

**PERSONALITY PREDICTORS OF POST-TRAUMATIC STRESS
DISORDER AND POST-TRAUMATIC GROWTH IN FORENSIC
MORTUARY EMPLOYEES**

by

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DECLARATION

I declare that the mini-dissertation hereby submitted to the University of Pretoria, for the degree of Masters in Clinical Psychology has not previously been submitted by me for a degree at this or any other university; that it is my work in design and in execution, and that all material contained herein has been duly acknowledged.

SIGNED AT: _____ **ON THE** ____ **DAY OF** _____ **2017**

F. HEIBERG

DEDICATION

This mini-dissertation is dedicated to my loved ones who formed my support structure throughout my studies. A special thanks to my mom, Elize O'Toole, and my stepdad, John O'Toole, who have always provided me with their unconditional love and support. To my friends, Amanda du Plessis and Adele Sneyd, thank you for believing in me through the years and encouraging me during difficult times.

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ABSTRACT

Employees of the Forensic Pathology Services (FPS) work under constant physical, emotional and psychological stress due to the demands of their work. The literature review emphasizes the widespread existence of traumatic stress in relation to critical incident occupations involving contact with the deceased. However, a need for further research into prolonged and recurring death exposure was highlighted. The objectives of this study were: to investigate the predictive relationship between personality dimensions and post-traumatic stress symptoms within the FPS; and to evaluate whether personality factors can predict post-traumatic growth (PTG). A quantitative study was done with a sample of 118 FPS members from forensic mortuaries within the Gauteng Provincial jurisdiction. Participants included forensic officers, forensic medicine practitioners, administrative staff, and forensic science graduate students. A personality-based conceptual framework allowed for PTSD and PTG to be analysed in relation to the Five-factor model of personality. Findings revealed that significantly high levels of PTSD currently exist within the FPS. The personality traits Neuroticism and Conscientiousness, as well as the PTGI factor Appreciation of life, were found to be significant predictors of PTSD symptomology. Level of education was found to serve as a protective factor. Furthermore, Extroversion, Openness to experience, and job description, were found to have a significant influence on PTG. This study concludes with recommendations for future research into PTSD and PTG within the FPS or similar critical incident occupations.

Key words: *Forensic Pathology Services; Personality traits; Five-factor model; PTSD; Post-traumatic growth; Resilience*

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CHAPTER 1

OVERVIEW OF THE STUDY

1. General Introduction

1.1 Introduction

Exposure to the deceased is documented as an extreme stressor with great potential to traumatise (e.g., Brysiewicz, 2007; Flynn, McCarroll, & Biggs, 2015; Fullerton, Ursano, & Wang, 2004; Linley & Joseph, 2005). Due to the nature and scope of their jobs, members of the Forensic Pathology Service (FPS) constantly find themselves in physically, emotionally, and psychologically challenging situations. Consequently, FPS employees could be more susceptible to trauma and psychopathology than professionals who work in more conventional occupational environments.

With increasing crime-related deaths in South Africa, it is likely that FPS employees are at a greater occupational risk of developing psychopathology – especially post-traumatic stress disorder (PTSD). Although the peer-reviewed research available concludes that exposure to death by way of handling human remains is stressful and potentially traumatic, little is known about the long-term psychological effects of body handling (e.g., Brysiewicz, 2007; Zerach & Levin, 2015). Various studies have indicated that the duration and intensity of traumatic events are major predictors of psychological outcomes (e.g., Gomila, 2006; Skogstad et al., 2013; van der Ploeg, Dorresteijn, & Kleber, 2003), while a need for research on the prolonged effects of exposure to death has been identified.

In contrast, the literature shows that not all individuals who are exposed to traumatic stress develop psychopathology (e.g., Linley & Joseph, 2005; Tedeschi & Calhoun, 2004). Post-traumatic growth (PTG) refers to the general understanding that possible distress caused by traumatic incidents, could potentially yield positive psychological change. Therefore, differences in individual personality traits may clarify the development of, or resilience against PTSD symptoms which may result during the course of conducting professional duties in a critical incident occupation.

1.2 Statement of the problem

Repeated exposure to traumatic stress is a common part of the job for many professionals in critical incident occupations. It can, therefore, be expected that these employees are at an increased risk of developing post-traumatic stress disorder (PTSD) in comparison to the general population. Indeed, a South African Health and Stress study conducted in 2013 indicated that the lifetime prevalence rate of PTSD in the general South African population is estimated at 2.3% (Atwoli et al., 2013), whereas the estimate for various critical incident occupations may range from 0% to 47% (e.g., Fullerton et al., 2004; Ward, Lombard, & Gwebushe, 2006; Zerach & Levin, 2015). PTSD not only increases a person's susceptibility to developing co-morbid psychopathology, but may also have dire implications for psychosocial functioning (McFarlane & Bookless, 2001). This study, therefore, investigates the role of personality traits in PTSD vulnerability and resilience, specifically for employees exposed to a forensic mortuary environment. Differences in individual personality traits may clarify the development of, or resilience against PTSD symptoms as a result of working in a critical incident occupation.

1.3 Aim of the study

The study aimed to investigate the predictive relationship between personality dimensions and PTSD symptoms, and/or post-traumatic growth (PTG), in a sample of FPS mortuary employees in Gauteng, South Africa.

1.4 Objectives of the study

- 1.4.1 To examine if personality traits will predict PTSD symptoms;
- 1.4.2 To evaluate if personality factors can predict post-traumatic growth (PTG).

1.5 Research questions

- 1.5.1 Will personality dimensions of the Five-factor Model (FFM) predict PTSD symptoms in this sample of FPS employees?
- 1.5.2 Will personality dimensions of the FFM predict PTG in this sample of FPS employees?

1.6 Significance of the study

To date, only a handful of quantitative studies have examined the mental health consequences associated with mortuary work in low- or middle-income countries (Nöthling, Ganasen, & Seedat, 2015). In a middle-income country like South Africa, mortuary employees may be at an even greater occupational risk of developing mental illness as result of our country's high violent crime rate and the subsequent increased exposure to deceased victims of violent deaths (Seedat, van Niekerk, Jewkes, Suffla, & Ratele, 2009). As per the Basic Conditions of Employment Act (1997), employers should strive for the promotion and conservation of the highest degree of physical, mental and social welfare of personnel in all occupations. This would include the prevention of mental health problems resulting from occupational environments, as well as assignment to an occupational environment best suited to the employee's psychological capabilities (Loewenson, 2001). Therefore, service organisations like the FPS should be aware of mental health problems associated with critical incident occupations and should offer suitable support to vulnerable groups. FPS employees could benefit from interventions which focus on endorsing mental health. Similarly, preparative training relating to mental health may be valuable to inexperienced FPS applicants prior to occupational uptake.

1.7 Operational definition of terms

1.7.1 Forensic Pathology Service (FPS):

The FPS was established in 2006 when the South African Police Service (SAPS) mortuaries were transferred to the Department of Health. The Service contemplated in Regulation 3 in terms of Section 90(1)(i) of the National Health Act, 2003 (Act No. 61 of 2003) includes, but is not limited to the following:

- conducting a death scene investigation in consultation with the investigating officer;
- obtaining information that is relevant to the medico-legal investigation of a death;
- removal of a body from the scene of death;

- taking custody of a body from the scene of death until released for burial or cremation, and the processes attached thereto;
- preserving evidence relating to a body and any associated items at all times;
- assisting with the process of identification of the deceased;
- conducting a post-mortem investigation, including external and internal examination of a body;
- harvesting material, tissue or fluids for evidentiary or diagnostic purposes;
- requesting and conducting appropriate special investigations;
- providing medico-legal reports, expert testimony, and opinions;
- archiving documents, specimens, and related materials;
- collecting, reviewing, and analysing related data to determine trends or prevalence of unnatural deaths; and
- providing information and advice to the Department of Health, or other government authorities and departments (Government Gazette, April 2005, p. 25).

1.7.2 Post-traumatic Stress Disorder (PTSD):

Post-traumatic Stress Disorder (PTSD) refers to a trauma- and stressor-related mental disorder that could develop after an individual is (directly or indirectly) exposed to a traumatic event. Symptoms may include the following: disturbing thoughts, feelings, or dreams related to the events; mental or physical distress to trauma-related cues; attempts to avoid trauma-related cues; negative changes in cognitions; and increased arousal or hypervigilance. These symptoms last for more than one month after the event and cause significant impairment relating to the individual's occupational, social, and/or personal environment (American Psychiatric Association, 2013).

1.7.3 Personality traits:

Personality traits reflect an individual's characteristic patterns of thoughts, feelings, and behaviours. These traits, therefore, suggest consistency and stability. Trait psychology proposes that individuals differ from one another in terms of basic trait dimensions that persist over time and across differing contexts. The Five-factor Model (FFM) of personality suggests five broad trait dimensions: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (e.g., McCrae & Costa, 2003).

1.7.4 Resilience:

Resilience is the practice of adapting well in the face of adversity, trauma, disaster, threat, or substantial sources of stress. Simply put, it means “bouncing back” from challenging experiences. Being resilient does not suggest that one lacks the ability to experience difficulty or distress. Indeed, the development of resilience is expected to involve considerable emotional distress. Resilience, therefore, encompasses behaviours, thoughts, and actions that can be learned and developed in any individual (Windle, 2010).

1.7.5 Post-traumatic growth:

Post-traumatic growth (PTG) refers to constructive psychological transformation experienced as a result of hardship, or other challenges, in order to adapt to healthier levels of functioning. Such circumstances involve substantial contests to the adaptive resources of the individual and pose considerable challenges to an individual's manner of making sense of the world. PTG refers to a process of meaningful psychological adjustments which contribute to a personal process of significant transformation. It is often characterised by improved future resilience (Tedeschi & Calhoun, 2004).

1.8 Conclusion

The chapter described the research questions, aim, and objectives of the study and further introduced and defined relevant concepts of the study.

CHAPTER 2: THEORETICAL PERSPECTIVE AND LITERATURE REVIEW

2. Introduction

This chapter will focus on existing literature on the experience of traumatic stress within the FPS; the association between dimensions of personality (Five-factor Model), PTSD, and post-traumatic growth (PTG); and the explanation of trauma-related behaviour from a theoretical perspective.

