The overall score on the Impact of Events - Revised score is the sum of the above three clinical subscales.

As noted by Weiss and Marmar (1997), the IES-R has sound psychometric properties, showing high internal consistency with coefficient alphas ranging from .87 to .92 for Intrusion, .84 to .85 for Avoidance, and .79 to .90 for Hyperarousal. A South African study by Peltzer (2000) has also shown good internal consistency and reliability with coefficient alphas of 0.95 for the total scale, 0.91 for the Hyperarousal subscale, 0.83 for the Intrusion subscale, and 0.83 for the Avoidance subscale.

3.4.4 Traumatic Stress Schedule (TSS)

The Traumatic Stress Schedule (Norris, 1990) is a 10-item scale that measures essential information with regards to the nature of a traumatic event.

The TSS assesses for the occurrence or non-occurrence of events such as combat, robbery, hijacking, rape, motor vehicle accidents, and natural disasters, as indicated by a *yes* or *no* response. In addition, time lapse since the traumatic event is assessed with the response continuum ranging from *0-3 months ago* to *more than 24 months ago*.

In selecting items for the scale, the author (Norris, 1990) utilized criterion A as stipulated by the DSM-III R in the diagnosis of PTSD. The event portion of the scale reports a test-retest correlation of .88 between English and Spanish versions, and the symptom portion exhibits a modest reliability (alpha=.76). However, this scale is not recommended as a measure for PTSD (Hamblen & Norris, 2004).

4 RESULTS

The hypotheses established in the foregoing chapter have been investigated through conducting various statistical analyses. This chapter will be providing descriptive statistics for the dependent variable, Posttraumatic Growth (PTG) and its domains, as measured by the Posttraumatic Growth Inventory (PTGI), as well as the independent variable Sense of Coherence as measured by the Sense of Coherence Scale (SOCS). In addition, descriptive statistics of other key variables such as age, gender, language, and number of traumas experienced (TRAUMA) as measured by the Traumatic Stress Schedule (Norris, 1990), as well as levels of subjective distress as measured by the Impact of Event Scale – Revised (IES-R) will be discussed. Pearson's correlation analyses were undertaken in order to establish the significance of the relationship between Sense of Coherence (SOC), Posttraumatic Growth (PTG), as well that of the domains of SOC and PTG, age, the number of traumas, as well as the impact of events. Lastly, the analysis of variance, and multivariate analysis results will be discussed.

4.1 Preliminary Analyses

4.1.1 Sample

The original sample consisted of 84 participants of which four of the participants were excluded due to incomplete responses. One further participant was omitted from the study on the basis of having reported no exposure to a traumatic event. As such the final sample comprised of 79 participants (N=79).

The sample (N= 79) was comprised of 15 males (18.99%) and 64 females (81.01%). The mean age of male participants was 20.93 (SD=1.62), with a range of 19 to 24 years, and that of female participants was 20.45 (SD=1.65), with a range of 18 to 26

years.

With regards to language, 68.35 % of the sample reported English as their primary language, with the rest of the sample spread over 11 other languages, ranging in percentage from 1.27% (Ndebele, Tsonga and other) to 6.33% (Zulu).

4.1.2 Descriptive Statistics

The means and standard deviations for overall Posttraumatic Growth (PTG), the five domains of PTG, overall Sense of Coherence (SOC), three domains of SOC, Age, posttraumatic stress symptoms (IES-R), and the total number of traumas experienced (TRAUMA) are reported in Table 1 below.

Table 1.*Means and Standard Deviations*

Variable	n	Mean	Std Dev	Minimum	Maximum
PTG	79	59.93	23.49	4	102
– Relating to others	79	18.94	8.97	0	35
– New possibilities	79	12.81	7.10	0	25
– Spiritual change	79	5.31	3.92	0	10
– Appreciation of life	79	10.19	3.30	1	15
– Personal strength	79	12.65	4.84	0	20
SOC	79	126.86	19.28	80	174
- Meaningfulness	79	41.34	7.20	17	55
- Manageability	79	45.48	8.71	26	64
- Comprehensibility	79	40.03	8.02	22	63
Age	79	20.54	1.64	18	26
IES-R	79	46.63	17.33	8	82
TRAUMA	79	2.43	1.22	1	6

The mean overall Posttraumatic Growth reported by participants was 59.93 (SD=23.49), which falls in the moderate range of scores between 41 and 79

(Tedeschi & Calhoun, 1996). The means of the domains of Posttraumatic Growth ranged from 5.31 (SD=3.92) on the Spiritual change domain to 18.94 (SD=8.97) on the Relating to Others domain. The mean for the time variable was 3.52 (SD=1.87). In addition, the female sample reported marginally higher overall PTG scores (M=60.25, SD=22.87) than the male sample with a mean overall PTG score of 58.53 (SD=26.80).

The mean overall Sense of Coherence reported by participants was 126.86 (SD=19.28), with the means of the three subscales being 40.03 (SD=8.02) on the Comprehensibility subscale, 45.48 (SD=8.71) on the Manageability subscale, and 41.34 (SD=7.20) on the Meaningfulness subscale. The male sample reported relatively higher mean SOC scores (M=131.73, SD=20.30) than the female sample (M=125.72, SD=19.02).

The mean subjective distress (posttraumatic stress symptoms) as measured by the IES-R was 46.63 (*SD* = 17.33). The maximum possible score on the IES-R was 82, with scores of 33 and above suggesting high levels of posttraumatic stress symptoms (Creamer, Bell & Failla, 2003). In addition, the female participants reported marginally higher IES-R scores (M=47.83, SD=17.17) than the male participants (M=41.53, SD=17.70). Furthermore, participants reported an average of 2.43 (SD=1.22) traumas in the course of their lifetime.

4.1.3 Correlations

Correlations between Posttraumatic Growth (PTG), the five domains of PTG, Sense of Coherence (SOC), the three domains of SOC, Age, posttraumatic stress symptoms (IES-R) and the number of traumas experienced (TRAUMA) was explored through the use of Pearson's Product-Moment Correlation Coefficient (see Table 2.) and arediscussedbelow.

Table 2. Correlation Matrix: Posttraumatic Growth (PTG), 5 domains of PTG, Sense of Coherence (SOC), 3 domains of SOC, Age, IES-R, and TRAUMA

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII
I Posttraumatic Growth	1.00	-	-	-	-	-	-	-	-	-	-	-	-
II Relating to others	**0.87	1.00	-	-	-	-	-	-	-	-	-	-	-
III New Possibilities	**0.90	**0.67	1.00	-	-	-	-	-	-	-	-	-	-
IV Age	**-0.45	**-0.38	**-0.37	1.00	-	-	-	-	-	-	-	-	-
V Spiritual change	**0.80	**0.61	**0.67	**-0.40	1.00	-	-	-	-	-	-	-	-
VI Appreciation of life	**0.84	**0.69	**0.78	**-0.40	**0.60	1.00	-	-	-	-	-	-	-
VII Personal Strength	**0.70	**0.39	**0.60	**-0.36	**0.56	**0.48	1.00	-	-	-	-	-	-
VIII SOC	-0.06	-0.07	-0.10	-0.08	0.04	-0.10	0.02	1.00	-	-	-	-	-
IX Meaningfulness	0.13	0.09	0.07	-0.12	0.12	0.08	0.19	**0.76	1.00	-	-	-	-
X Manageability	0.02	0.02	-0.05	-0.16	0.11	-0.02	0.05	**0.90	**0.60	1.00	-	-	-
XI Comprehensibility	*-0.28	*-0.28	*-0.24	0.08	-0.14	*-0.27	-0.18	**0.75	*0.26	**0.53	1.00	-	-
XII IES	**0.37	*0.28	**0.35	-0.19	**0.36	**0.32	*0.23	**-0.35	-0.12	*-0.24	**-0.47	1.00	-
XIII Trauma	0.13	0.12	0.12	0.00	0.17	0.09	0.03	*-0.26	-0.21	-0.20	-0.22	**0.42	1.00

* Significant at the 0.05 level
** Significant at the 0.01 level

Variable I is the overall Posttraumatic Growth as measured by the Posttraumatic Growth Inventory (PTGI)
Variables II, III, V, VI and VII are the 5 domains of Posttraumatic Growth as measured by the PTGI
Variable VIII is the overall Sense of Coherence as measured by the Sense of Coherence Scale (SOCS)
Variables IX, X and XI are the three domains of Sense of Coherence as measured by the SOCS
Variable XII is posttraumatic stress symptoms as measured by the Impact of Event Scale – Revised (IES-R)
Variable XIII are the total number of trauma's experienced as measured by the Traumatic Stress Schedule (TSS)

4.1.3.1 Posttraumatic Growth (PTG) and the 5 domains of PTG

As would be expected, PTG was significantly correlated to its five domains, with coefficients ranging from r=0.70 (p<.0001) to r=0.90 (p<.0001). These results are consistent with findings regarding the multidimensionality of PTG and its intercorrelated domains (Morris, Shakespeare-Finch, Rieck & Newberry, 2005; Taku, Cann, Calhoun & Tedeschi, 2008). A significant negative correlation was found between Age and PTG (*r*=-0.45, p<.0001), as well as Age and the five domains of PTG, with correlations ranging from r=-0.36 (p=0.0012) to r=-0.40 (p=0.0002). This suggests that younger participants were more likely to report PTG in the current sample. In addition, a significant positive correlation was found between IES and PTG (r=0.37, p=0.0009), and the 5 domains of PTG with coefficients ranging between r=0.23 (p=0.0380) to r=0.36 (p=0.001) suggesting that subjective distress is related to perceptions of Posttraumatic Growth.

4.1.3.2 Sense of Coherence (SOC) and the three domains of SOC

A significant positive correlation was found between overall Sense of Coherence and it's three domains indicating that the SOC subscalesin this sample were internally consistent, with coefficients ranging from r=0.75 (p<0.0001) to r=0.90 (p<0.0001).

There were no significant correlations between overall SOC and Age, or between the three domains of SOC and Age, suggesting that there were no age differences in levels of SOC in this sample.

There was a significant negative correlation between overall SOC and posttraumatic stress symptoms (IES-R) with a coefficient of -0.35 (p=0.0019). Moreover, it was found that a significant negative correlation exists between posttraumatic stress symptoms (IES-R) and each of Manageability (r=-0.24, p=0.0356) and Comprehensibility (r=-0.47, p<0.0001).Thereis a further significant negative correlation between SOC and TRAUMA (r=-0.26, p=0.0194). Comprehensibility and

TRAUMA were also negatively correlated (r=-0.22, p=0.0512). This finding suggests that as participants were exposed to more traumatic events, their levels of overall SOC, particularly in the area of Comprehensibility, were decreased.

4.1.3.3 Posttraumatic stress symptoms (IES-R)

No significant correlation was indicated between posttraumatic stress symptoms IES-R) and Age. However, a significant positive correlation was found between posttraumatic stress symptoms (IES-R) and TRAUMA (r=0.42, p=0.0001), which suggests a positive relation between the number of traumas experienced and the levels of subjective distress reported by an individual.

4.2 Main Analyses

4.2.1 Parametric Assumptions

Before the main analyses were conducted, the following assumptions of MANOVA (Field, 2009) were tested. The results of which and are discussed below.

a) *Normality*

The assumption of normality was tested in all the key independent and dependent variables in this sample. Shapiro Wilk's 'W' statistic was used to test for this assumption (seeTable 3. below showing the Shapiro Wilk's *W* statistic for PTG, SOC and IES).

The scores of the PTGI suggested that PTG was not normal in this sample, W=0.94, p<.05 (p=0.0034). This result is in keeping that the sample was selected with all having experienced a traumatic event. As such, PTG would not be expected to be normal in a sample of trauma-exposed students.

The Shapiro Wilk's statistic for overall SOC was not significant, W=0.99, p>.05 (p=0.84), suggesting that SOC was normally distributed in this sample. Lastly, the IES-R was also normally distributed as suggested by a non significant Shapiro Wilk's W statistic, W=0.97, p>.05 (p=0.21).

Table 3. Shapiro Wilk's W statistic for PTG, SOC and IES-R

Variable	Shapiro Wilk's W	P. Value
PTG	0.94	0.0034
SOC	0.99	0.84
IES-R	0.97	0.21

b) *Linearity*

MANOVA assumes that there are linear relationships among the dependent variables and this was tested by plotting scatterplots, which suggested a linear relationship between PTG, SOC and IES-R.

c) *Homogeneity of Variance*

Homogeneity of variances tests the assumption that the dependent variables show equal levels of variance across the range of independent variables. The assumption was met as the residuals clustered around zero.

4.2.2 Relation between SOC and PTG

A Pearson's Product Moment Correlation analysis found that there is no significant relation between overall Sense of Coherence and overall Posttraumatic Growth (r=-0.06, p=0.60). Further examination of the inter-correlations between the sub-factors of PTG and those of the SOC (Table 2.) suggest that the Meaningfulness and Manageability domains of SOC are not significantly related to any of the PTG domains. In addition, no significant correlations were found between overall PTG and each of Meaningfulness and Manageability. Nor was there a significant correlation between overall SOC, each of Meaningfulness and Manageability, and each of the five domains of PTG. Whilst there was no significant correlation found between Comprehensibility and each of Spiritual Change and Personal Strength, a significant negative correlation was indicated between Comprehensibility and overall PTG (r=-0.28, p=0.0123). In addition, a significant negative correlation was found between Comprehensibility and Relating to Others (r=-0.28, p=0.0128), New Possibilities (r=-0.24, p=0.0301) and Appreciation of Life (r=-0.27, p=0.0144). This suggests that while Comprehensibility is negatively related to overall PTG, as well as to Relating to Others, New possibilities and Appreciation of life, it is not related to reports of growth in the areas of Spiritual Change and Personal Strength in the

present sample. This finding was contrary to that which was predicted in the research hypothesis.

4.2.3 Does Meaningfulness moderate relations between PTSS and PTG?

Hypotheses 2 and 3 were tested through a multivariate analysis of variance (MANOVA). More specifically, the statistical technique of Two Way MANOVA was used in order to determine the nature and extent of the relationship between the independent variable, Meaningfulnessand the dependent variables, which are the five domains of PTG (Hypothesis 2). In addition, Two Way MANOVA was used to determine whether Meaningfulness moderated the interaction between posttraumatic stress symptoms and the five domains of Posttraumatic Growth (Hypothesis 3). Wilk's lamda was chosen as a commonly used test statistic, which "represents the ratio of error variance to total variance for each variate" when conducting MANOVA (Field, 2009).

A Two Way MANOVA was appropriate in this instance as there were several dependent variables (the five domains of Posttraumatic Growth), in addition to which they all measure separate facets of a central theme (Posttraumatic Growth). Results from various studies support the idea that growth outcomes of a traumatic event are multidimensional, and that the PTGI measures these different areas of growth. [For example, the studies by Morris, Shakespeare-Finch, Rieck and Newbery (2005) and Taku, Cann, Calhoun, and Tedeschi (2008) both support the foregoing, that being the five domains of the PTGI (which are the dependent variables in this study) are correlated, yet remain separate facets.]

MANOVA was used to test the interaction of Meaningfulness and IES with the five domains of PTG. There was no overall multivariate effect for Meaningfulness on the five domains of PTG, Λ=0.96, $F_{(5,71)=}$0.58, p=0.72. Similarly, no multivariate overall effects were found for posttraumatic stress symptoms (PTSS) on PTG, (Λ=0.95, $F_{(5,71)=}$0.70, p=0.62), or for the overall multivariate effect of the interaction between

posttraumatic stress symptoms and Meaningfulness on PTG, Λ=0.93, $F_{(5,71)=}$0.92, p=0.4702.

Given the non-significant multivariate effects, univariate ANOVAs were analysed. A Two Way ANOVA testing the main effects and interaction of Meaningfulness and posttraumatic stress symptoms on New Possibilities found a significant overall effect $F_{(3,78)=}$4.68, p=0.0048. A non-significant Meaningfulness X posttraumatic stress symptoms interaction ($F_{(1,78)}$=2.10, p=0.15) suggests that posttraumatic stress symptoms do not interact with Meaningfulness to predict reports of Posttraumatic Growth in the openness to New Possibilities domain in this sample. A further look at the main effects suggest a significant main effect for posttraumatic stress symptoms on New Possibilities ($F_{(1,78)=}$11.48, p=0.0011), whilst the main effect for Meaningfulness on New Possibilities was not significant ($F_{(1,78)=}$0.45, p=0.51).

The Two Way ANOVA testing the main effects and interaction of Meaningfulness and posttraumatic stress symptoms on Spiritual Change found a significant overall effect $F_{(3,78)=}$4.80, p=0.0041. A non-significant Meaningfulness X posttraumatic stress symptoms interaction on Spiritual Change ($F_{(1,78)}$=0.19, p=0.66) suggests that posttraumatic stress symptoms do not interact with Meaningfulness to predict Spiritual Change in this sample. A further look at the main effects suggest a significant main effect for posttraumatic stress symptoms on Spiritual Change ($F_{(1,78)=}$12.88, p=0.0006), whilst the main effect for Meaningfulness on Spiritual Change was not significant ($F_{(1,78)=}$1.33, p=0.25).

The Two Way ANOVA testing the main effects and interaction of Meaningfulness and posttraumatic stress symptoms on Appreciation of Life found a significant overall effect $F_{(3,78)=}$4.31, p=0.0074. A non-significant Meaningfulness X posttraumatic stress symptoms interaction on Appreciation of Life ($F_{(1,78)}$=2.44, p=0.1222) suggests that posttraumatic stress symptoms are not moderated by Meaningfulness to predict Appreciation of Life in this sample. A further look at the main effects suggest a significant main effect for posttraumatic stress symptoms on Appreciation of Life

($F_{(1,78)=}$9.94, p=0.0023), whilst the main effect for Meaningfulness on Appreciation of Life was not significant ($F_{(1,78)=}$0.54, p=0.4652).

The Two Way ANOVA testing the main effects and interaction of Meaningfulness and posttraumatic stress symptoms on Personal Strength found a significant overall effect $F_{(3,78)=}$3.86, p=0.0126. A non-significant Meaningfulness X posttraumatic stress symptoms interaction on Personal Strength ($F_{(1,78)}$=2.65, p=0.1079) suggests that posttraumatic stress symptoms do not interact with Meaningfulness to predict Personal Strength in this sample. A further look at the main effects suggest a significant main effect for posttraumatic stress symptoms on Personal Strength ($F_{(1,78)=}$5.77, p=0.0188), whilst the main effect for Meaningfulness on Personal Strength was not significant ($F_{(1,78)=}$3.16, p=0.0794). This was very close to significant and perhaps a larger sample would have yielded sufficient power to detect this small effect size.

The Two Way ANOVA testing the main effects and interaction of Meaningfulness and posttraumatic stress symptoms on Relating to Others found a significant overall effect $F_{(3,78)=}$3.14, p=0.03. A non-significant Meaningfulness X posttraumatic stress symptoms interaction on Relating to Others ($F_{(1,78)}$=1.57, p=0.2142) suggests that posttraumatic stress symptoms do not interact with Meaningfulness to predict Relating to Others in this sample. A further look at the main effects suggest a significant main effect for posttraumatic stress symptoms on Relating to Others ($F_{(1,78)=}$7.21, p=0.0089), whilst the main effect for Meaningfulness on Relating to Others was not significant ($F_{(1,78)=}$0.65, p=0.4224).