2.1 Theoretical perspective

This study follows a personality-based approach demonstrating a dimensional facet of the trans-disciplinary integrative model of PTSD (Jakovljević et al., 2012). This model proposes distinct differences in personality structure regarding an individual's vulnerability or resilience to psychological stress - in this instance, PTSD (McKeever & Huff, 2003). The model includes the following significant elements in the psycho-traumatisation process: (1) probable deficits in personality structure and functioning, (2) exposure to distressing or traumatising events, and (3) atypical responses to such events. Individuals who are on the vulnerability end of the continuum require less traumatic stress to develop associated psychopathology, whereas more resilient individuals would require increased traumatic stress before developing PTSD or another psychiatric disorder (Paris, 2000). Interventions are thus focused on aiding individuals in using personality strengths to enhance their well-being and to subsequently re-establish resilience to manage future stressors more effectively (Jakovljević et al., 2012).

The dimensional perspective suggests that "health" and "illness" are two ends of a one-dimensional continuum, while PTSD is situated between these two extremities (Wolf, Miller, Harrington, & Reardon, 2012). After experiencing traumatic stress, PTSD appears to develop (or not) through the complex interaction between three sets of factors: "vulnerability factors" which increase the probability of PTSD development, "protective factors" which increase the likelihood of recovery from traumatic stress, and "generative or creativity factors" which enhance revelatory

learning, as well as resource acquisition and development - thereby placing emphasis on personal growth (McKeever & Huff, 2003). Therefore, PTSD may stem from personal dispositions (diathesis) in addition to challenging life circumstances. Personality weaknesses (vulnerability), risky traits, and low resilience may be directly accountable for PTSD patterns (e.g., Vrana, 2001; Yuan et al., 2011).

2.2 Literature review

It is evident throughout the reviewed literature that exposure to the deceased could serve as an extreme stressor with great potential to traumatise (e.g., Chang et al., 2003; Fullerton & Biggs, 2014; Gomila, 2006). Over the past twenty years, there has been a rise in the number of occupations recognised for inducing work-related traumatic stress due to death exposure (Gomila, 2006). These so-called “critical incident” occupations span many professional groups, including military soldiers, emergency response personnel, military health care workers, police officers, disaster workers, forensic technicians, and funeral directors (e.g., Benedek, Fullerton, & Ursano, 2007; Chang et al., 2003; Fullerton & Biggs, 2014; Jacobson et al., 2012; Linley & Joseph, 2005).

Globally, mortuary employees represent an understudied population. Mortuary employees’ mental health has been researched in relation to mass disasters or conditions of war, but the psychological consequences of full-time employment in a forensic mortuary setting have yet to receive consideration. To date, only a handful of quantitative studies have researched the psychological consequences of this occupation in low- or middle-income countries (Nöthling et al., 2015). In a country like South Africa, mortuary employees may be at a greater occupational risk of developing mental illness, given the extremely high violent crime rate and the subsequently increased exposure to victims of violent deaths (Seedat et al., 2009). For instance, Statistics South Africa reported that in 2013, 47 219 of the 458 933 deaths in the country were due to unnatural causes (Statistics South Africa, 2014). Autopsies were conducted in 40 742 (8.9%) of the cases and post-mortem examinations were done in 105 206 (22.9%) of the cases, indicating that more than 30% of the deaths in 2013 were investigated in a forensic mortuary (Statistics South Africa, 2014).

A study by Nöthling, Ganasen and Seedat (2015) showed that South African mortuary employees appear to be at an increased risk of developing psychopathology (e.g., depression). In their sample, the prevalence of depression was almost double for inexperienced workers (16.7%) when compared with experienced workers (9.5%), suggesting that an individual's level of experience may be a predictor for the development of psychopathology in this line of work (Nöthling et al., 2015). Correspondingly, Ward, Lombard and Gwebushe (2006) conducted a study on mental health issues associated with critical incident exposure in South African emergency services personnel. They found that critical incident exposure and the prevalence of mental illness were higher than in studies of first-world countries (Ward et al., 2006). Their study also established that exposure to critical incidents was linked to PTSD symptomology specifically. Not surprisingly, some studies have shown that exposure to numerous or repeated traumatic events is related to an increased risk of developing PTSD (e.g., Follette, Polusny, Bechtle, & Naugle, 1996; Green et al., 2000; Suliman et al., 2009).

FPS employees' involvement with a death scene is often prolonged and recurring, thus increasing the potential risk for adverse psychological consequences (e.g., Brysiewicz, 2007; Masum, 2010). Specialist forensic pathologist, Prof. L. du Toit-Prinsloo (personal communication, July 30, 2015), noted that FPS employees are often confronted with the bodies of victims who succumbed to death in grotesque manners. These may include: severely burned or decomposed bodies; dismembered or/and disfigured remains; bodies of children; deaths as a result of homicide or suicide; remains from motor vehicle or pedestrian accidents; and potentially even the remains of individuals who were friends or acquaintances of FPS employees. An integral part of this profession is repeated exposure to a broad range of potentially traumatic incidents or stressors – a factor that is evidenced to increase the risk of PTSD development (e.g., Palm, Polusny, & Follette, 2004; Skogstad et al., 2013; van der Ploeg, Dorresteijn, & Kleber, 2003). Not surprisingly, the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (*DSM-5*) extended Criterion A of the PTSD diagnosis to include a specification of recurrent or extreme indirect exposure to aversive details of the traumatic event(s), commonly in the course of professional duties (American Psychiatric Association, 2013). At this time, no South

African studies have been conducted with regards to the risk of PTSD development for FPS employees specifically.

On the contrary, evidence suggests that not all individuals manage or perceive trauma in a similar manner. The notion that traumatic experiences inevitably lead to the development of PTSD has, in fact, been rejected by empirical data (e.g., Chung, Dennis, Easthope, Werrett, & Farmer, 2005; Olf, Langeland, & Gersons, 2005). Research has indicated that fewer than 10% of people exposed to traumatic events eventually develop PTSD, depression, or other psychopathology (e.g., Breslau, 2009; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). As such, research has focused on how individual differences in personality traits affect the development of PTSD symptoms in an attempt to understand the process of psycho-traumatisation, vulnerability, and resilience (Paris, 2000; Wolf et al., 2012). Personality traits reflect an individual's distinctive pattern of thoughts, feelings, and behaviours which is said to remain constant across all developmental stages and within differing contexts (McCrae & Costa, 2003). Advances in research on personality have emphasised the interface between personality and psychopathology, including PTSD. However, further research regarding the influence of personality on PTSD development is necessary, both to elucidate relevant risk factors and in order to determine possible protective factors (Paris, 2000).

2.2.1 Personality traits as vulnerability factors for PTSD

Personality trait theorists propose that, on each spectrum of psychological disorders, overt symptoms can be linked to underlying trait dimensions (Watson, Clark, & Chmielewski, 2008). A vulnerability factor, therefore, refers to a measurable personality trait dimension which enhances the probability of negative or unwanted existing or future outcomes (Layne, Warren, Watson, & Shalev, 2007). It follows that a personality trait which can be linked to the development of PTSD symptoms in a sample of individuals who have been exposed to a traumatic event, may qualify as a vulnerability factor (Jakšić, Brajković, Ivezić, Topić, & Jakovljević, 2012). A variety of studies have examined the association between PTSD symptoms and personality dimensions in relation to the Five-factor Model of personality (FFM) by McCrae and Costa (2003) (e.g., Caska & Renshaw, 2013; Lawrence & Fauerbach, 2003; Pienaar,

Rothmann, & Van De Vijver, 2007). The five dimensions of the model are Extraversion/Introversion, Neuroticism, Agreeableness, Conscientiousness, and Openness to experience (McCrae & Costa, 2003). Longstanding research indicates Neuroticism as the trait most significantly linked to the development of PTSD(e.g., Breslau, Davis, & Andreski, 1995; Williams, 1999).

One of the broadest and most basic of personality dimensions, Neuroticism describes “a temperamental sensitivity to negative stimuli, emotional instability and maladjustment” (Goldberg, 1993, p. 26). This proposes that individuals who have a higher Neuroticism score are more susceptible to stress as their reactions are faster, more intense, and slower to return to “normal”. Conversely, those who obtain a lower score tend to be more emotionally stable (McCrae & Costa, 2003). A higher level of Neuroticism has been significantly linked to Vietnam veterans’ battle-related PTSD. Talbert, Braswell, Albrecht, Hyer and Boudewyns (1993) arranged these veterans into three groups based on their exposure to trauma and found no noteworthy differences in their personality profiles; however, a normative profile characterised by elevated Neuroticism scores and extremely low Agreeableness scores was presented (Talbert et al., 1993).

Similarly, Hodgins, Creamer and Bell (2001) conducted a prospective, longitudinal study investigating risk factors in the development of PTSD symptoms in a group of junior police officers 1) throughout their training and 2) again, 12 months later. Their assessment included the NEO Five-factor Inventory, and the results indicated high Neuroticism and lower levels of Agreeableness and Conscientiousness as important predictors for PTSD symptom development (Hodgins, Creamer, & Bell, 2001). Individuals who obtain high scores on Agreeableness tend to be warm, caring, and considerate towards others; whereas lower scores may point toward individuals who are more inflexible, competitive, distrustful, and hostile towards others (McCrae & Costa, 2003). Conscientiousness concerns a sense of responsibility, perseverance in the face of difficulties, diligence, and adherence to rules and processes (McCrae & Costa, 2003). Researchers, therefore, concluded that Agreeableness may make it easier to function as part of a multi-disciplinary team, whereas Conscientiousness may aid in coping with the

controlled and procedure-oriented expectations of a critical incident occupation (Hodgins et al., 2001).

As mentioned, research suggests that Neuroticism is the best personality dimension predictor for PTSD symptom development. However, results regarding the other personality dimensions are still inconsistent and further research is needed to gain a better understanding of their role in PTSD symptom development.