Taken together, the above findings suggest that, contrary to what was expected, Meaningfulness did not moderate the relation between posttraumatic stress symptoms and PTG. In fact, the only predictor of PTG was posttraumatic stress symptoms.

4.3 Additional Analyses

Further analyses were carried out post-hoc to examine potential moderating effects of other variables that were not hypothesized *a* priori. Specifically, analyses sought to elucidate the potential moderating effects of time such as time since trauma (PTG Time), as well as the potential moderating effects of number of traumas (TRAUMA) on PTG.

The Two Way ANOVA testing the main effects and interaction of Meaningfulness and PTG Time on PTG found no significant overall effect $F_{(3,77)=}0.82$, p=0.4847. A non-significant Meaningfulness X PTG Time interaction on PTG ($F_{(1,77}$)=1.22, p=0.2727) suggests that PTG Time does not interact with Meaningfulness to predict PTG in this sample. A further look at the main effects suggest no significant main effect for PTG Time on PTG ($F_{(1,77)=}0.30$, p=0.5863), whilst the main effect for Meaningfulness on PTG was not significant ($F_{(1,77)=}0.95$, p=0.3323). Taken together, these findings suggest that time since trauma (PTGI time) does not interact with meaning making processes to predict PTG. In fact, PTGI time is not directly related to the development of PTG either.

The Two Way ANOVA testing the main effects and interaction of TRAUMA and PTG Time on PTG found a significant overall effect $F_{(10,77)=}2.81$, p=0.0058. A significant TRAUMA X PTG Time interaction on PTG ($F_{(4,77}$)=3.21, p=0.018) suggests that PTG Time does interact with TRAUMA to predict PTG in this sample (See Table 4.). As there is a significant interaction the main effects are not interpreted.

Table 4 . Two-Way ANOVA for PTGITime and TRAUMA on PTG

Variable	df	F value	Pr > F
PTGI Time	5	3.02	0.0161
TRAUMA	1	0.11	0.7394
TRAUMA X PTGI Time	4	3.21	0.0180

Post hoc tests with *Tukey's HSD* suggested that there were significant PTG differences between Time 1 (0-3 months) and Time 3 (6-12 months), as well as between Time 3 (6-12 months) and Time 6 (2 years+). In addition, when taking into account the number of traumas as well, there appears to be PTG differences that are associatedwith the number of traumas experienced over time (see Table 5).

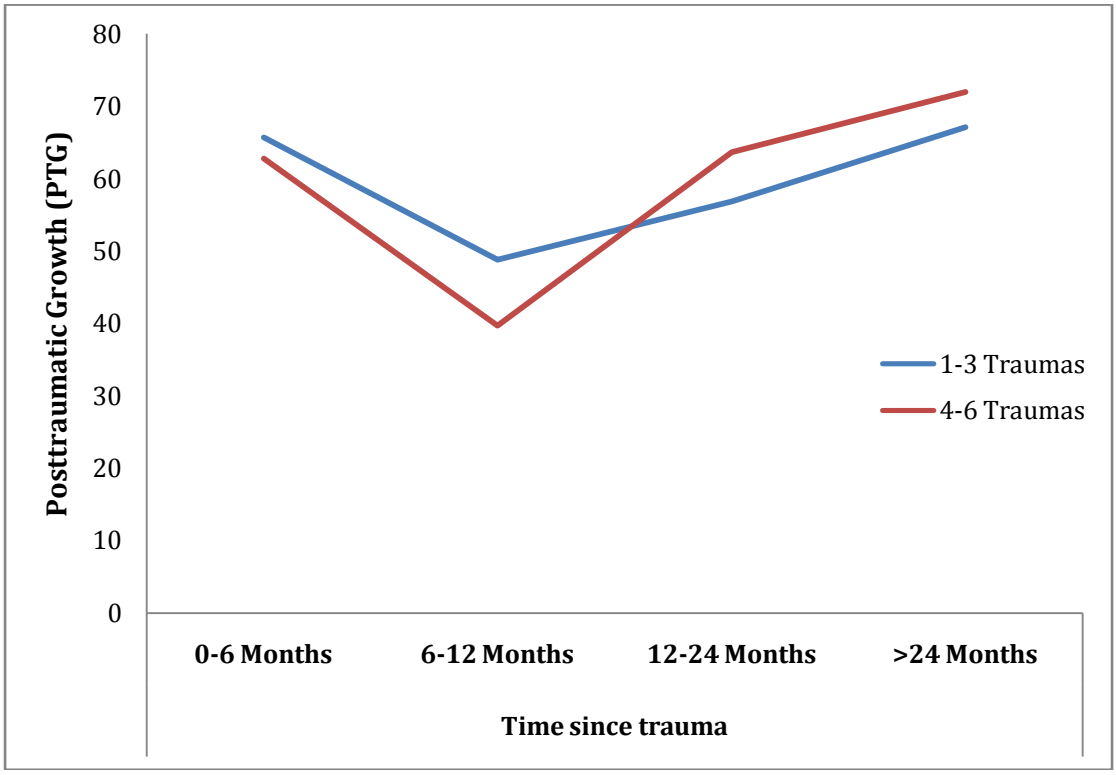
Table 5. PTG Time, PTG and Trauma means

PTG Time	n	PTG Mean	Mean # of traumas
1	16	68.50 (SD=23.90)	2.43 (SD=1.45)
2	9	55.88 (SD=32.54)	2.33 (SD=1.00)
3	21	47.47 (SD=21.57)	2.00 (SD=1.26)
4	1	29.00 (SD=.)	1.00 (SD=.)
5	12	60.87 (SD=19.47)	3.08 (SD=1.16)
6	19	67.63 (SD=16.16)	2.57 (SD=1.01)

In order to graph the relationship (Figure 1.), some of the time periods of the variable PTGITime were merged so as to facilitate this. Time 1 and 2 were merged to form the category '<6months'; Time 3 (6-12 months) remained the same; Time 4 and 5 were merged to form the '12-24 months' time period; and Time 6 remained as is and was renamed '>24 months'. Furthermore, for graphing purposes 1-3 traumas were grouped together, as was 4-6 traumas. This was largely due to the small sample size, where in some cells there were no participants. Figure 1 (see below) suggests that PTG is higher, at least for the first 12 months, for individuals who have experienced one to three traumas. Thereafter it appears that PTG becomes stable

for those individuals. It also appears that those who experienced a trauma 6-12 months ago seem to report the lowest PTG. Lastly, it appears that after a year, those who have experienced the most number of traumas, seem to report the highest level of PTG. This suggests that perhaps PTG, whilst maybe beneficial for single traumas in the long run, may also serve some function for dealing with multiple traumas.

Figure 1. Interaction between number of traumas, and time since trauma



The nature of the relationship between Comprehensibility and PTG was further explored by testing whether Comprehensibility interacts with PTG Time to predict PTG. The TwoWay ANOVA testing the main effects and interaction of Comprehensibility and PTG Time on PTG found a significant overall effect $F_{(10,77)=}2.45$, p=0.0148. A non-significant Comprehensibility X PTG Time interaction on PTG ($F_{(4,77}$)=1.40, p=0.2422) suggests that PTG Time does not interact with Comprehensibility to predict PTG in this sample. A further look at the main effects suggest a significant main effect for PTG Time on PTG ($F_{(5,77)=}2.91$, p=0.0195), whilst the main effect for Comprehensibility on PTG was also significant ($F_{(1,77)=}4.33$, p=0.0413).

4.4 Summary of Findings

Findings suggest that the mean overall PTG scores fell in the moderate range. In addition to which, mean SOC scores were lower than those of international data (Antonovsky, 1987) and fell in the lower limits of mean scores from South African studies (Van Wijk, 2008). The mean subjective distress in this sample was 46.63, suggesting clinical levels of posttraumatic stress symptoms (Creamer, Bell & Failla, 2003).No relationship was found between SOC and PTG, nor with the five domains of PTG. In addition, no relationship was found between Meaningfulness and PTG, nor with the five domains of PTG. Moreover Meaningfulness does not moderate the relationship between posttraumatic stress symptoms and PTG.Findings did indicate a positive relationship between overall PTG and posttraumatic stress symptoms, suggesting that subjective distress is related to perceptions of growth. Furthermore posttraumatic stress symptoms are shown to be positively associated with TRAUMA, indicating that there is a tendency toward increased levels of subjective distress with repeat traumas. Whilst no relationship was found between overall SOC and PTG, a negative association was found for the SOC domain of Comprehensibility and overall PTG. Moreover, Comprehensibility was negatively associated with the three PTG domains of New Possibilities, Relating to Others and Appreciation of Life. A negative relationship was also found between Comprehensibility and posttraumatic stress

symptoms, as well as TRAUMA. From this it can be surmised that participants in this sample who are high in Comprehensibility, will be low in reported levels of subjective distress and growth. This suggests that Comprehensibility is a potential buffer against posttraumatic stress symptoms, and hence the development of PTSD. Furthermore, as individuals report low subjective distress they are less likely to seek growth opportunities, and as such less likely to report PTG.

Furthermore there was a significant negative association found between SOC and the two domains of Manageability and Comprehensibility, with posttraumatic stress symptoms, indicating that increased levels of subjective distress are associated with lower SOC, and lower Manageability and Comprehensibility. In addition to the foregoing, SOC is negatively correlated with TRAUMA, suggesting that repeat traumas decrease SOC. Taken together these findings suggest that posttraumatic stress symptoms and repeat traumas decrease SOC. These findings also indicate that repeat trauma and posttraumatic stress symptoms may reduce the resilience effects of Comprehensibility.

With regards to the variable Age, there was an indication of a significant negative correlation between Posttraumatic Growth and the five domains of PTG, and Age, indicating that the younger participants in this study are more likely to report growth. No relationship was found between Age and SOC.

Lastly, an association was found between PTGI Time, TRAUMA and PTG. PTG appeared highest in the first 12 months for participants who have experienced 1-3 traumas, which was then followed by a stabilizing of reported PTG in this group. However, after 12 months individuals who had experienced the most number of traumas, seemed to report the highest PTG.Future research regarding this relationship is probably best explored through a longitudinal design.

5 DISCUSSION

5.1 Discussion of Findings

The first aim of this study was to explore whether or not a relationship exists between Sense of Coherence and Posttraumatic Growth. A secondary aim was to explore the nature of this relationship by looking at the associations between the domains of Sense of Coherence and the five domains of Posttraumatic Growth, specifically focusing on Meaningfulness (as a domain of Sense of Coherence) and the five domains of Posttraumatic Growth. Tedeschi and Calhoun (1995) linked Antonovsky's (1987) Sense of Coherence constructs, Manageability, Meaningfulness and Comprehensibility, with the process of rumination, which leads to Posttraumatic Growth. However, whilst these assumptions have been made, there remains a paucity of literature exploring these links. This study sought to explore whether Meaningfulness potentially moderates the proposed relationship between posttraumatic stress symptoms and Posttraumatic Growth. This study's undertaking was to be situated within the South African context.

Powell et. al (2003) summarized the findings from various research, with South African studies showing mean PTGI scores of 40.3 to 62.5, and international studies mean PTGI scores that ranged from 67.77 to 83.16. The results from this study indicate a mean PTGI of 59.93, which is comparable to the upper limits of the range of means of other South African studies, yet below that of the international studies. The mean PTGI score can be considered a moderate score falling into the range of 58 to 70 (Tedeschi & Calhoun, 2007). Taking into consideration the possible effects of multiple traumas, of which the mean for this sample is 2.43, these findings are consistent with those of Powell et. al (2003) which found a low mean Posttraumatic Growth score in a sample of individuals exposed to extreme stress and multiple traumas, over an extended period of time, during the war in the former Yugoslavia. Samples in a South African context are potentially exposed to significant stressors

and even multiple traumas due to high crime rates, violence and road accidents (Jacobs, 2003; Roe-Berning, 2009), thus resulting in lowered Posttraumatic Growth scores.

The results also indicate a significant positive correlation between both, overall Posttraumatic Growth (PTG), and each of the five domains of PTG, and posttraumatic symptoms. These results are consistent with those of other studies where growth is associated with continuing distress or posttraumatic stress symptoms (Levine, Laufer, Hamama-Raz, Stein & Solomon, 2008; Roe-Berning, 2009; Tedeschi & Calhoun, 2004). Tedeschi, Calhoun and Cann (2007) maintain that distress and growth do co-exist, and that in fact Posttraumatic Growth arises from the struggle in the aftermath, and so posttraumatic stress symptoms are a necessary condition for Posttraumatic Growth.

Further results indicate a significant negative correlation between Posttraumatic Growth and age. When interpreting the foregoing we may take into consideration the following: firstly, the sample was relatively small (N=79), and secondly the age range was narrow (Minimum= 18 and maximum=26 years old). Dekel and Nuttman Schwartz (2009) results showed no contribution of age to prediction of Posttraumatic Growth, however it is indicated that previous findings are mixed. Powell et. al (2003) found a strong age effect, interpreting the results speculatively that the older individual who finds benefit in a trauma after a lifetime of stressors is unique and unusual, or that the older cohort is less likely to engage in growth seeking processes. It should be noted that both studies contrast to this research in that the sample age range spanned approximately 50 to 60 years, and both had relatively large samples of 134 to 136 participants. However, perhaps Posttraumatic Growth becomes incorporated in personality or becomes stable, enabling a person to cope better with age. Hence, Posttraumatic Growth could be expected in the population of young adults. Future research should explore this.

With regards to Sense of Coherence, (Mlonzi & Strümpfer, 1998; Van Wijk, 2008) indicated means that ranged from 126.68 to 161.54 in various South African studies,

whereas Antonovsky (1998) indicated mean scores that ranged between 132.40 and 139.71 in a U.S. student population. The mean for this study is 126.86, which falls in the lower limits of the range of means of other South African studies, and below that of Antonovsky's U.S. study. A study by Bernstein and Carmel (1991) found that stressors lowered Sense of Coherence scores in medical students over time. So it is possible to speculate that the traumas and perhaps university stressors experienced by the sample in the current study, may have impacted on the Sense of Coherence, resulting in lowered scores. A final, least likely possibility is that this sample has low Sense of Coherence scores. Future research should perhaps explore Sense of Coherence in a similar sample while comparing it to a non trauma-exposed control group with the ultimate aim of establishing the manner in which trauma effects Sense of Coherence.

A correlational analysis was run to determine whether a significant relationship exists between Sense of Coherence and Posttraumatic Growth in a sample of participants who had been exposed to some traumatic event(s). The analysis indicated that no significant relationship exists. This is in contrast to the findings of Forstmeier et. al (2009) and Znoj (2004). This study is not able to determine an individual's pre-trauma levels of Sense of Coherence, however whilst Sense of Coherence is stable, an individual who experiences a traumatic event will in all likelihood experience the world as incoherent, and as such the global disposition of Sense of Coherence will temporarily be in a state of flux (Antonovsky, 1987). Scores on the IES-R indicated that participants experienced some event as traumatic, with mean scores suggesting high levels of traumatic stress (Roe-Berning, 2009). In addition, there was a significant negative correlation between the impact of the traumatic events and scores on Sense of Coherence. There was a further significant negative correlation between the two Sense of Coherence domains of Manageability and Comprehensibility, and the impact of events (posttraumatic stress symptoms). Bernstein and Carmel (1991) found that as stressor scores increased, Sense of Coherence scores decreased. From the foregoing we can postulate that individuals who have experienced trauma or significant stressors within the last two to three months, and are experiencing high levels of posttraumatic stress symptoms will tend

to have an unstable Sense of Coherence, and in fact with increasing levels of subjective distress there will be decreasing scores on Sense of Coherence. In addition to the impact of events, participants in this study where also shown to have experienced an overall mean of 2.43 traumatic events. Whilst there are studies that have explored Sense of Coherence in the context of multiple trauma exposure due to war (Ebina & Yamakazi, 2008; Forstmeier et. al, 2009), the studies have been conducted some 7 to 60 years after the event has taken place. There appears to be a lack of literature concerning the effect of multiple traumas on Sense of Coherence in the first five years. Results from this study indicate a significant negative correlation between Sense of Coherence and the number of traumas experienced. This suggests that an increase in the number of traumas experienced may have the potential effect of decreasing levels of Sense of Coherence. Furthermore a significant positive correlation was found between posttraumatic stress symptoms and the number of traumas experienced. There appears to be a cumulative effect with multiple traumas, with an increase in trauma exposure being related to higher risk of distress (Williams et. al, 2007). This supports the relationship between number of traumas and posttraumatic symptoms, where an increase in number of traumas corresponds with an increase in posttraumatic symptoms. Lastly, Cann et. al (2010) state that with the present model of Posttraumatic Growth, which involves a re-evaluation of the individual's assumptive world, the extent of disruption to an individual's core beliefs and the re-evaluation in this regard, should be related to growth. However the Sense of Coherence score, which is a measure of an individual's global disposition at a particular point in time and is susceptible to disruption to the experience of a traumatic event, provides no indication as to the presence and or extent of the disruption to this disposition.

A Two Way MANOVA found no significant relationship between Meaningfulness and both overall Posttraumatic Growth, as well as on the five domains of Posttraumatic Growth. These findings are in contrast to that of the study by Forstmeier et. al (2009) whereby a positive linear correlation between Meaningfulness and Posttraumatic Growth was found. However, there are many factors that may impact on the results. Tedeschi and Calhoun (1995) suggested that finding meaning in the aftermath of a

traumatic experience involved two tasks, firstly finding meaning in the occurrence of the traumatic event and secondly, finding life to remain meaningful despite the traumatic event. Furthermore, Tedeschi and Calhoun (1995) maintain that the search for meaning in some event is part of the process that leads to benefit finding or growth. Zoellner and Maercker (2006) cite the 2002 study by Schorr and Roemer where individuals reporting posttraumatic stress symptoms and who were engaged in a search for meaning were more likely to report Posttraumatic Growth. Whereas reporting having made sense of a traumatic event or having found meaning, as opposed to searching for meaning, was unrelated to Posttraumatic Growth. The mean of Meaningfulness for the sample of this study was high , indicating a strong sense that life is coherent and makes sense emotionally, in addition to which challenges or events are worth engaging in (Antonovsky, 1987). In light of this and Schorr and Roemer's argument, we could speculate that finding life meaningful obviates the need to search for meaning, of which the search is part of the growth process, and so Meaningfulness is unrelated to Posttraumatic Growth. However, it is also possible that this strong sense of Meaningfulness is "inauthentic" and is in response to the cumulative effect of multiple traumas, whereby the individual has narrowed the scope of their boundaries and become intensely focused on areas of personal importance in response to the distress arising from the traumas (Antonovsky, 1987).

Further analyses revealed a significant negative correlation between Comprehensibility and Posttraumatic Growth, as well as between Comprehensibility and the three Posttraumatic Growth domains of Relating to Others, New Possibilities and Appreciation of Life. A Two Way ANOVA, whilst indicating no interaction between Comprehensibility and time since the trauma, found a significant effect of Comprehensibility on Posttraumatic Growth. As previously stated, Comprehensibility refers to the confidence an individual has that events in the future will be predictable and understandable. Tedeschi and Calhoun (1995) emphasize the extraordinary nature of a trauma, in which the event is unknown and unpredictable, with which the findings of this study are consistent. Moreover, the results also indicated an approach toward a negative correlation between Comprehensibility and

number of traumas experienced, which further confirms the foregoing whereby repeated traumatic experiences reinforce the notion that future events will be unpredictable and not make sense. Furthermore, a negative relationship was also found between Comprehensibility and posttraumatic stress symptoms. As previously stated, it can be surmised that individuals who are high in Comprehensibility, will be low in reported levels of subjective distress and growth, suggesting that Comprehensibility is a potential buffer against PTSS, and hence the development of PTSD. In addition to which, individuals reporting low subjective distress are less likely to seek growth opportunities, and as such less likely to report PTG.