2.2.2 Personality traits as protective factors for PTSD

Resiliency refers to the capacity to cope in spite of threatening or distressing circumstances (Agaibi & Wilson, 2005). Resilient individuals are not necessarily unaffected by misfortune, but are more likely to adapt to challenging events and, in turn, be less susceptible to the associated adverse psychological consequences. Luthar, Sawyer and Brown (2006) offered a detailed overview of this concept and recommended using the term “protective factors” when referring to factors that buffer against the effects of adversity (Luthar et al., 2006). Similar to the above segment on vulnerability factors, several studies propose a link between “positive” personality traits and PTSD symptomology, since lower scores on these trait dimensions are believed to increase the risk for PTSD development. Therefore, it is anticipated that scoring higher on these trait dimensions may be representative of protective factors against developing PTSD symptoms (Jakšić et al., 2012).

Indeed, several studies found positive correlations between certain FFM personality dimensions and PTSD resilience. For example, a longitudinal study of burn victims showed that those with high Extraversion scores showed fewer PTSD symptoms (Fauerbach, Lawrence, Schmidt Jr, Munster, & Costa Jr, 2000). High scorers are generally perceived as sociable, unreserved, friendly, and enthusiastic individuals, whereas low scorers tend to be more inhibited, private, and aloof (McCrae & Costa, 2003). Similarly, Löckenhoff, Terracciano, Patriciu, Eaton and Costa (2009) conducted a longitudinal study on the role of personality during adverse life events and reported Extraversion, as well as Conscientiousness, to be related to better mental health outcomes in general. Conscientiousness has sparked research interest because it is seen as an indirect measure of emotional regulation,

which is thought to be instrumental in moderating the effects of traumatic experiences (e.g., Campbell-Sills, Cohan, & Stein, 2006; Vrana, 2001). It is, however, noteworthy that some studies did not find a link between positive personality dimensions (as measured with the FFM of personality) and lower PTSD symptomology (e.g., Caska & Renshaw, 2013; Yuan et al., 2011). As such, literature on this association is inconclusive and contradictory.

2.2.3 Personality traits and post-traumatic growth (PTG)

In contrast to the pathogenic outlook of trauma, an alternative perspective proposes that trauma could have a salutogenic effect (Jakovljević et al., 2012). PTG largely refers to positive change/s resulting from trauma, with its focus on five key aspects: an increase in personal strength, interpersonal intimacy, sense of spirituality, appreciation of life, and life possibilities (Tedeschi & Calhoun, 2004). According to Tedeschi and Calhoun's (2004) model of PTG, personality dimensions play a significant role in predicting PTG. For example, the literature review of PTG by Linley and Joseph (2004) showed unfailing support for the positive relationship between PTG and Extraversion, Openness to experience, Agreeableness, and Conscientiousness. It is therefore not surprising that the level of PTSD severity correlates negatively with the degree of PTG (Dekel, Ein-Dor, & Solomon, 2012). Traumatic stress may require of affected individuals to restructure their belief systems, distance themselves from unattainable goals, and review their life narratives associated with personal growth (Tedeschi & Calhoun, 2004). PTG may well be palliative in providing comfort in spite of trauma and in creating positive personality transformations.

It would appear as though the terms "post-traumatic growth" and "resilience" are often confused in the literature. For example, it is questioned whether PTG forms part of resilience, or is superior to it (Tedeschi, Calhoun, & Cann, 2007). To negotiate this impasse, one may think of resilience as a personality trait (Agaibi & Wilson, 2005) and PTG as a means of adjusting to traumatic circumstances (Tedeschi & Calhoun, 2004). Resilience can, therefore, be described as the absence of mental illness in the aftermath of exposure to potentially traumatic events (Agaibi & Wilson, 2005; Klasen et al., 2010). In contrast, PTG denotes a change in the

individual that goes beyond an ability to buffer against the development of psychopathology resulting from exposure to trauma - it implicates a transformation beyond pre-trauma levels of adaptation (Tedeschi & Calhoun, 1996). In examining the relationship between resilience and PTG, Levine, Laufer, Stein, Hamama-Raz and Solomon (2009) concluded that, even though PTG and resilience are both salutogenic concepts, they are inversely related. Their study also relied on defining “resilience” as an absence of PTSD following trauma (Levine et al., 2009). Accordingly, this study accepts resilience as the general resistance to traumatic stress owing to existing pre-trauma personality traits.

Numerous studies have given consideration to the association between personality and mental health in stressful occupational environments (Caska & Renshaw, 2013; du Preez, Cassimjee, Ghazinour, Lauritz, & Richter, 2009; Heinrichs et al., 2014; Pienaar et al., 2007; Vrana, 2001; Yuan et al., 2011); however, less attention has been given to the association between the dimensions of personality and PTSD, as well as PTG, in mortuary employees. Awareness of employees’ pre-morbid personalities could workably detect personality traits that predispose individuals to psychological vulnerability during their careers in a mortuary environment (Pienaar et al., 2007). Accordingly, examining the role of personality traits in mortuary workers’ vulnerability to, or resilience against PTSD could lead to the development of strategies for supporting their performance, long-term employment, and mental well-being.

2.3 Conclusion

This chapter discussed the theoretical perspective of the study as well as findings from previous studies on mortuary work as a critical incident occupation; personality traits as playing a protective role against or as increasing an individual’s vulnerability towards developing PTSD; and personality traits in relation to PTG.

CHAPTER 3

METHODOLOGY

3. Introduction

The methods employed in the present study are outlined in this chapter. This outline includes explanations of the data collection instruments and procedures followed in conducting the research.

3.1 Research design

This study adopted a correlational research approach with a cross-sectional design, which also informed the data collection strategy. An empiricist quantitative perspective to research was thus followed, where the aim is to determine whether the predictive generalisations of a theory hold true by acquiring knowledge through observation. It is characterised by philosophical determinism, where human behaviour is viewed as the lawful outcome of antecedent environmental events (Graziano & Raulin, 1993). These predictions are made on the basis of previously observed and explained realities and their interrelationships.

3.2 Participants

A non-probability, purposive sample of 118 FPS employees from nine forensic mortuaries within the Gauteng Provincial jurisdiction was drawn for the study. More specifically, Total Population Sampling (TPS) was used as the entire population (FPS employees) was likely to meet the inclusion criteria for the study (Kothari, 2004). The participants in the survey included forensic officers, forensic medicine practitioners (registrars, medical officers, and pathologists), administrative staff, and forensic science graduate students. The researcher decided to include administration staff because of the potentially traumatising effect of regular exposure to secondary traumatic stressors (for example, dealing with the families of the deceased). Two groups of individuals were excluded from this study for practical reasons; these include all mortuary cleaning staff (mostly outsourced), as well as fifth-year medicine students rotating at the FPS as part of their syllabus. Although the chosen survey questionnaires are standardised and only require a basic level of

English literacy, difficulty in understanding certain questions could influence a participant's response. However, it should be noted that all FPS employees eligible for this study would have had to obtain their Matric certificates in order to qualify for employment in their respective positions. Therefore, exclusions based on English proficiency were not implicated. Lastly, employees (or students) were required to be 18 years or older to volunteer their participation in this study. The chosen sampling method ensured the inclusion of participants with diverse socio-demographic characteristics (age, race, and sex).

3.3 Research instruments

Data were collected with the following instruments: (1) Demographic questionnaire; (2) Big Five Inventory: Ten-Item Personality Inventory (TIPI); (3) PTSD Checklist for *DSM-5* (PCL-5); and (4) The Post-Traumatic Growth Inventory (PTGI).

3.3.1 Demographic questionnaire

Information was gathered on the following demographic categories: Age; race; gender; marital status; education level; professional experience in years; job title/description; and involvement with post-mortems.

3.3.2 TIPI

The TIPI personality measure (Gosling, Rentfrow, & Swann, 2003) is a 10-item Likert-type questionnaire (1 = disagree strongly to 5 = agree strongly), which includes two items for each of the Big Five personality dimensions: (1) Extraversion; (2) Agreeableness; (3) Conscientiousness; (4) Emotional stability (Neuroticism); and (5) Openness to experiences/ideas (Costa & McCrae, 1985). The measure was created to be completed within a minute. Some of the items require reverse scoring to control for a response set. The scale demonstrates convergent validity (with the NEOPI-R) and test-retest reliability ($r = .72$) (Gosling et al., 2003; Renau, Oberst, Gosling, Rusinol, & Chamarro, 2013). In the present study, the scale's internal reliability coefficients were as follows: $\alpha = .410$ for Extraversion; $\alpha = .286$ for

Agreeableness; $\alpha = .378$ for Conscientiousness; $\alpha = .211$ for Emotional stability; and $\alpha = .131$ for Openness to experiences/ideas. The low coefficient alphas of the TIPI subscales is not cause for concern, because the TIPI emphasises content validity considerations which result in lower inter-item correlations than can be expected of more homogenous scales (Gosling et al., 2003). These relatively low inter-item correlations, in addition to the TIPI having scales consisting of merely two items, result in abnormally low internal consistency estimations. An illustration of how content validity can exceed reliability can be found in the study by Gosling et al. (2003), in which the TIPI was compared to more robust measures of the Big Five Personality traits.

3.3.3 PCL-5

The PCL-5 is a 20-item self-report measure that assesses the *DSM-5* symptoms for PTSD (Weathers et al., 2013). The PCL-5 takes only 5 to 10 minutes to complete and each item is rated on a 5-point Likert-type scale (0 = not at all to 4 = extremely), which indicates the degree to which a participant has been bothered in the past month by their identified “worst” stressful event. Currently, Weathers et al. (2013) state that a cut-point of 33 is a reasonable value to suggest a provisional PTSD diagnosis until further psychometric information is available. Blevins, Weathers, Davis, Witte and Domino (2015) reported that the scale demonstrates good internal consistency ($\alpha = .940$), test-retest reliability ($r = .82$), and convergent ($r_s = .74$ to $.85$) and discriminant ($r_s = .31$ to $.60$) validity. To test for convergent validity, Blevins et al. (2015) used several scales including the Detailed Assessment of Post-traumatic Symptoms – Post-traumatic Stress Scale (DAPS), as well as the Post-traumatic Distress Scale (PDS). Discriminant validity was tested with components of the Personality Assessment Inventory (PAI), excluding that of Traumatic Stress (PAI-ARD-T) (Blevins et al., 2015). The scale’s Cronbach’s alpha value was adequate at $\alpha = .949$ in the current study.