Whilst there was no significant relationship found between Manageability and the five domains of Posttraumatic Growth, results show a significant negative correlation between Manageability and time since the trauma. This could possibly be related to number of traumas experienced and Posttraumatic Growth, so that in the immediate aftermath of a trauma the individual does not have the resources available to meet the demands of the event and so consequently we would expect to see drops in Manageability. As the individual begins to process the traumatic event, they are able to access resources and so the sense of being able to meet demands would be reinforced. However, this particular sample has experienced a mean of 2.43 traumas in their lifetime, and so we may see Manageability being negatively impacted over time as each new trauma is experienced. This is an area that should be explored further in future research.

A Two Way ANOVA showed a significant interaction between the number of traumas experienced and the time since the trauma occurred, as predictors of Posttraumatic Growth. This interaction perhaps suggests a curvilinear relation between time and Posttraumatic Growth. This seems to suggest that there is an increase in Posttraumatic Growth in the aftermath of the trauma(s) occurring in this sample, with a period of subsidence in Posttraumatic Growth in the intervening interval prior to additional traumatic event(s) occurring. Perhaps this suggests the South African population is unique in that people are more likely to experience multiple trauma, as opposed to single or once off traumas. Hence the curvilinear relation between

Posttraumatic Growth and time should be noted as potentially related to the experience of additional trauma, with PTG possibly serving a function in dealing with multiple traumas. This is an area for future research, which would possibly be best explored in a longitudinal design.

Tedeschi (1999) suggests that most individuals require, at a minimum, a few weeks proceeding a traumatic event in order to experience some Posttraumatic Growth. Moreover Tedeschi (1999) suggests that it may be necessary that the individual experiences some respite from the trauma in order for growth to occur. He offers the argument that rumination, a cognitive process, is key to the outcome of growth. However continuing levels of distress can disrupt this process and so impede growth. It is possible to speculate that despite numerous traumas and high levels of posttraumatic stress symptoms, the mean Posttraumatic Growth falls in the moderate range suggesting that growth may potentially be impeded by the cumulative effect of the traumas and high levels of posttraumatic symptoms. This is consistent with findings in the study by Levine et. al (2008) whereby results indicated a positive linear relationship between Posttraumatic Growth and posttraumatic symptoms, however the highest levels of Posttraumatic Growth were found where posttraumatic symptoms are at average levels. Future research should explore the optimal levels of PTSS where PTG occurs, as well as the mechanisms that either facilitate or hinder this process.

A Two- Way MANOVA exploring the whether or not Meaningfulness interacted with posttraumatic stress symptoms to predict the five domains of Posttraumatic Growth found no significant multivariate or univariate effects of both posttraumatic stress symptoms and Meaningfulness in predicting the five domains of Posttraumatic Growth. In addition, there was found to be no significant interaction between the two variables in predicting the five domains of Posttraumatic Growth. This suggests that firstly, there is no significant relationship between Meaningfulness and Posttraumatic Growth, and secondly that Meaningfulness does not act as a moderator between posttraumatic stress symptoms and the five domains of Posttraumatic Growth. This result is in contrast to the findings in the study by

Forstmeier et. al (2009) where they found a positive linear association between Meaningfulness and Posttraumatic Growth. However, in comparison to the study by Forstmeier et. al, the immediacy of the trauma experienced by the sample in the present study must be noted. Furthermore, there does not appear to be any literature as to whether Meaningfulness acts as a moderator between posttraumatic stress symptoms and the five domains of Posttraumatic Growth, though Kimhi, Eshel, Zysberg, Hantman and Enosh (2010) found that Sense of Coherence served as a partial *mediator* between level of exposure to a traumatic event and posttraumatic recovery. As the study by Kimhi et. al (2010) was not a measure of Posttraumatic Growth, Sense of Coherence as a potential mediator with Posttraumatic Growth as an outcome, is a possible area of future research.

5.2 Limitations

There are a few limitations to this study that should be considered. Firstly, the study made use of a convenience sample of university students. As such the sample was in the majority youthful, and of which all were engaged in tertiary education at the time of the study. In addition, all participants had been exposed to some traumatic event. Furthermore, Hutchinson (2007), suggests that late adolescence/early adulthood is a period in which the individual is transitioning between childhood and adulthood with major life decisions to be made, for example pursuing tertiary education and future employment opportunities. As such the sample in the current study are situated in a specific life phase (Hutchinson, 2007). From the foregoing it is possible to ascertain that the sample is not representative of the general population and is perhaps representative of a trauma-exposed university student population.

Moreover, while the sample size was adequate, a larger sample would have resulted in more statistical power. As such, the possibility of Type II errors in the present research cannot be excluded.

In addition, a further limitation of this study is the self-report nature of the measures, where retrospective recall of growth, SOC, and posttraumatic stress symptoms are subject to distortion. Moreover, the measures have not been validated for the South African population.

A further limitation was the variable nature of the traumatic events experienced by participants. Traumas varied in terms of nature and severity, with reports of PTG, SOC and PTSS being related to a subjective experience of perceived trauma.

5.3 Future Directions

A significant finding in this study was the relationship between Comprehensibility and PTG. Results suggest that Comprehensibility acts as a buffer for posttraumatic stress symptoms and possibly deters the development of PTSD. In this way Comprehensibility could be considered a resilience factor. Future research should explore ways in which Comprehensibility may be fostered in the aftermath of traumain order to ameliorate posttraumatic stress symptoms as a preventative measure against PTSD.

Multiple traumas were prevalent in the current study. Future directions for research should focus on firstly, the nature of multiple traumas, and secondly the extent and nature of the impact of multiple traumas on Sense of Coherence and Posttraumatic Growth. Further to this is the relationship between multiple traumas and PTSS, with future research investigating the potential of optimal levels of PTSS where growth occurs, and ascertaining the mechanisms, which hinder or facilitate this process.

A further area for future research is the relationship between Posttraumatic Growth and age, and more specifically young adults, potentially exploring late adolescence as a time marked by turbulence and as such lending itself toward growth seeking opportunities.

With regards to Sense of Coherence, a possible focus for future studies is the nature and extent of disruption of Sense of Coherence through the impact of trauma. This could be facilitated through the inclusion of an instrument that measures disruption of core beliefs or assumptive world, as well as including a non-trauma exposed control group in order to ascertain effects of trauma on SOC. A further focus could be exploring SOC as a mediator with the outcome of PTG. Furthermore, the SOC domain was associated with PTG time, and this is a further area of future research, whereby the effect of time since a trauma on Manageability is explored.

PTG Time was further associated with PTG itself, indicating a future area of study that explores time since the event and reporting of PTG. In addition, further exploration should be undertaken to explore the impact of additional traumas on this process.

6 CONCLUSION

In conclusion, this study sought to explore the relationship between Sense of Coherence and Posttraumatic Growth. The results of the study indicated no significant relationship. Moreover the relationship between the SOC domain of Meaningfulness and the five domains of Posttraumatic Growth was explored, to which no significant relationship was found. Furthermore, there was no evidence to support Meaningfulness moderating an interaction between posttraumatic stress symptoms and the five domains of Posttraumatic Growth.

However, results from this study have shown the South African population to be unique in that there were elevated mean number of traumas reported suggesting that by the age of 26, most people have experienced at least two traumatic events. The trajectory of the peaks in the mean number of traumas over time was associated with corresponding peaks in mean Posttraumatic Growth scores, which suggests that the number of traumas experienced may impact on Posttraumatic Growth experiences. Multiple traumas in the current study's sample were further associated with lower mean Posttraumatic Growth levels. The impact of multiple traumas was also associated with lowered mean Sense of Coherence score, which was consistent with the findings of significant negative correlations between Sense of Coherence, and both the number of traumas experienced and posttraumatic stress symptoms.

A significant negative relationship was indicated between Age and Posttraumatic Growth. This was attributed to the possibility of better coping with increased age, whichnegatively impacts on the motivation to engage in growth seeking processes.

Whilst age was not indicated as a factor with SOC, the life phase of students as well the stressors to which they are exposed to on a daily basis, potentially leaves university students vulnerable to challenges to SOC.

Finally, whilst no significant relationship was found between the SOC domain Meaningfulness and Posttraumatic Growth, the SOC domain of Comprehensibility was shown to have a significant negative relationship with overall Posttraumatic Growth, as well as three of the domains of Posttraumatic Growth, namely Relating to Others, New Possibilities, and Appreciation of Life. The association was attributed to the sense of Comprehensibility, a confidence that future events will be predictable and understandable, having been shaken through the experience of trauma, and this subsequently leads to engaging in growth seeking processes.

7 REFERENCES

The Automobile Association. *Crash! In the event of a road accident the AA has you covered.* Retrieved 29 September, 2010, fromhttp://www.aa.co.za/live/content.php?Item_ID=360andRevision=en/0andStart=0

Affleck, G., & Tennen, H. (1996). Construing benefits from adversity: Adaptational significance and dispositional underpinnings. *Journal of Personality*, 64, 899-922.

Almedom, A. M. (2005). Resilience, hardiness, Sense of Coherence, and Posttraumatic Growth: All paths leading to "light at the end of the tunnel"? *Journal of Loss and Trauma*, 10, 253-265.

American Psychiatric Association (2000). *Diagnostic and statistical manual of mental Disorders (*4th ed.). Arlington: APA.