3.3.4 PTGI

The Post-Traumatic Growth Inventory (Tedeschi & Calhoun, 1996) consists of a 21-item self-report measure reflecting the tendency to experience a positive

transformation in reaction to traumatic events. In the present study, participants were asked to rate the degree to which each change occurred as a consequence of the potentially traumatising nature of their occupation on a 6-point Likert-type scale ranging from 0 (I did not experience this change) to 5 (I experienced this change to a great degree). The inventory yields a potential range of 0–105, with a higher score signifying greater experience of PTG. The PTGI scores for five factorally derived subscales: (1) New possibilities; (2) Relating to others; (3) Personal strength; (4) Spiritual change; and (5) Appreciation of life. The PTGI showed good internal consistency ($\alpha = .900$) and acceptable test-retest reliability ($r = .71$) (Flynn et al., 2015; Linley & Joseph, 2005; Peltzer, 2000; Tedeschi & Calhoun, 1996). The internal reliability coefficient (alpha) of the scale was adequate at $\alpha = .941$ in the present study.

3.4 Procedure

Guidelines from the University of Pretoria for conducting ethical research were adhered to. Data collection commenced once ethical clearance was received from the Faculty of Humanities' Research and Ethics Committee. Potential participants were accessed with the help of the respective mortuary managers through an open invitation (with information letter), and those who volunteered to participate were then given the questionnaire to complete outside of their work hours. Questionnaires were collected by the researcher at a later stage. The survey entailed a self-report questionnaire that was self-administered by the participants. The purpose of the research was explained and participants were informed of their rights before volunteering to participate in the study. The questionnaire was available in English only.

3.5 Ethical considerations

Ethical approval was granted by the Faculty of Humanities' Research and Ethics Committee of the University of Pretoria prior to the commencement of the study. The mortuary manager at each respective mortuary was approached for access and approval to recruit participants. All potential participants thus had the right to decide whether they wanted to partake in this study. Informed consent was

attained from each participant before initiating the data collection phase. Questionnaires were completed anonymously and subjects were not identifiable in any of the data sheets. There was no foreseeable risk or discomfort to the participants, who could choose to withdraw at any point during the research process without suffering any consequences. Any participant who experienced distress as a result of completing the questionnaire was referred to Itsoseng Psychology Clinic for debriefing (at no cost to them). The raw data is stored for a minimum of 15 years in a secure location (HSB 11-23) at the Department of Psychology, University of Pretoria, for archiving and reuse purposes. Other researchers also have access to use the data during this period (participants also consented to this). No form of remuneration for participation in this study was offered.

3.6 Conclusion

This section offered a description of the research design, the procedures followed, the research instruments, and the participants selected for the study.

CHAPTER 4

RESULTS

4. Introduction

4.1 Data analysis strategy

Data analysis was conducted using IBM SPSS (Version 24.0). Preliminary analysis aimed to describe the sample characteristics. Descriptive statistics were provided for demographic characteristics, levels of post-traumatic symptoms, and personality characteristics of the participants. Further descriptive analysis focussed on assessing the sample distributions of the various scale measures, amongst other, to check for deviations from normality.

The primary aim of this study focussed on identifying significant predictors of PCL-5. For this analysis multiple regression was employed. The independent variables, as noted in the research objectives, were the five subscale measures of TIPI (Extraversion; Agreeableness; Conscientiousness; Emotional stability/Neuroticism; and Openness to new experiences) and the five subscales of PTGI (New possibilities; Relating to others; Personal strength; Spiritual change; and Appreciation of life).

However, this regression model did not account for assessing the predictive capabilities of socio-economic indicators and the five TIPI personality trait construct variables on PTGI as dependent variable. Therefore additional regression models were calculated. This allowed for drawing meaningful conclusions in relation to the prediction of these main study constructs.

To guide the multiple regression analyses, the model building first considered the bi-variate correlations between dependent and predictor variables. Only those independent variables that showed significant relationships were henceforth included in the regression models.

4.2 Presentation of results

4.2.1 Descriptive data

The participants in this study consisted of 118 FPS employees from nine forensic mortuaries falling under the Gauteng Province jurisdiction. Eighty-four (71.2%) of the participants were forensic officers, eight (6.8%) were forensic medicine practitioners, twenty (16.9%) were administrative staff, and six (5.1%) were forensic science graduate students. Of all the respondents, ninety-seven (82.2%) classified themselves as “Black”, eighteen (15.3%) were “White”, one (0.8%) was “Asian” and two (1.7%) were “Coloured”. Forty-six (39%) participants were male, while seventy-two (61%) were female. Twenty-one (16.8%) of the participants were aged in their 20’s, fifty-one (43.6%) were in their 30’s, thirty-four (29.2%) were in their 40’s, and eleven (8.7%) were aged above 50. Furthermore, seventy-one (60.2%) of the participants had an education of Matric (or less), whilst only forty-seven (38.8%) had some form of tertiary education. Slightly more respondents were married (51.7%) than those who classified themselves as single (48.3%). The majority of participants were involved in post-mortem autopsies (84.7%). Furthermore, ninety-six (81.7%) of the respondents had less than 10 years’ experience in the field.

Almost half of the participants show a high prevalence of PTSD symptomatology. Forty-nine percent (49%) of the sample scored high (> cut-point of 33) on the symptomatic range of the PCL-5 as suggested by Weathers et al. (2013).

Table 1**Sample Demographics**

		Frequency	Percentage
Ages	22-30 years	21	16.8
	31-40 years	51	43.6
	41-50 years	34	29.2
	51-59 years	11	8.7
Race	Black	97	82.2
	Coloured	2	1.7
	White	18	15.3
	Asian	1	0.8
Gender	Female	72	61.0
	Male	46	39.0
Highest education completed	Grade 8-11	10	8.5
	Matric	61	51.7
	Diploma	20	16.9
	Degree	27	22.9
Marital status	Married	61	51.7
	Single	57	48.3
Job title	Administration	20	16.9
	Forensic officer	84	71.2
	Forensic pathologist	8	6.8
	Student	6	5.1
Involvement in post-mortems	No	18	15.3
	Yes	100	84.7
Work experience in years	1-10 years	96	81.7
	11-35 years	22	18.3

Note. Because of missing values in the data, values in the table do not constantly add up to 118.

4.2.2 Data quality and reliability coefficients of the research instruments

The normality of distribution of the sample data and the psychometric properties of the scales were tested. Table 2 presents the means, standard deviations, skewness and kurtosis, and alpha coefficients of the research instruments. It is evident that all the scales are normally distributed since the skewness coefficients are within the range of +1 to -1 (Kothari, 2004). The kurtosis coefficients for each of the individual scales are also within limits. The PCL-5 and the five PTGI subscales had moderate to high reliability (alpha) coefficients, while the reliability coefficients of the five TIPI subscales were poor. As noted in Section 3.3.2, the low reliability coefficient of the TIPI subscales is not cause for concern as the TIPI emphasises content validity considerations, which result in lower inter-item correlations than can be expected of more homogenous scales (Gosling et al., 2003).

4.2.3 Relationship between PCL-5, selective demographic variables, TIPI and PTGI

To guide the multiple regression analysis, the bi-variate correlations between the noted dependent and predictor variables were considered. Only those independent variables that showed significant relationships were identified and included in the subsequent regression models. The results of these models are presented in Section 4.2.4 and 4.2.5.

Table 3 provides a summary of the correlations coefficients between the dependent and independent variables. Where correlations are statistical significant it is indicated with an asterisk ($p < 0.05$).

Table 2***Normality, Mean and Cronbach's alphas of the Research Instruments***

	Skewness	Kurtosis	Mean	SD	α	Items
PCL	0.439 (0.227)	-0.868 (0.551)	30.30	20.27	0.949	20
PTGI Relating to others	0.000 (0.223)	-0.754 (0.442)	17.96	9.03	0.879	7
PTGI New possibilities	-0.378 (0.223)	-0.670 (0.442)	14.58	6.49	0.843	5
PTGI Personal strength	-0.580 (0.224)	-0.368 (0.444)	13.05	4.81	0.825	4
PTGI Spiritual change	-0.385 (0.224)	-1.020 (0.444)	6.17	3.03	0.685	2
PTGI Appreciation of life	-0.332 (0.223)	-0.797 (0.442)	8.96	3.93	0.675	3
TIPI Extraversion	0.106 (0.224)	-0.316 (0.444)	4.03	1.46	0.410	2
TIPI Agreeableness	-0.439 (0.225)	0.081 (0.446)	4.97	1.28	0.286	2
TIPI Conscientiousness	-1.051 (0.226)	0.395 (0.447)	6.02	1.04	0.378	2
TIPI Emotional stability	-0.313 (0.225)	-0.064 (0.446)	4.74	1.37	0.211	2
TIPI Openness to experiences	-0.580 (0.225)	0.165 (0.446)	5.45	1.12	0.131	2

Note. α = Cronbach's alpha

The results indicate that the PCL-5 scores show significant negative correlations with education level; TIPI Agreeableness; TIPI Extraversion; TIPI Conscientiousness; TIPI Emotional stability; and TIPI Openness to experiences. Furthermore, the PCL-5 score shows a significant positive correlation with PTGI Appreciation of life. Respectively, this implies that a lower educational level and lower scores on the various TIPI personality traits mentioned tend to lead to higher levels of PTSD symptoms experienced. Conversely, higher scores of PTGI Appreciation of life tend to lead to higher levels of PTSD symptomology.

Examining the various subscales of PTGI, it is evident that PTGI Relating to others shows a significant negative correlation with job description and a significant positive correlation with TIPI Extraversion. Respectively, these correlations imply that higher scores of PTGI Relating to others can be linked to certain occupational categories of FPS employees. It is also evident that higher scores of TIPI Extraversion tend to lead to the higher scores of PTGI Relating to others.

The subscale of PTGI New possibilities correlates significantly in a negative manner with job description. Furthermore, a significant positive correlation with TIPI Openness to experiences is shown. These results suggest higher scores of PTGI New possibilities can be linked to certain occupational categories of FPS employees. The results also imply that higher scores of TIPI Openness to experiences tend to lead to higher scores of PTGI New possibilities.

Subscale PTGI Personal strength displays significant positive correlations with TIPI Conscientiousness and TIPI Openness to experiences. This suggests that higher scores of TIPI Conscientiousness and TIPI Openness to experiences tend to lead to higher scores of PTGI Personal strength.

PTGI Spiritual change shows a significant negative correlation with job description. The results imply that higher scores of PTGI Spiritual change can be linked to certain occupational categories of FPS employees.

Table 3***Correlations Coefficients between Dependent and Independent Variables***

Independent (X)	Dependent (Y)					
	PCL-5	PTGI Relating to others	PTGI New possibilities	PTGI Personal strength	PTGI Spiritual change	PTGI Appreciation of life
Education level	-0.211*	-0.106	-0.085	-0.048	-0.035	0.035
Job description	-0.148	-0.206*	-0.258*	-0.176	-0.212*	-0.073
TIPI Agreeableness	-0.303*	0.061	0.076	0.038	0.167	0.049
TIPI Extraversion	-0.223*	0.189*	0.118	0.078	-0.038	-0.027
TIPI Conscientiousness	-0.373*	0.017	0.139	0.201*	0.082	0.057
TIPI Emotional stability	-0.412*	0.100	0.061	0.159	0.035	-0.027
TIPI Openness to experience	-0.221*	0.161	0.227*	0.266*	0.096	0.189*
PTGI Relating to others	0.081					
PTGI New possibilities	0.111					
PTGI Personal strength	0.110					
PTGI Spiritual change	0.067					
PTGI Appreciation of life	0.229*					

Note. * Statistically significant correlation ($p < 0.05$)

PTGI Appreciation of life shows a significant positive correlation with TIPI Openness to experiences. The results imply that higher scores of TIPI Openness to experiences tend to lead to higher scores of PTGI Appreciation of life.

The variables that showed significant correlations were henceforth included in the regression models in the next section.

4.2.4 The prediction of PCL-5 as proxy measure of PTSD symptoms by educational level, job description, the five TIPI personality traits and PTGI Appreciation of life

A multiple regression analysis was conducted to assess the explanatory capabilities of the socio-economic indicators educational level and job description; the five subscale measures of TIPI (Extraversion, Agreeableness, Conscientiousness, Emotional stability/Neuroticism, and Openness to new experiences); and PTGI Appreciation of life on PCL-5 as proxy measure of PTSD. The inclusion of these variables in the regression model was identified in the previous phase, namely the correlation analysis.

The predictor variables were entered in three steps or blocks; the first step involved adding only the demographic indicators educational level and job description; the five subscale measures of TIPI were added in the second step; lastly the construct variable PTGI Appreciation of life was added as third step. This strategy is in line with what Pallant (2010) refers to as hierarchical or sequential multiple regression, namely to add predictors in a stepwise manner. Each set of independent variables can therefore be assessed in terms of what they add to the prediction of the dependent variable after the previous variables have been controlled for. Refer to Table 4 where the results of the analysis are reported.

Model 1 shows that PCL-5 were not predicted by either educational level ($\beta = -0.183, p = 0.064$) or job description ($\beta = -0.091, p = 0.352$). The model explained only 5.2% of the variance in the PCL-5 score ($R^2 = 0.052$). The second model with TIPI personality traits added, explained 32.0% of variance in PCL-5 ($R^2 = 0.320$). Conscientiousness ($\beta = -0.240, p = 0.019$) and Emotional stability ($\beta = -0.265, p =$

0.007) being the only significant predictors. The final model with PTGI Appreciation of life added, explained 38.0% of the total variance ($R^2 = 0.380$). TIPI Conscientiousness ($\beta = -0.229$, $p = 0.020$), TIPI Emotional stability ($\beta = -0.251$, $p = 0.008$) and PTGI Appreciation of life ($\beta = 0.249$, $p = 0.003$) being the significant predictors. The results indicate that lower scores of TIPI Conscientiousness and TIPI Emotional stability predicted higher levels of PTSD symptomology, while higher scores of PTGI Appreciation of life were indicative of higher levels of PTSD symptoms. Simply put, respondents who were found to be less conscientious or who were less emotionally stable (as indicated by their TIPI scores) showed more symptoms of PTSD in comparison to respondents with higher scores of TIPI Conscientiousness and TIPI Emotional stability. Additionally, those respondents who seemed to have a higher appreciation of life (as indicated by their PTGI scores) also showed more symptoms of PTSD in comparison to respondents with lower scores of PTGI Appreciation of life.

The non-significant independent variables reported in the model (i.e., job description), therefore, do not present with any predictive or explanatory power/capabilities in the context of study. This result will be true for the models that follow in relation to non-significant independent variables.

Table 4***The Prediction of PCL-5***

Variables	Model 1	Model 2	Model 3
Step 1:			
Educational level	-0.183	-0.109	-0.128
Job description	-0.091	-0.139	-0.120
Step 2:			
TIPI Agreeableness		-0.083	-0.102
TIPI Extraversion		-0.090	-0.080
TIPI Conscientiousness		-0.240*	-0.229*
TIPI Emotional stability		-0.265**	-0.251**
TIPI Openness to experience		-0.093	-0.134
Step 3:			
PTGI Appreciation of life			0.249**
<hr/>			
R ² (Adj. R ²)	0.052 (0.035)	0.320 (0.272)	0.380 (0.329)
ΔR ²	0.052	0.320	0.380
F	3.019	6.656	7.499

Note. * $p < 0.05$; ** $p < 0.01$

4.2.5 Predictions for PTGI

4.2.5.1 The prediction of PTGI Relating to others by job description and TIPI Extraversion

Table 5 shows that PTGI Relating to others was predicted by job description ($\beta = -0.206$, $p = 0.025$) in the first model. The model explained 4.3% of the total variance in the PTGI Relating to others score ($R^2 = 0.043$). The second model ($R^2 = 0.075$) with TIPI Extraversion added explained 7.5% of the variance in PTGI Relating to others score, with both job description ($\beta = -0.199$, $p = 0.029$) and TIPI Extraversion ($\beta = 0.187$, $p = 0.040$) significantly predicting PTGI Relating to others. The results suggest that the manner in which respondents relate to others was predicted by their type of occupational uptake. For example, those respondents involved in administration work showed higher scores on PTGI Relating to others than the other job descriptions.

Furthermore, the results imply that higher scores of TIPI Extraversion predicted higher scores on the PTGI Relating to others subscale. In other words, more extroverted respondents (as indicated by their TIPI scores) were found to be better able in relating to others (as indicated by their PTGI scores) than those respondents who were more introverted.

Table 5***The Prediction of PTGI Relating to others***

Variables	Model 1	Model 2
Step 1:		
Job description	-0.206*	-0.199*
Step 2:		
TIPI Extraversion		0.187*
R ² (Adj. R ²)	0.043 (0.034)	0.075 (0.059)
ΔR^2	0.043	0.075
F	5.161	4.640

Note. * $p < 0.05$

4.2.5.2 The prediction of PTGI New possibilities by job description and TIPI Openness to experiences

Table 6 shows that PTGI New possibilities was predicted by job description ($\beta = -0.258, p = 0.005$) in the first model. The model explained 6.7% of the total variance in the PTGI New possibilities score ($R^2 = 0.067$). The second model ($R^2 = 0.102$), with TIPI Openness to experiences added, explained 10.2% of variance in PTGI New possibilities, with both job description ($\beta = -0.227, p = 0.013$) and TIPI Openness to experiences ($\beta = 0.197, p = 0.030$) significantly predicting PTGI New possibilities. The results suggest that the respondents' awareness of new possibilities was predicted by their type of occupational uptake. For example, forensic pathologists had less awareness of new possibilities (as indicated by their PTGI scores) than administrative personnel.

Furthermore, the results imply that higher scores of TIPI Openness to experiences predicted higher levels of PTGI New possibilities. This means that respondents who were found to be more open to experiences (as indicated by their TIPI scores) showed more awareness of new possibilities (as indicated by their PTGI scores) than respondents who were found to be less open to experiences.

4.2.5.3 The prediction of PTGI Personal strength by TIPI Conscientiousness and TIPI Openness to experiences

Table 7 shows that PTGI Personal strength was only significantly predicted by TIPI Openness to experiences ($\beta = 0.212, p = 0.036$) but not TIPI Conscientiousness ($\beta = 0.115, p = 0.252$). The model explained 7.8% of the variance in the PTGI Personal strength score ($R^2 = 0.078$). The results suggest that higher scores of TIPI Openness to experiences predicted higher scores of PTGI Personal strength. In other terms, respondents who were found to be more open to experiences (as indicated by their TIPI scores) showed higher levels of personal strength (as indicated by their PTGI scores) than respondents who were found to be less open to experiences.

Table 6***The Prediction of PTGI New possibilities***

Variables	Model 1	Model 2
Step 1:		
Job description	-0.258**	-0.227**
Step 2:		
TUPI Openness to experiences		0.197*
R ² (Adj. R ²)	0.067 (0.058)	0.102 (0.086)
ΔR ²	0.067	0.102
F	8.266	6.437

Note. * $p < 0.05$; ** $p < 0.01$

Table 7***The Prediction of PTGI Personal strength***

Variables	Model 1
TUPI Openness to experiences	0.212*
TUPI Conscientiousness	0.115
R ² (Adj. R ²)	0.078 (0.061)
ΔR ²	0.078
F	4.631
<i>Note.</i>	* <i>p</i> < 0.05

4.2.5.4 *The prediction of PTGI Spiritual change by job description*

Table 8 shows that PTGI Spiritual change was significantly predicted by job description ($\beta = -0.212, p = 0.022$). The model explained 4.5% of the total variance in the PTGI Spiritual change score ($R^2 = 0.045$). The results suggest that the type of work that respondents are involved in at the FPS, predicted their ability for PTGI Spiritual change. This implies that the respondents' experience of spiritual change was predicted by their type of occupational uptake. For example, forensic pathologists had seemingly experienced less spiritual change (as indicated by their PTGI scores) than administrative personnel.

4.2.5.5 *The prediction of PTGI Appreciation of life by TIPI Openness to experiences*

Table 9 shows that PTGI Appreciation of life was significantly predicted by TIPI Openness to experiences ($\beta = 0.189, p = 0.042$). The model explained 3.6% of the variance in the PTGI Appreciation of life score ($R^2 = 0.036$). The results suggest that higher scores of TIPI Openness to experiences predicted higher scores of PTGI Appreciation of life. In other words, respondents who were found to be more open to experiences (as indicated by their TIPI scores) showed more appreciation of life (as indicated by their PTGI scores) than respondents who were found to be less open to experiences.