American Psychiatric Association (2010). *Proposed draft revisions to DSM disorders criteria.* Retrieved 29 September, 2010, from http://www.dsm5.org/progressreports/pages/0904reportofthedsm-vanxiety,obsessivecompulsivespectrum,posttraumatic,anddissociativedisordersworkgroup

Antonovsky, A. (1987). *Unraveling the mystery of health: How people manage stress and stay well*. San Francisco: Jossey-Bass Publishers.

Antonovsky, A. (1979). Health, stress, and coping. San-Francisco: Jossey-Bass Publishers.

Bernstein, J. & Carmel, S. (1991). Gender differences over time in medical school stressors, anxiety, andSense of Coherence. *Sex Roles*, 24, 5/6.

Brown, S.E., Esbensen, F., Geis, G. (1998). *Criminology: Explaining crime and its context (3rd ed.).* Cincinnati: Anderson Publishing Co.

Cann, A., Calhoun, L.G., Tedeschi, R.G., Kilmer, R.P., Gil-Rivas, V., Vishnevsky, T., & Danhauer, S.C. (2010).The Core Beliefs Inventory: a brief measure of disruption in the assumptive world. *Anxiety, Stress& Coping*, 23, 1, 19-34.

Carey, P.D., Stein, D.J., Zungu-Dirwayi, N., & Seedat, S. (2003). Trauma and posttraumatic stress disorder in an urban Xhosa primary care population: Prevalence, comorbidity, and service use patterns. *Journal of Nervous and Mental Disease,* 191, 4, 230-236.

Centre for the Study of Violence and Reconciliation (2010). *Shadow of doubt still hangs over police crime statistics.*Retrieved 29 September, 2010 from http://www.csvr.org.za/index.php?option=com_content&task=view&id=1346&Itemid=21

Chopko, B. A. & Schwartz, R. C. (2009). The relation between mindfulness and Posttraumatic Growth:A study of first responders to trauma-inducing incidents. *Journal of Mental Health Counseling*, 31, 4, 363-376.

Cockcroft, K.(2009). Piaget's constructivist theory of cognitive development. In J. Watts, K. Cockcroft, and N. Duncan (Eds.). *Developmental Psychology. Second Edition (pp.324-343).* Cape Town: UCT Press.

Creamer, M., Bell, R., & Failla, S. (2003). Psychometric properties of the Impact of Event Scale—Revised. Behaviour Research and Therapy, 41, 1489–1496

Dekel, R. & Nuttman-Shwartz, O. (2009). Posttraumatic stress and growth: The contribution of cognitive appraisal and sense of belonging to the country. *Health & Social Work*, 34, 2, 87-96.

Durkin, J. & Joseph, S. (2009). Growth following adversity and it's relation with subjective well-being andPsychological well-being. *Journal of Loss and Trauma*, 14, 228-234.

Ebina, R. & Yamazaki, Y. (2008). Sense of Coherenceand coping in adolescents directly affected by the1991-5 war in Croatia. *International Union for Health Promotion and Education,* 15, 4, 5-10.

Epel, E. S., McEwen, B. S., & Ickovics, J. R., (1998). Embodying psychological thriving : Physical thriving in response to stress. *Journal of Social Issues*, 54, 301-322.

Feder, A., Southwick, S.M., Goetz, R.R., Wang, Y., Alonso, A., Smith, B.W., Buchholz, K.R., Waldeck, T., Ameli, R., Moore, J., Hain, R., Charney, D.S., & Vythilingam, M. (2008). Posttraumatic Growth in former Vietnam prisoners of war. *Psychiatry*, 71, 4, 359-370.

Field, A. (2009). *Discovering statistics using SPSS (3rd ed.).* London: SAGE Publications Ltd.

Forstmeier, S., Kuwert, P., Spitzer, C., Freyberger, H., & Maercker, A. (2009). Posttraumatic Growth, social acknowledgement as survivors, and Sense of Coherence in former German child soldiers of World War II. *The American Journal of Geriatric Psychiatry*, 17, 12, 1030-1039.

Frankl, V.E. (1985).*Man's search for meaning*. New York: Pocket Books.

Harms, L. & Talbot, T. (2007). The aftermath of road trauma: Survivor's perceptions of trauma and growth.*Health & Social Work*, 32, 2, 129-137.

Hutchinson, A. K., (2005). *Meaning in life and Sense of Coherence as predictors of coping among youngadults.*Unpublished Masters Thesis. University of Johannesburg.

Jacobs, F. P. (2003). *The extent and some of the vicissitudes of psychological traumatisation at the hands of violent crime in first-year university students.* UnpublishedMasters thesis*.* University of the Witwatersrand.

Joseph, S. (2004). Client-centred therapy, posttraumatic stress disorder and Posttraumatic Growth: Theoretical perspectives and practical implications. *Psychology and Psychotherapy: Theory, Research and Practice*, 77, 101-119.

Joseph, S., Linley, P.A., & Harris, G.J. (2005). Understanding positive change following trauma and adversity: Structural clarifications. *Journal of Loss and Trauma,* 10, 83-96.

Joseph, S.,& Linley, P.A. (2008). *Trauma, recovery, and growth: Positive psychologicalperspectives on posttraumatic stress*. New Jersey: John Wiley & Sons.

Kimhi, S., Eshel, Y., Zysberg, L., Hantman, S., & Enosh, G. (2010). Sense of Coherence and socio-demographic characteristics predicting posttraumatic stress symptoms and recovery in the aftermath of the Second Lebanon War. *Anxiety, Stress & Coping*, 23, 2, 139-152.

Linley, P.A. & Joseph, S. (2006). The positive and negative effects of disaster work: A Preliminary investigation. *Journal of Loss and Trauma*, 11, 229-245.

Levine, S.Z., Laufer, A., Hamama-Raz, Y., Stein, E. & Solomon, Z. (2008). Posttraumatic Growth inadolescence: Examining it's components and relationship with PTSD. *Journal of Traumatic Stress*, 21, 5, 492-496.

Mlonzi, E.N. & Strümpfer, D.J.W. (1998). Antonovsky's Sense of Coherence scale and 16PF second-orderFactors. *Social Behaviour and Personality*, 26, 39-50.

Morris, B.A., Shakespeare-Finch, J., Rieck, M., & Newbery, J. (2005). Multidimensional nature of Posttraumatic Growth in an Australian population. *Journal of Traumatic Stress*, 18, 5, 575-585.

Norris, F. (1990). Screening for traumatic stress: A scale for use in the general population. *Journal of Applied Social Psychology, 20, 1704-1718.*

Norris, F.H. & Hamblen, J.L. (2004). Standardized self-report measures of civilian trauma and PTSD. In J.P. Wilson, T.M. Keane & T. Martin (Eds.), *Assessing psychological trauma and PTSD* (pp. 63-102). New York: Guilford Press.

Peltzer,K. (2000). Trauma symptom correlates of criminal victimization in an urban community sample, South Africa. Journal of Psychology in Africa, 10, 49-62.

Peterson, K.C., Prout, M.F., & Schwarz, R.A. (1991). *Post-Traumatic Stress Disorder: A clinician's guide.*New York: Plenum Publishing Corporation.

Polatinsky, S. & Esprey, Y. (2000). An assessment of gender differences in the perception of benefitresulting from the loss of a child. *Journal of Traumatic Stress*, 13, 4,709-718.

Powell, S., Rosner, R., Butullo, W., Tedeschi, R.G. & Calhoun, L.G. (2003). Posttraumatic Growth after war: A study with former refugees and displaced people in Sarajevo. *Journal of Clinical Psychology*, 59, 1, 71-83.

Regehr, C. & Sussman, T. (2004). Intersections between grief and trauma: Toward an empirically basedmodel for treating traumatic grief. *Brief Treatment and Crisis Intervention*, 4, 3, 289-309.

Roe-Berning, S. (2009). *The complexity of Posttraumatic Growth: Evidence from a South African sample.*Unpublished Masters Thesis. University of the Witwatersrand.

Sadock, B.J. & Sadock, V.A. (2007). *Kaplan & Sadock's Synopsis of Psychiatry: Behavioural Sciences/ClinicalPsychiatry. Tenth Edition*. Philadelphia: Lippincott Williams & Wilkins.

Sagy, S., & Antonovsky, H. (2000). The development of the sense of coherence: A retrospective study of early life experiences in the family. *International Journal of Aging and Human Development*, 51, 155-166.

Seedat, S., Nyamai, C., Njenga, F., Vythilingum, B. & Stein, D.J. (2004). Trauma exposure and post-traumatic stress symptoms in urban African schools. *British Journal of Psychiatry,* 184, 2,69-175.

Shantall, H.M. (1989). Viktor Frankl's existential theory. In W.F. Meyer, C. Moore & H.G. Viljoen (Eds.), *Personality Theories: From Frankl to Freud (pp. 421-439).* Johannesburg: Lexicon Publishers.

Soanes, C. & Hawker, S. (Eds.). (2005). Compact Oxford English Dictionary (3rd ed.). Oxford: Oxford UniversityPress.

Solomon, Z. & Dekel, R. (2007). Posttraumatic Stress Disorder and Posttraumatic Growth among Israeli ex-POWs. *Journal of Traumatic Stress*, 20,3, 3030-312.

South African Police Service (2010). Crime in RSA National Total for April to March 2003/2004 to 2009/2010. Retrieved 29 September 2010 from, *http://www.saps.gov.za/statistics/reports/crimestats/2010/crime_stats.htm*

Taku, K., Cann, A., Calhoun, L. G., & Tedeschi, R. G. (2008). The Factor structure of the PosttraumaticGrowth Inventory: A comparison of five Models using confirmatory factor analysis. *Journal ofTraumatic Stress,* 21, 2, 158-164.