4.3 Conclusion

Chapter 4 presented the statistical results, highlighting significant correlations between potential predictors, PTSD symptomatology, and PTG. Multiple regression analysis was conducted to examine the prediction of PTSD symptoms and PTG by those independent variables that showed significant association during the linear relationship analysis. To follow in the next chapter is a discussion of the obtained results in alignment with the structure of the methods and results sections.

Table 8

The Prediction of PTGI Spiritual change

Variables	Model 1
Job description	-0.212*
R ² (Adj. R ²)	0.045 (0.037)
ΔR ²	0.045
F	5.421

Note. * $p < 0.05$

Table 9

The Prediction of PTGI Appreciation of Life

Variables	Model 1
TIPI Openness to experiences	0.189*
R ² (Adj. R ²)	0.036 (0.027)
ΔR ²	0.036
F	4.231

Note. * $p < 0.05$

CHAPTER 5

DISCUSSION, RECOMMENDATIONS, AND LIMITATIONS OF THE STUDY

5. Introduction

The results obtained in this study have illuminated the extent of traumatic stress, as well as the possibility for post-traumatic growth (PTG) within Forensic Pathology Services. Although a variety of authors have touched on the experience of traumatic stress affecting mortuary workers, these studies were primarily conducted outside of South Africa. Additionally, numerous of these studies have examined risk factors for traumatic stress in mortuary workers in relation to specific mass disasters or conditions of war, but few have approached the question from the perspective of repetitive and/or prolonged death exposure. This study aimed to highlight the association between personality traits and traumatic stress and/or post-traumatic growth of FPS employees within the South African context.

5.1 Discussion

Over the past decade, it has become evident that traumatic stress resulting from death exposure can lead to the development of PTSD. The nature of the FPS's work implicates prolonged involvement with potentially traumatic stressors, which puts FPS employees at a greater occupational risk of developing PTSD during the course of their careers. A growing body of literature has focused on risk and protective factors associated with the development of, or resilience against occupation-related PTSD development. This study therefore focused its attention on investigating whether personality traits have a predictive role in the development of, or resilience against PTSD in a sample of FPS employees.

On the contrary, literature proposes that the experience of trauma could have a salutogenic effect (e.g., Jakovljević et al., 2012). Since this study accepted resilience as the general resistance to traumatic stress owing to existing pre-trauma personality traits, PTG is better understood as a means of adjusting to traumatic circumstances - which ultimately results in significant personal growth (Tedeschi & Calhoun, 2004). This implies that PTG cannot occur without the experience of

traumatic stress or the possibility of developing PTSD. As such, the study concurrently examined whether personality traits have a predictive role in the occurrence of PTG in a sample of FPS employees.

5.1.1 The prediction of PTSD by the five personality traits, educational level and PTGI Appreciation of life

In the present study, almost half of the participants show a high prevalence of PTSD symptomatology. Results indicated that the FFM personality traits Conscientiousness and Emotional stability (as opposed to Neuroticism), as well as Appreciation of life from the PTGI, were significant predictors of PTSD. The results imply that lower scores of Conscientiousness and Emotional stability tend to lead to the experience of higher levels of PTSD. Conscientiousness is characterised by organisation, purposive action, self-control, and determination to achieve (McCrae & Costa, 2003). Emotional stability denotes a person's ability to remain constant and balanced. On the other hand, an individual with a high level of Neuroticism has the inclination to easily experience negative emotions (McCrae & Costa, 2003). It is thus plausible that FPS employees who are less organised, lacking in self-discipline and/or ambition with regards to this critical incident occupation, are at greater risk of developing PTSD.

Conscientiousness has sparked research interest because it is seen as an indirect measure of emotional regulation, which is understood to be instrumental in moderating the effects of traumatic experiences (e.g., Campbell-Sills et al., 2006; Vrana, 2001). Similarly, individuals scoring lower on Emotional stability (and thus higher on Neuroticism) have a lower tolerance for stress or aversive stimuli, and are emotionally reactive – which makes them more vulnerable to developing PTSD. Indeed, a study by Hodgins et al. (2001) showed that high levels of Conscientiousness served as a protective factor against PTSD symptomatology as this trait may assist in coping with the procedure-oriented expectations of a critical incident occupation. The above-mentioned study also concluded that high levels of Neuroticism were indicative of an increased risk of developing PTSD symptomatology. Similarly, in a longitudinal study by Löckenhoff et al. (2009), results indicated that

Conscientiousness (and Extraversion) lead to better mental health outcomes after experiencing adverse life events.

This study's results are consistent with longstanding literature which indicates a significant link between Neuroticism and the development of PTSD (e.g., Breslau et al., 1995; Caska & Renshaw, 2013; Haisch & Meyers, 2004). In our sample, however, Extraversion, Agreeableness, and Openness to experiences did not predict PTSD symptomology. Nevertheless, this general pattern was mostly consistent with prior findings, with the exception of Agreeableness (e.g., Borja, Callahan, & Rambo, 2009; Talbert et al., 1993). Likewise, some studies have found that positive personality dimensions (measured with the FFM measures) were not significantly linked to lower PTSD symptomology (e.g., Caska & Renshaw, 2013; Yuan et al., 2011).

Literature on the association between personality traits and PTSD symptoms are inconclusive and contradictory. It is, therefore, important to remember that the FFM of personality traits are not necessarily expressed in isolation of one another (McCrae & Costa, 2003). It is reasonable to assume that different individuals have differing levels of the five traits and that the traits have overlying relations with certain risk and/or resiliency factors. Therefore, some traits can be linked to self-worth and positive emotionality, while these traits may also overlap on appraisal and coping style (Haisch & Meyers, 2004). Moreover, some traits may be linked to higher levels of social support. It is, therefore, important to deliberate the likely impact that interactions among personality traits have on an individual's response to traumatic stress. For example, this study's results may suggest that FPS employees may be at greater risk for developing PTSD symptomology if they score, concurrently, high on Neuroticism and low on Conscientiousness. This was found to be the case in a study of job-related well-being in the South African Police Service (SAPS) (Mostert & Rothmann, 2009). Nevertheless, there are several other personality configurations that may intensify or alleviate risk in this specific occupation.

This study's cross-sectional nature highlights the importance of acknowledging other probable ways in which personality may impact on the development of PTSD symptomology. Some studies have proposed that an

individual's pre-trauma personality and the subsequent post-trauma changes in personality may mediate the link between traumatic stress and PTSD (Follette, Polusny, & Milbeck, 1994). For example, the study by Follette et al. (1994) concluded that both mental health and law enforcement professionals with personal trauma histories had considerably more post-traumatic stress symptoms than employees who did not report previous traumas. More specifically, Bramsen, van der Ploeg, Leo and Adér (2002) concluded that developing a negative view of the world after experiencing traumatic stress, increased the probability of combat-veterans reporting higher levels of Neuroticism and being more vulnerable to post-traumatic stress. Nonetheless, the findings in this area are not conclusive, as Talbert et al. (1993) noted that FFM personality profiles of veterans with PTSD were not associated with combat exposure. Similarly, a study by Rademaker, van Zuiden, Vermetten and Geuze (2011) reported that pre-trauma Neuroticism and Introversion were not exclusively accountable for post-trauma PTSD symptoms beyond previous psychological distress. Therefore, more prospective research studies are required to better comprehend the mediational impact of personality on these associations.

Interestingly, the demographic variables in this study, bar educational level (at least at linear level) did not show a predictive relationship to PTSD symptomology. These variables included age; race; gender; marital status; work experience; job description; and involvement with post-mortems. Existing research shows conflicting results on whether an employee's education level influences the psychological impact of traumatic stress. Some research studies discovered that an individual's level of training (generalised to education), played no role in the development of trauma-related disorders (e.g., Bride, Robinson, Yegidis, & Figley, 2004). However, as was the case in this study, level of education has been shown to have an impact on the probability of developing trauma-related disorders (e.g., Bramsen, Dirkzwager, & van der Ploeg, 2000). In this study, educational level and PTSD symptomology showed a negative correlation at a linear level. The reason for this may be that FPS employees with additional training (and education in the field) tend to be involved with death scenes/post-mortem investigations which are potentially more traumatizing as they may be better equipped to handle these situations efficiently. It is therefore possible that these FPS employees have become somewhat desensitised through repeated exposure. It is also important to

differentiate between forensic medical practitioners (with extensive tertiary education) and, for example, forensic officers (with Matric). The unique field of forensic pathology is a specific career choice for medical doctors wishing to specialize in death investigation, whereas for many forensic officers, this choice of occupation may have been more influenced by financial considerations than by true interest. Nevertheless, a higher educational level does not necessarily make an individual exempt from suffering the same psychological distresses than other FPS employees.

Lastly, the results of this study show that higher scores of PTGI Appreciation of life predicted higher levels of PTSD symptoms. This result is consistent with a study involving motor vehicle accident victims in which the individuals with PTSD scored higher on their views of Appreciation of life (and Spiritual change) than those without PTSD (Nishi, Matsuoka, & Kim, 2010). The authors explained this by noting that Appreciation of life was also strongly correlated with avoidance as assessed by the Impact of Event Scale-Revised (IES-R); implying that avoidant coping can impede more active coping mechanisms, leading to higher PTSD vulnerability. More research studies are required to better comprehend the relationship between specific PTG factors and PTSD.

5.1.2 The prediction of PTG by the personality traits and job description

In this study, PTGI factors Relating to others, New possibilities, and Spiritual change have been significantly predicted by the demographic variable of job description. The subcategories for job description used in our study comprised of: administration; forensic officers; forensic pathologists; and forensic students. Results from this study showed that 'lower' job description categories predict higher levels of PTGI Relating to others, PTGI New possibilities and PTGI Spiritual change. The inverse of this predictive relationship stands in that 'higher' job description categories predicted lower levels of growth in the mentioned PTGI factors.

Tedeschi and Calhoun (2004) proposed that a perception of sufficient social support is linked to better adaptability in the face of adversity. In the aftermath of

traumatic stress, individuals may therefore experience a deeper emotional connection with others, as well as feelings of closeness in their interpersonal relationships (Tedeschi & Calhoun, 2004). In this study, FPS employees in an administrative capacity showed more growth in their ability to relate to others than, for example, forensic medical practitioners. It was also found that the former also showed better growth in the area of confronting new possibilities. Growth in this area implies that an individual's previous assumptions and beliefs are reformed - leading to a better awareness of new opportunities (Tedeschi & Calhoun, 2004). Similarly, confrontation with traumatic stress can lead an individual to grow in terms of religious or spiritual matters. The belief in a religion may intensify after a traumatic experience and also serve as a coping mechanism in the cognitive process of finding meaning (Tedeschi & Calhoun, 2004). However, Tedeschi and Calhoun (2004) stated that growth in this sphere varies among individuals and is dependent on their previous relationship to religiosity and spirituality.

Differences between the mentioned job descriptions in this study relate to variations in rank; workload; salaries; training; working hours; possibility of promotions; available resources; and career interests – to name but a few. Most of these differences have been identified as factors that influence job performance, motivation, and endurance of employees (e.g., Rafferty, Friend, & Landsbergis, 2001). These factors may, therefore, explain the association found between the mentioned PTGI factors and job description. Further research into this is required to better comprehend the relationship between job description and specific PTG factors.

In this study, PTGI Relating to others also was significantly predicted by the personality trait of Extraversion. Results indicate that higher scores of Extraversion predicted higher scores on the PTGI Relating to others subscale. This makes sense as extraverted individuals generally tend to be more sociable, friendly, and disinhibited (McCrae & Costa, 2003). Additionally, this result may be related to coping strategies of extraverted individuals, who tend to use mechanisms involving social support-seeking (McCrae & Costa, 2003). Furthermore, this study found that PTGI New possibilities, PTGI Personal strength, and PTGI Appreciation of life were significantly predicted by the personality trait of Openness to experiences. This trait

entails being interested in new situations, new experiences and ideas. The results suggest that higher scores of Openness to experience predicted higher scores of PTGI New possibilities, PTGI Personal strength, and PTGI Appreciation of life. This could possibly be due to the fact that high scorers on Openness to experience generally show a tendency to be more curious, flexible, creative, unconventional, and attentive to feelings (McCrae & Costa, 2003). Since cognitive processing is necessary for PTG (Tedeschi & Calhoun, 2004), it can be expected that individuals showing Openness to experiences are possibly more equipped to cognitively process traumatic stress and therefore show more growth in the mentioned domains.

Results from this study generally replicate and extend findings from earlier research studies. For instance, Extraversion and Openness to experience were linked to PTG in Tedeschi and Calhoun's (1996) study of participants who were drafted from a more wide-ranging population. More specifically, strong correlations of Extraversion and Openness to experience were especially noted in a study of personality, coping, and PTG in emergency ambulance personnel (Shakespeare-Finch, Gow, & Smith, 2005). Results indicated that Openness to experience and changes in the perception of PTGI New possibilities revealed the most robust relationship, with Extraversion forming the most significant relationship with changes in PTGI Relating to others. Similar to our study, Neuroticism was not meaningfully correlated with PTG (Shakespeare-Finch et al., 2005). Future research on how personality traits relate to PTG by examining cognitive processing and coping strategies unique to these traits, may prove to be extremely valuable.

5.2 Recommendations

It is important to note the most readily addressable recommendations for future research consideration based on information gathered from this study's literature review and results sections.

There is a severe lack of research pertaining to the psychological effects of forensic mortuary work and whether these effects can be mediated by personality factors. The researcher strongly recommends that future research studies aim to incorporate larger and more representative samples of the FPS population.

Therefore, similar studies should be replicated in other Provinces in order to fairly represent the FPS, country-wide. This would allow for more widely generalisable conclusions.

Given the high probability that FPS employees will experience potentially traumatic events during their career, this occupational group may be an ideal population to include in prospective research studies that could irradiate how underlying risk/resilience factors affect reactions to trauma. Such evidence could, in turn, inform prevention and intervention efforts that endeavour to lessen trauma-related psychological symptoms. These interventions should aim to reinforce pre-existing protective traits in FPS employees. Programs should aim to improve resilience to traumatic stress and decrease barriers to support.

Moreover, resilience programs may be most effective if administered in a more targeted manner. Trobst (2000) proposes that intervention techniques are likely to be more effective when personalised for individuals, or even groups of individuals, based on their personality traits. For example, FPS employees who score high on Neuroticism may perhaps benefit from relaxation training. On the other hand, those employees who are more Extroverted may react better to suggestions involving social support. Likewise, employees who score high on Openness to experiences may possibly benefit from training in art therapy. In other words, interventions could be more successful if tailored to employees' fundamental personality traits, instead of according to the nature of the traumatic stressor (Trobst, 2000).

It is important to remain mindful of the fixed nature of personality questionnaires (Kothari, 2004). The limited number and range of responses that are made available to participants remain challenging in an effort to account for the complexities inherent in a variable such as personality. It is, therefore, recommended that future research studies employ a combination of self- and other report instruments to address some of the challenges associated with the use of self-report measures and response bias. Individual interviews to investigate differences or similarities between the self- and observer reports may offer additional valuable insights. Furthermore, future studies of this nature should perhaps consider a combination of quantitative and qualitative data collection and analysis methods.

This may offer a more comprehensive understanding of the complex relationship between personality and traumatic stress and/or traumatic growth within a critical incident occupation such as the FPS.

5.3 Limitations of the study

There are several limitations that should be considered when interpreting these results. Firstly, this research study was limited in that the sample size was drawn solely from the Gauteng Province, from which only 118 members participated. Furthermore, the demographic subgroupings for this study were predominantly unequal in that the overwhelming majority of participants were black females. This highlights the need for further investigation into traumatic stress and PTG within the FPS, country-wide.

Language is a particularly significant source of bias when the language of a self-report instrument is not the first language of the participant (Kothari, 2004). For instance, the FFM has been supported in Afrikaans and English-speaking groups, but has not been duplicated for individuals who speak predominantly African languages (Laher, 2010). Although this study only required a basic level of English literacy, it is important to remain cognisant of the influence of language bias on the results of this study. It is thus vital to consider participants' home language when choosing measurement instruments for studies within the South African context.

While self-report methodology and declarations of confidentiality may have aided in decreasing response bias, it can still not be eliminated. This study's data collection instruments do not contain formalised items that measure social desirability, faking, or acquiescence. It may well be possible that FPS employee culture serves to discourage reporting of psychological symptoms. It is, therefore, likely that some respondents denied or underreported problems and, as a result, did not score above the threshold for PTSD symptomology. It is consequently possible that the reported levels on the measure of post-trauma reactions are, in reality, much higher. Additionally, FPS employees on leave of absence were not included in this study, nor could data be gathered from those individuals who declined participation.

Those who did not participate may possibly include employees who suffer the most from trauma-related stress.

5.4 Conclusion

In conclusion, this study found that traumatic stress is, in fact, prominent within the Gauteng Province's FPS. Looking at personality predictors, it appears that greater levels of Neuroticism and lower levels of Conscientiousness place FPS employees at a higher risk of being vulnerable to traumatic stress. Also, having a higher level of Appreciation of life (PTGI) seems to enhance the risk of developing PTSD symptomology in this occupational group. Furthermore, it would seem that higher formal education serves as a protective factor against the development of PTSD symptoms among participants.

With regards to post-traumatic growth, employees in lower-level positions (such as administration) showed higher levels of spiritual change, more awareness of new possibilities, and a better manner of relating to others. Additionally, FPS employees who are more extroverted also seem to better relate to others than those who have a more introverted personality type. Lastly, employees who have personalities characterised by openness to experiences, are more likely to experience post-traumatic growth by being more aware of new possibilities, being better able to appreciate life, and by achieving growth through their personal strengths.

These results provide a sufficient base from which future research might benefit. Further research with larger and more representative samples is required to determine whether these results can be generalised to other Provinces and to further explore the predictive relationship between personality and post-traumatic stress and/or post-traumatic growth in the FPS.

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APPENDICES

Appendix A: Ethics clearance



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities
Research Ethics Committee

27 May 2016

Dear Prof Maree

Project: Personality predictors of post-traumatic stress disorder and post-traumatic growth in forensic mortuary employees
Researcher: F Heiberg
Supervisor: Dr MS Makhubela
Department: Psychology
Reference number: 14087732 (GW20160515HS)

Thank you for the application that was submitted for ethical consideration.

I am pleased to inform you that the above application was **approved by the Research Ethics Committee** on 26 May 2016. Data collection may therefore commence.

Please note that this approval is based on the assumption that the research will be carried out along the lines laid out in the proposal. Should the actual research depart significantly from the proposed research, it will be necessary to apply for a new research approval and ethical clearance.

The Committee requests you to convey this approval to the researcher.

We wish you success with the project.

Sincerely

A handwritten signature in black ink, appearing to read 'Maxi Schoeman'.

Prof Maxi Schoeman
Deputy Dean: Postgraduate Studies and Ethics
Faculty of Humanities
UNIVERSITY OF PRETORIA
e-mail: tracey.andrew@up.ac.za

Kindly note that your original signed approval certificate will be sent to your supervisor via the Head of Department. Please liaise with your supervisor.

Research Ethics Committee Members: Prof MME Schoeman (Deputy Dean); Prof KL Harris; Dr L Blokland; Dr R Fassett; Ms KT Govender; Dr E Johnson; Dr C Panebianco; Dr C Puttergilt; Dr D Reyburn; Prof GM Spies; Prof E Taljard; Ms B Tsebe; Dr E van der Klanshorst; Mr V Sithola

Appendix B: Information sheet and consent form



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities
Department of Psychology

INFORMATION FOR PARTICIPANTS

PROJECT TITLE: “PERSONALITY PREDICTORS OF POST-TRAUMATIC STRESS DISORDER AND POST-TRAUMATIC GROWTH IN FORENSIC MORTUARY EMPLOYEES”.