Taku, K., Cann, A., Tedeschi, R.G., & Calhoun, L.G. (2009). Intrusive versus deliberate rumination inPosttraumatic Growth across US and Japanese samples. *Anxiety, Stress & Coping*, 22,2 129-136.

Tedeschi, R.G. (1999). Violence transformed: Posttraumatic Growth in survivors and their societies. *Aggression and Violent Behaviour*, 4, 3, 319-341.

Tedeschi, R.G. & Calhoun, L.G., (1995). *Trauma & Transformation: Growing in the aftermath of suffering.* Thousand Oaks, California: Sage Publications.

Tedeschi, R.G. & Calhoun, L.G. (1996). The Posttraumatic Growth Inventory: Measuring the positive legacyof trauma. *Journal of Traumatic Stress*, 9, 3, 455-471.

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

Tedeschi, R.G. & Calhoun, L.G., (2004b). Posttraumatic Growth: A new perspective on psychotraumatology. *Psychiatric Times*, 21, 4.

Van der Hal-van Raalte, E.A.M., Van Ijzendoorn, M.H., & Bakermans-Kranenburg, M.J. (2008). Sense of Coherence moderates late effects of early childhood Holocaust exposure. *Journal of Clinical Psychology*, 64, 12, 1352-1367.

Van Wijk, C. (2008). The resilience of naval specialists: their Sense of Coherence and its relationshipwith measures of personality. *South African Journal of Psychology*, 38, 4, 737-751.

Waters, A. H., & Van Wijk, C. H. (2008). Positive Psychology made practical: A case study with navalspecialists. *Military Medicine,* 173, 488-492.

Weiss, D. S., & Marmar, C. R. (1996). The Impact of Event Scale—Revised. In J. P. Wilson, & T. M. Keane(Eds.), *Assessing psychological trauma and PTSD: A handbook for practitioners (pp. 399–411*). New York: Guilford Press.

Williams, S.L., Williams, D.R., Stein, D.J., Seedat, S., Jackson, P.B., & Moomal, H. (2007). Multiple traumatic events and psychological distress: The South Africa stress and health study. *Journal of Traumatic Stress,* 20, 5, 845-855.

Yalom, I. D.(1980). *Existential Psychotherapy*. United States of America: Basic Books.

Znoj, H. (2006). Bereavement and Posttraumatic Growth. In L.G. Calhoun & R.G. Tedeschi (Eds.), *Handbook of Posttraumatic Growth: Research and practice* (p. 176-196). New Jersey: Lawrence Erlbaum Associates Inc.

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

8 APPENDICES

8.1 Statistics for crime and violence in South Africa

8.1.1 **Appendix A:** *Crime in RSA National Total for April to March 2003/2004 to 2009/2010 (South African Police Service, September 2010)*

Crime Category	April 2003 to March 2004	April 2004 to March 2005	April 2005 to March 2006	April 2006 to March 2007	April 2007 to March 2008	April 2008 to March 2009	April 2009 to March 2010
CONTACT CRIME (CRIMES AGAINST THE PERSON)							
Murder	19,824	18,793	18,545	19,202	18,487	18,148	16,834
Total Sexual Crimes	66,079	69,117	68,076	65,201	63,818	70,514	68,332
Attempted murder	30,076	24,516	20,553	20,142	18,795	18,298	17,410
Assault with the intent to inflict grievous bodily harm	260,082	249,369	226,942	218,030	210,104	203,777	205,293
Common assault	280,942	267,857	227,553	210,057	198,049	192,838	197,284
Common robbery	95,551	90,825	74,723	71,156	64,985	59,232	57,537
Robbery with aggravating circumstances	133,658	126,789	119,726	126,558	118,312	121,392	113,755
CONTACT-RELATED CRIME							
Arson	8,806	8,184	7,622	7,858	7,396	6,846	6,701
Malicious damage to property	158,247	150,785	144,265	143,336	136,968	134,261	132,134
PROPERTY-RELATED CRIME							
Burglary at non-residential premises	64,629	56,048	54,367	58,438	62,995	70,009	71,773
Burglary at residential premises	299,290	276,164	262,535	249,665	237,853	246,616	256,577
Theft of motor vehicle and motorcycle	88,144	83,857	85,964	86,298	80,226	75,968	71,776
Theft out of or from motor vehicle	171,982	148,512	139,090	124,029	111,661	109,548	120,862
Stock-theft	41,273	32,675	28,742	28,828	28,778	30,043	32,380
CRIME HEAVILY DEPENDENT ON POLICE ACTION FOR DETECTION							
Illegal possession of firearms and ammunition	16,839	15,497	13,453	14,354	13,476	14,045	14,542
Drug-related crime	62,689	84,001	95,690	104,689	109,134	117,172	134,840
Driving under the influence of alcohol or drugs	24,886	29,927	33,116	38,261	48,405	56,165	62,939
OTHER SERIOUS CRIME							
All theft not mentioned elsewhere	606,460	536,281	432,629	415,163	395,296	394,124	367,442
Commercial crime	55,869	53,931	54,214	61,690	65,286	77,474	84,842
Shoplifting	71,888	66,525	64,491	65,489	66,992	80,773	88,634
SUBCATEGORIES FORMING PART OF AGGRAVATED ROBBERY ABOVE							
Carjacking	13,793	12,434	12,825	13,599	14,201	14,915	13,902
Truck hijacking	901	930	829	892	1,245	1,437	1,412
Robbery at residential premises	9,351	9,391	10,173	12,761	14,481	18,438	18,786
Robbery at non-residential premises	3,677	3,320	4,387	6,689	9,862	13,920	14,534
OTHER CRIME CATEGORIES							
Culpable homicide	11,096	11,995	12,415	12,871	13,184	12,571	12,272
Public violence	979	974	1,044	1,023	895	1,500	1,323
Crimen injuria	59,908	55,929	44,512	36,747	33,064	30,355	32,356
Neglect and ill-treatment of children	6,504	5,568	4,828	4,258	4,106	4,034	4,014
Kidnapping	3,004	2,618	2,320	2,345	2,323	2,535	2,889

8.2 Request for participants

8.2.1 Appendix B - Participants information letter



UNIVERSITY
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School of Human and Community Development
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Hi,

Our names are Samantha Walsh and Sannah Moeti. We are both students in the MA Clinical Psychology programme at the University of the Witwatersrand. We are currently working on research in partial fulfilment for our degree and we would like to invite you to participate in our research projects.

Our research projects focus on trauma, and on how we respond to and deal with the aftermath of trauma. We are specifically trying to identify factors and mechanisms that come into play in response to the struggle with a trauma. The aim is to contribute not only to literature on the subject, but also to generating new ideas around interventions in coping with trauma.

If you choose to participate in this project you will be asked to complete a series of questionnaires. The questionnaires relate to how we make sense of our world, and how we respond to the demands it makes on us, with a focus on trauma. These questionnaires are not tests, in other words there is no pass or fail, and will take approximately 20 minutes to complete. If you choose to complete the questionnaires please answer as carefully and honestly as possible.

It must be stressed that your participation in the research process is voluntary, and you may withdraw at any time. Participation will have a potential for minimal risk of distress, and no benefits to your self.

While you will be asked questions of your personal circumstances you will not be asked for any identifying information such as your name or student number. As such you will remain anonymous. With regards to your responses, all information will be treated in a confidential manner, and will not be made public in any way that could reveal your identity to an outside party. Results will be used for research purposes and may be reported in scientific journals, but not in any way that will reveal any specifics of any individual. By filling in the following questionnaires you will be giving your consent to participate in this study.

This research will be asking you to think of a difficult experience, if you are feeling distressed in any way please contact one of the following organisations who offer free counselling services:

Emthonjeni Community Psychology Clinic	Tel: 011 717 4513
CSVR Trauma Clinic	Tel: 011 403 5102
Lifeline	Tel: 011 728 1347

Finally, for anyone who is interested in the outcome of the research project, you will be given a one-page summary of the research results on request. You may contact the researchers through the School of Human and Community Development, Tel: (011) 717-4503 or by email.

We thank you for your time!

Kind Regards

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8.3 Measures

8.3.1 Appendix C - Biographical Questionnaire

Please mark the option that applies to you, where appropriate.

1. Age: [ ]

2. Gender:

Male	Female

3. Language:

English	Afrikaans	Ndebele	Xhosa	Zulu
Sepedi	Sesotho	Tswana	Swati	Venda
Tsonga	Shona	Other		

If other, please specify: _____

8.3.2 Appendix D - Questionnaire 1 : Traumatic Stress Schedule

Please read the statements below and answer the questions by choosing the answer of your choice. Please place a cross (x) over the chosen answer. Write in your answer for question 10.