PROJECT LEADER: FRANCHELE HEIBERG

1. You are invited to participate in the following research project:
“Personality predictors of post-traumatic stress disorder and post-traumatic growth in forensic mortuary employees”.
2. Participation in the project is completely voluntary and you are free to withdraw from the project (without providing any reasons or consequences) at any time.
3. It is possible that you might not personally experience any advantages during the project, although the knowledge that may be accumulated through the project might prove advantageous to others.
4. You are encouraged to ask any questions that you might have in connection with this project at any stage. The project leader will gladly answer your question(s).
5. There are no known consequences of completing a questionnaire about personality traits, PTSD, resilience and PTG. However, some individuals may react apprehensively; being sensitive to completing questions about situations that were not particularly comfortable for them. If this happens, you will be referred for debriefing at the University of Pretoria’s Itsoseng Clinic at no cost.

6. Should you at any stage feel unhappy, uncomfortable or is concerned about the research, please **contact the researcher (Ms F. Heiberg) on: 0825956896 or her study supervisor (Dr. M. Makhubela) at the University of Pretoria, Tel: 012 420 2830.**



CONSENT FORM

PROJECT TITLE: PERSONALITY PREDICTORS OF POST-TRAUMATIC STRESS DISORDER AND POST-TRAUMATIC GROWTH IN FORENSIC MORTUARY EMPLOYEES

PROJECT LEADER: FRANCHELE HEIBERG

I, _____ hereby voluntarily consent to participate in the following project:

“PERSONALITY PREDICTORS OF POST-TRAUMATIC STRESS DISORDER AND POST-TRAUMATIC GROWTH IN FORENSIC MORTUARY EMPLOYEES”

I realise that:

1. The study investigates the role of personality traits in the vulnerability, resilience, and post-traumatic growth associated with PTSD, in a forensic mortuary environment in South Africa.
2. The research project, i.e., the extent, aims and methods of the research, has been explained to me.
3. The procedure envisaged may hold some risk for me that cannot be foreseen at this stage (i.e., psychological distress as a result of completing a

questionnaire on post-traumatic stress disorder).

4. The Faculty of Humanities' Research and Ethics Committee at the University of Pretoria has approved that individuals may be approached to participate in the study.
5. The project sets out the risks that can be reasonably expected as well as possible discomfort for persons participating in the research, an explanation of the anticipated advantages for myself or others that are reasonably expected from the research and alternative procedures that may be to my advantage.
6. I will be informed of any new information that may become available during the research that may influence my willingness to continue my participation.
7. Access to the records that pertain to my participation in the study will be restricted to persons directly involved in the research.
8. Any questions that I may have regarding the research, or related matters, will be answered by the researcher.
9. If I have any questions about, or problems regarding the study, or experience any undesirable effects, I may contact the project leader (Ms F. Heiberg: 0825956896).
10. Participation in this research is voluntary and I can withdraw my participation at any stage.
11. The raw data will be securely stored at the Department of Psychology's storage room (HSB 11 - 23) for a minimum period of 15 years for archiving and reuse. During this period the raw data might also be used for further research by other researchers.
12. I indemnify the University of Pretoria and all persons involved with the above project from any liability that may arise from my participation in the above

project or that may be related to it, for whatever reasons, including negligence on the part of the mentioned persons.

SIGNATURE OF PARTICIPANT

**SIGNATURE OF PERSON THAT INFORMED
THE RESEARCHED PERSON**

Signed at _____ this ____ day of _____ 20__

Appendix C: Permission letter to conduct research (Mortuary manager)

Permission to access Records / Files / Data base at the Tshwane Medico-Legal Mortuaries

To:

From: Ms. Franchéle Heiberg

Re: Permission to do research at Tshwane Medico-Legal Mortuaries

I am a Masters student from the Department of Psychology, University of Pretoria. I am requesting permission to conduct a study at the Mortuary facilities of Ga-Rankuwa, Bronkhorstspuit, and Pretoria.

The request is lodged with you in terms of the requirements of the Promotion of Access to Information Act. No. 2 of 2000.

The title of the study is: Personality predictors of post-traumatic stress disorder and post-traumatic growth in forensic mortuary employees

The researcher requests permission to the following:

- Access to the employee records of this facility.
- Administration of anonymous questionnaires to employees after informed consent has been obtained.

We intend to publish the findings of the study in a professional journal and/ or at professional meeting like symposia, congresses, or other meetings of such a nature.

We intend to protect the personal identity of the participants by assigning each participant a random code number.

We undertake not to proceed with the study until we have received approval from the Faculty of Humanities' Research and Ethics Committee, University of Pretoria.

Yours sincerely,
Ms Franchéle Heiberg

Permission to do the research study at this facility and to
access the information as requested is hereby approved:

L.A. SEKI AOILELO
ASSISTANT DIRECTOR
J. Heiberg
Name & Surname 7745

Signature

Appendix D: Questionnaire

POST-TRAUMATIC STRESS AND POST TRAUMATIC GROWTH IN MORTUARY WORKERS IN SOUTH AFRICA

Dear participant,

We invite you to kindly take part in a study investigating the role of personality traits in the vulnerability, resilience, and post-traumatic growth associated with PTSD, in a forensic mortuary environment in South Africa. Participation in the project is completely voluntary and you are free to withdraw your participation (i.e., without providing any reasons or consequences) at any time. The Ethics Committee of the University of Pretoria has approved that individuals may be approached to participate in the study. In the event that you seek clarification regarding the research (e.g., meaning of words or statements), or related matters, the researcher will be glad to assist. We will not at any stage reveal what your individual answers were. The results will be analysed for groups only. Confidentiality is guaranteed. We believe that no harm will arise by taking part in this study. However, if you wish to discuss any aspect of the study afterwards, feel free to do so, after completing the questionnaire. Please answer without stating your name anywhere on the questionnaire. Codes will be used to identify your completed questionnaire. Please make sure that you answer all the questions and sections.

Before proceeding further, please answer the following question below:

Do you agree to take part in this study and indemnify the University of Pretoria and all persons involved with the above project from any liability that may arise from your participation in the above project or that may be related to it, for whatever reasons, including negligence on the part of the mentioned persons?

Yes, I agree to take part in the study, and agree to sign the consent form which will be given to me.	
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If **you do not wish to take part**, you are free to stop now and return the questionnaire unanswered. Nevertheless, we thank you for your time.

Researcher: F. Heiberg,
Department of Psychology
Human Sciences Building
University of Pretoria
+27825956896

SECTION A:

Instructions: Please note that the information provided below does not in any way identify you as an individual. It is used to gain an even better understanding of the issues investigated in the study.

1. What is your gender?

1.	Male	
2.	Female	

2. My age: _____ years

3. What is your race?

1.	Black	
2.	Coloured	
3.	Asian	
4.	White	

4. Marital status?

1.	Married	
2.	Single	

5. What is your level of education?

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6. Job title/description

7. Years of FPS employment

8. Involvement with post-mortems

YES	NO
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SECTION B

Instructions: Here are a number of personality traits that may or may not apply to you. Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement. You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other.

Items	<i>Disagree strongly</i>	<i>Disagree moderately</i>	<i>Disagree a little</i>	<i>Neither agree nor disagree</i>	<i>Agree a little</i>	<i>Agree moderately</i>	<i>Agree strongly</i>
1) Extraverted, enthusiastic.	1	2	3	4	5	6	7
2) Critical, quarrelsome.	1	2	3	4	5	6	7
3) Dependable, self-disciplined.	1	2	3	4	5	6	7
4) Anxious, easily upset.	1	2	3	4	5	6	7
5) Open to new experiences, complex.	1	2	3	4	5	6	7
6) Reserved, quiet.	1	2	3	4	5	6	7
7) Sympathetic, warm.	1	2	3	4	5	6	7
8) Disorganized, careless.	1	2	3	4	5	6	7
9) Calm, emotionally stable.	1	2	3	4	5	6	7
10) Conventional, uncreative.	1	2	3	4	5	6	7

SECTION C:

Instructions: Here is a list of problems that people sometimes have in response to extremely stressful experiences (i.e., traumatic work environment): **keeping your worst event in mind**, please read each problem carefully and then circle one of the numbers to indicate how much you have been bothered by that problem **in the past month**.

Items	<i>Not at all</i>	<i>A little bit</i>	<i>Moderately</i>	<i>Quite a bit</i>	<i>Extremely</i>
1) Repeated, disturbing, and unwanted memories of the stressful experience?	0	1	2	3	4
2) Repeated, disturbing dreams of the stressful experience?	0	1	2	3	4
3) Suddenly feeling or acting as if the stressful experience were actually happening again (<i>as if you were actually back there reliving it</i>)?	0	1	2	3	4
4) Feeling very upset if something reminded you of the stressful experience?	0	1	2	3	4
5) Having strong physical reactions when something reminded you of the stressful experience (<i>for example, heart pounding, trouble breathing, sweating</i>)?	0	1	2	3	4
6) Avoiding memories, thoughts, or feelings related to the stressful experience?	0	1	2	3	4
7) Avoiding external reminders of the stressful experience (<i>for example, people, places, conversations, activities, objects, or situations</i>)?	0	1	2	3	4
8) Trouble remembering important parts of the stressful experience?	0	1	2	3	4
9) Having strong negative beliefs about yourself, other people, or the world (<i>for example, having</i>	0	1	2	3	4

<i>thoughts such as: I am bad; there is something seriously wrong with me; no one can be trusted; the world is completely dangerous)?</i>					
10) Blaming yourself or someone else for the stressful experience or what happened after it?	0	1	2	3	4
11) Having strong negative feelings such as fear, horror, anger, guilt, or shame?	0	1	2	3	4
12) Loss of interest in activities that you used to enjoy?	0	1	2	3	4
13) Feeling distant or cut off from other people?	0	1	2	3	4
14) Trouble experiencing positive feelings (<i>for example, being unable to feel happiness or have loving feelings for people close to you</i>)?	0	1	2	3	4
15) Irritable behaviour, angry outbursts, or acting aggressively?	0	1	2	3	4
16) Taking too many risks or doing things that could cause you harm?	0	1	2	3	4
17) Being "super alert" or watchful or on guard?	0	1	2	3	4
18) Feeling jumpy or easily startled?	0	1	2	3	4
19) Having difficulty concentrating?	0	1	2	3	4
20) Trouble falling or staying asleep?	0	1	2	3	4

SECTION D:

Instructions: Indicate for each of the statements below the degree to which this change occurred in your life as a result of the crisis/stressful experience, 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.

Items	0	1	2	3	4	5
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.						

Thank you very much for participating in this study!!!