1	Did anyone ever take or attempt to take something from you by force or threat of force, such as in a robbery, mugging, smash and grab or holdup?	No	Yes	0-3 months ago	3-6 months ago	6-12 months ago	12-18 months ago	18-24 months ago	more than 24 months ago
2	Did anyone ever beat you up or attack you?	No	Yes	0-3 months ago	3-6 months ago	6-12 months ago	12-18 months ago	18-24 months ago	more than 24 months ago
3	Did anyone ever make you have sex by using force or threatening to harm you? This includes any type of unwanted sexual activity.	No	Yes	0-3 months ago	3-6 months ago	6-12 months ago	12-18 months ago	18-24 months ago	more than 24 months ago
4	Did a very close friend or a close family member ever die because of an accident, homicide, or suicide?	No	Yes	0-3 months ago	3-6 months ago	6-12 months ago	12-18 months ago	18-24 months ago	more than 24 months ago
5	Have you ever been hijacked or someone very close to you been hijacked?	No	Yes	0-3 months ago	3-6 months ago	6-12 months ago	12-18 months ago	18-24 months ago	more than 24 months ago
6	Were you ever in a motor vehicle accident serious enough to cause injury to one or more passengers?	No	Yes	0-3 months ago	3-6 months ago	6-12 months ago	12-18 months ago	18-24 months ago	more than 24 months ago
7	Did you ever serve in combat?	No	Yes	0-3 months ago	3-6 months ago	6-12 months ago	12-18 months ago	18-24 months ago	more than 24 months ago
8	Did you ever suffer injury or extensive property damage because of fire?	No	Yes	0-3 months ago	3-6 months ago	6-12 months ago	12-18 months ago	18-24 months ago	more than 24 months ago
9	Did you ever suffer injury or property damage because of severe weather or either a natural or manmade disaster?	No	Yes	0-3 months ago	3-6 months ago	6-12 months ago	12-18 months ago	18-24 months ago	more than 24 months ago
10	Did you experience any other events not mentioned above? If so, please specify below.	No	Yes	0-3 months ago	3-6 months ago	6-12 months ago	12-18 months ago	18-24 months ago	more than 24 months ago

Specify other, _____
_____
_____
_____

8.3.3 Appendix E - Questionnaire 2 : Impact of Event Scale – Revised

Instructions: The following is a list of difficulties people sometimes have after stressful life events. Please read each item, and then indicate how distressing each difficulty has been for you with respect to **the most recent stressful life event**. Please try to also remember how you felt in the weeks after the event. Please indicate which event you were thinking of and how long ago this event took place.

Stressful/ traumatic event:_____

How long ago: _____

How much were you distressed or bothered by these difficulties?

		Not at all	A little bit	Moderately	Quite a bit	Extremely
1.	Any reminder brought back feelings about it.	0	1	2	3	4
2.	I had trouble staying asleep.	0	1	2	3	4
3.	Other things kept making me think about it.	0	1	2	3	4
4.	I felt irritable and angry.	0	1	2	3	4
5.	I avoided letting myself get upset when I thought about it or was reminded of it.	0	1	2	3	4
6.	I thought about it when I didn't mean to.	0	1	2	3	4
7.	I felt as if it hadn't happened or wasn't real.	0	1	2	3	4
8.	I stayed away from reminders of it.	0	1	2	3	4
9.	Pictures about it popped into my mind.	0	1	2	3	4
10.	I was jumpy and easily startled.	0	1	2	3	4
11.	I tried not to think about it.	0	1	2	3	4
12.	I was aware that I still had a lot of feelings about it, but I didn't deal with them.	0	1	2	3	4
13.	My feelings about it were kind of numb.	0	1	2	3	4
14.	I found myself acting or feeling as if I was back at that time.	0	1	2	3	4
15.	I had trouble falling asleep.	0	1	2	3	4
16.	I had strong waves of feeling about it.	0	1	2	3	4
17.	I tried to remove it from my memory.	0	1	2	3	4
18.	I had trouble concentrating.	0	1	2	3	4
19.	Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea or a pounding heart.	0	1	2	3	4
20.	I had dreams about it.	0	1	2	3	4
21.	I felt watchful and on guard.	0	1	2	3	4
22.	I tried not to talk about it.	0	1	2	3	4

8.3.4 Appendix F - Questionnaire 3 : Posttraumatic Growth Inventory

Questionnaire 3 (PTGI)

STEP 1: Identify a Life-Altering Event

Think about a traumatic or life-altering event that has occurred recently in your life.

A. What experience are you thinking of?: _____

B. How long ago did it take place?

❑ 0- 3 months ago	❑ 18- 24 months ago
❑ 3- 6 months ago	❑ 2 –3 years ago
❑ 6- 9 months ago	❑ 3- 4 years ago
❑ 9- 12 months ago	❑ 4- 5 years ag0
❑ 12- 18 months ago	❑ More than 5 years

STEP 2: Answer the Following Questions

Indicate for each of the following statements the degree to which the change reflected in the question is true in your life as a result of your crisis, using the following scale:

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

1	I changed my priorities about what is important in life.	
2	I have a greater appreciation for the value of my own life.	
3	I developed new interests.	
4	I have a greater feeling of self-reliance.	
5	I have a better understanding of spiritual matters.	
6	I more clearly see that I can count on people in times of trouble.	
7	I established a new path for my life.	
8	I have a greater sense of closeness with others.	
9	I am more willing to express my emotions.	
10	I know better that I can handle difficulties.	
11	I am able to do better things with my life.	
12	I am better able to accept the way things work out.	
13	I can better appreciate each day.	
14	New opportunities are available which wouldn't have been otherwise.	
15	I have more compassion for others.	
16	I put more effort into my relationships.	
17	I am more likely to try to change things which need changing.	
18	I have a stronger religious faith.	
19	I discovered that I'm stronger than I thought I was.	
20	I learned a great deal about how wonderful people are.	
21	I better accept needing others.	

8.3.5 Appendix G - Questionnaire 4 : Sense of Coherence Scale

Questionnaire 4 (SOCS)

Here is a series of questions relating to various aspects of your life. Each question has 7 possible answers. Please mark the number, which expresses your answer, with 1 and 7 being the extreme answers. If the words under 1 are right for you, circle 1; if the words under 7 are right for you, circle 7. If you feel differently, circle the number which best expresses your feeling. Please give only one answer to each question.

1. When you talk to people, do you have the feeling that they don't understand you?

1 2 3 4 5 6 7
never have this feeling — always have this feeling

2. In the past, when you had to do something, which depended upon cooperation with others, did you have the feeling that it:

1 2 3 4 5 6 7
surely would not get done — surely would get done

3. Think of the people with whom you come into contact daily, aside from the ones to whom you feel closest. How well do you know most of them?

1 2 3 4 5 6 7
you feel that they're strangers — you know them very well

4. Do you have the feeling that you don't really care what goes on around you?

1 2 3 4 5 6 7
very seldom or never — very often

5. Has it happened in the past that you were surprised by the behaviour of people whom you thought you knew well?

1 2 3 4 5 6 7
never happened — always happened

6. Has it happened that people whom you counted on disappointed you?

1 2 3 4 5 6 7
never happened — always happened

7. Life is:

1 2 3 4 5 6 7
full of interest — just routine

8. Until now your life has had:

1 2 3 4 5 6 7
no clear goals or purpose at all — very clear goals and purpose

9. Do you have the feeling that you're being treated unfairly?

1 2 3 4 5 6 7
very often — very seldom or never

10. In the past ten years your life has been:

1 2 3 4 5 6 7
full of changes without knowing what will happen next — completely consistent and clear

11. Most of the things you do in the future will probably be:

1 2 3 4 5 6 7
completely fascinating — deadly boring

12. Do you have the feeling that you're in an unfamiliar situation and don't know what to do?

1 2 3 4 5 6 7
very often — very seldom or never

13. What best describes how you see life?

1 2 3 4 5 6 7
one can always find a solution to painful things in life — there is no solution to painful things in life

14. When you think about your life, you very often:

1 2 5 4 5 6 7
feel good to be alive — ask yourself why you exist at all

15. When you face a difficult problem, the choice of a solution is:

1	2	3	4	5	6	7
always confusing and hard to find						always completely clear

16. Doing the things you do everyday is:

1	2	3	4	5	6	7
a source of deep pleasure and satisfaction						a source of pain and boredom

17. Your life in the future will probably be:

1	2	3	4	5	6	7
full of changes without knowing what will happen next						completely consistent and clear

18. When something unpleasant happened in the past your tendency was:

1	2	3	4	5	6	7
"to eat yourself up" about it						to say "ok, that's that, I have to live with it" and go on

19. Do you have very mixed-up feelings and ideas?

1	2	3	4	5	6	7
very seldom or never						very often

20. When you do something that gives you a good feeling:

1	2	3	4	5	6	7
it's certain that you'll go on feeling good						it's certain that something will spoil the feeling

21. Does it happen that you have feelings inside you would rather not feel?

1	2	3	4	5	6	7
very often						very seldom or never

22. You anticipate that your personal life in the future will be:

1	2	3	4	5	6	7
totally without meaning or purpose						full of meaning and purpose

23. Do you think that there will always be people whom you can count on in the future?

1	2	3	4	5	6	7
you are certain there will be						you doubt there will be

24. Does it happen that you have the feeling that you don't know exactly what's about to happen?

1	2	3	4	5	6	7
very often						very seldom or never

25. Many people - even those with a strong character - sometimes feel like sad sacks (losers) in certain situations. How often have you felt this way in the past?

1	2	3	4	5	6	7
never						very often

26. When something happened, you have generally found that:

1	2	3	4	5	6	7
you overestimated or underestimated it's importance						you saw things in the right proportion

27. When you think of difficulties you are likely to face in important aspects of your life, do you have the feeling that:

1	2	3	4	5	6	7
You will always succeed in overcoming the difficulties						you won't succeed in overcoming the difficulties

28. How often do you have the feeling that there's little meaning in the things you do in your daily life?

1	2	3	4	5	6	7
very often						very seldom or never

29. How often do you have feelings that you're not sure you can keep under control?

1	2	3	4	5	6	7
very often						very seldom

8.4 Humanities Research Ethics Committee (Non-Medical)

8.4.1 Appendix H - Ethics Clearance Certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (NON MEDICAL)
R14/49 Walsh

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER H100 412**
PROJECT	An exploration of the relationships between post traumatic growth, sense of coherence and meaningfulness in the South African context
INVESTIGATORS	Ms S Walsh
DEPARTMENT	Psychology
DATE CONSIDERED	16.04.2010
DECISION OF THE COMMITTEE*	Approved Unconditionally

NOTE:

Unless otherwise specified this ethical clearance is valid for 2 years and may be renewed upon application

DATE 03.05.2010

CHAIRPERSON .....
(Professor R Thornton)

cc: Supervisor : Dr E Price

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10005, 10th Floor, Senate House, University.

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

_____
Signature

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES