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**How do social support and optimism moderate the relationship between  
traumatic exposure and PTSD symptoms?**

A thesis presented in partial fulfilment of the requirements for the degree of Master of Arts  
in Psychology at Massey University, Albany, New Zealand.

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2015

## **Declaration**

I declare that this thesis represents my own work, except where due acknowledgement is made, and that it has been previously included in a thesis, dissertation or report submitted to this University or to any other institution for a degree, diploma or other qualification.

.....

Barbara E. Wojciewska

*Promise me you'll always remember: You're braver than you believe, and stronger than you seem, and smarter than you think.*

A. A. Milne



Illustration by Beata Wojciewska, 2015.

## **Abstract**

The aim of this research was to look at how individuals within the Auckland region of New Zealand were affected by traumatic events in their lives. The current study's aims included looking at the relationship between trauma exposure and PTSD symptoms within individuals that had experienced traumatic events in the Auckland region of New Zealand. The current project also aimed to investigate whether optimism and social support had a moderating effect on the PTSD symptoms of Auckland residents who had experienced trauma. A cross-sectional, self-report survey design was used to collect data. This design was selected due to the time constraints of the project and considerations of how data would be collected. The self-report questionnaire was the only method of data collection for our constructs of PTSD, traumatic events, optimism and social support. Participants voluntarily completed the questionnaire online. One hundred and fifty participants attempted the questionnaire. One hundred and eight participants provided complete data. Statistical analysis was conducted to establish the relationship between trauma exposure, within 12 months and lifetime, and PTSD symptom prevalence within a general Auckland, New Zealand population. In addition, moderation analyses were conducted on the relationship between PTSD symptoms and trauma exposure. Results established a statistically significant relationship between trauma exposure within the last 12 months and PTSD symptoms. No moderation effects were found for social support and optimism in the present study for a general Auckland, New Zealand population. This research contributes to existing general population research regarding trauma exposure and also looks at optimism and social support in general populations.

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## Chapter One

### **Background of the study**

Everyday life often has unexpected events that leave a mark on who we are. Unexpected, traumatic or distressing events often contribute to how we see our lives and the world moving forward. Who we are, whether we are optimistic or not, and how we perceive support around us moulds how distressing events will affect our lives. Traumatic events create demands that often exceed the ordinary in individuals (Arnberg, Hultman, Michel, & Lundin, 2012). There have been multiple studies that have suggested that it is common for individuals to experience traumatic events in their lives, often more than once (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Norris, 1992; Goodman, Corcoran, Turner, Yuan, & Green, 1998; Arnberg et al., 2012). Everyone will at some point be exposed to a traumatic event that will in one way or another have an effect on them. Traumatic events can include human-made or natural disasters, combat or single event traumas such as assault, motor vehicle accidents and sustaining serious injuries, to name a few. About a third of those who experience traumatic events will be vulnerable to developing psychopathology (Horowitz, 1999). Earthquakes, pandemics or disease outbreaks are unpredictable and sudden, often causing traumatic outcomes to workers directly affected by the natural disaster (Shi, Wang, Zheng, Shi, Lu & Fan, 2006). Disasters can be seen as severe disruptions that exceed the coping capacities of individuals and communities due to their overwhelming nature (Garakani et al., 2004). Research has focused on frontline emergency workers such as paramedics, nurses, police and firefighters (e.g., Lee, Ahn, Jeong, Chae, & Choi, 2014; de Terte, Stephens, & Huddleston, 2014). The general population is often omitted from

research as studying specific response groups seems to be the trend when looking at trauma exposure literature. It is important to remember that recovery and response to human-made and natural disasters will differ between individuals and communities (Garakani et al., 2004). Few are unaffected when a disaster strikes (Greene & Greene, 2009). High levels of stress can lead to adverse effects on an individual's wellbeing and satisfaction with life (Carlson, Dikecligil, Greenberg & Mujica-Parodi, 2012). Stressful situations disrupt an individual's homeostasis or perceived balance at that point in their lives. The degree to which an individual perceives a situation as stressful depends on the individual's personal and environmental factors (Catalano, Chan, Wilson, Chiu & Muller, 2011).

From examining the scientific evidence surrounding individual differences when it comes to traumatic events, Bonanno (2004) discovered that, unlike what prior research has suggested, the majority of individuals exhibit a healthy rather than a pathological adjustment to traumatic events. (Bonanno, Brewin, Kaniasty & Greca, 2010). Literature has tended to be reluctant to acknowledge the prevalence of traumatic events in individuals' lives or just how common trauma exposure is (McFarlane & De Girolamo, 1996). General population studies have highlighted the prevalence of trauma exposure. Norris (1992) found that out of a sample of 1,000 adults in the southern United States, 69% of the sample had experienced a traumatic stressor in their lives, and out of that sample 29% had experienced some sort of traumatic stressor in the past year.

Within this context of the literature surrounding trauma and general populations, it is important to note that individuals are exposed to traumatic events; however, the likelihood of having high levels of posttraumatic stress disorder (PTSD) and other psychological distress symptoms within a general population are expected to be low. Bonanno (2004) argued that

the majority of individuals in a general population will have healthy adjustments to traumatic exposure and not a high prevalence of psychological distress. This is due to other factors such as coping styles, outlook on life, social support and the nature of the traumatic events in question (Bonnano, 2004).

The aim of this study is to look at individuals that are part of a general population, who are often not included in psychological research or if they are included they are included as control groups. Optimism and social support are the constructs examined in this study in a general population to try to explain why individuals will be more likely to be fine after trauma exposure than develop psychopathology as prior literature would suggest (Bonnano, 2004). Psychological research often targets specific groups of individuals who have experienced trauma or stress or are already exhibiting symptoms of psychopathology that the researcher wishes to study. The general population is often omitted from these studies due to their lack of symptoms. In other words, it appears studying general populations is not as appealing to researchers as studying niche groups. It is interesting to target specific groups of individuals with psychological distress or unifying traumatic events, but research tends to forget about the everyday individual who is continuing with their daily life and not seeking psychological assistance. The general population should not be considered boring to the research but should rather confirm how interesting individuals are.

### **Purpose of the study**

This study aims to look at how individuals within the Auckland region of New Zealand are affected by traumatic events in their lives, particularly by looking at their levels of social support and optimism. The project aims to see whether there is a moderating effect by

optimism and social support on the relationship between traumatic event exposure and PTSD. There is a lot to learn about why psychopathology is not as prevalent in a general population. Taking all the definitions regarding overcoming trauma into consideration, Bonanno's (2004) theory, which regards resilience occurring in most individuals and individuals mainly having healthy adjustments to traumatic events, is the most appropriate and realistic definition for this study and the theoretical basis for the purpose of this study. The purpose of this study is to highlight the general population of Auckland, New Zealand and to investigate their experiences and how they have reacted to traumatic events in their lifetime. This is important due to the commonality of trauma exposure. Social support and Optimism are the chosen constructs for this study because they have been found to act as buffers towards psychological stress (Cohen & Wills, 1985; Brissette, Scheier & Carver, 2002). Every single one of us will at some point experience something traumatic and be affected in some way by it. It is a significant part of being human and therefore it is important to acknowledge this part of our daily lives.

### **Significance of the study**

This study will contribute to existing literature by adding another general population to the growing body of research in this field. Norris (1992) mentioned how common trauma exposure is in a general population and how it needs to continue to be understood and acknowledged. Adding another general population, in this case an Auckland, New Zealand population, will help highlight the importance of understanding the commonality of trauma and contribute to existing research. It is important to provide a New Zealand perspective on this topic. The findings of this study will contribute to the discussion around trauma, social

support and optimism from an everyday perspective and contribute to building strategies in workplaces and within communities in order to reduce the negative effects of traumatic event exposure.

### **Research hypotheses**

The research hypotheses below are provided to establish the general investigatory themes. This will then be followed by specific hypotheses in Chapter Five and Chapter Seven, which are tested and statistically analysed. The results of testing the research hypotheses are in Chapter Seven.

#### *Hypotheses*

1. There will be a relationship between exposure to traumatic events in the last 12 months and PTSD symptoms in a general Auckland, New Zealand sample.
2. There will be a relationship between exposure to traumatic events over an individual's lifetime and PTSD symptoms.
3. Optimism will moderate the relationship in Hypothesis 1.
4. Optimism will moderate the relationship in Hypothesis 2.
5. Social support will moderate the relationship in Hypothesis 1.
6. Social support will moderate the relationship in Hypothesis 2.

## **Organisation of the study**

This thesis is presented in eight chapters.

Chapter One includes the background of the study, purpose of the study, significance of the study, research questions, limitations, assumptions and the organisation of the study.

Chapter Two investigates the literature surrounding traumatic stress. This relates to the first two constructs in the study, traumatic event exposure and PTSD symptoms. The ideas surrounding trauma are investigated, which includes looking at literature regarding stress and traumatisation and how these two ideas differ. Traumatic events such as natural and human-made disasters, war and combat and everyday trauma are also discussed and the relevant literature is reviewed. This chapter also reviews literature surrounding PTSD and the idea that trauma does not need to lead to psychopathology each time an individual is exposed to something traumatic.

Chapter Three reviews literature surrounding the third construct in this study, social support. In this chapter, we investigate ideas surrounding social support such as main effects versus buffering effects theoretical frameworks. Stressors and their relationship with social support are also observed. The benefits of social support close this chapter.

Chapter Four covers literature surrounding the fourth and final construct of this study, optimism. In this chapter, ideas surrounding optimism are explored, along with how stressors effect optimism and vice versa, plus the benefits of optimism to individual wellbeing and how this is connected to trauma exposure.

Chapter Five looks at the research aims and hypotheses. Within this chapter, the research aims are broken down into testable hypotheses and the variables and constructs are explained.

Chapter Six focusses on the method of this study. Within this chapter, the research design and sample are discussed, including power analysis. Methodological and ethical considerations are covered. The procedure and data collection are discussed and measures for each construct are explained with rationale and literature.

Chapter Seven contains the results of the study. Within this chapter the data screening is explained and the sample obtained is described along with tables. Each construct is explored in relation to the hypotheses that we have created from our research questions. Statistical analysis rationale is explained and then discussed with regard to findings for each tested hypothesis. A summary of the results is provided at the end of this chapter.

Chapter Eight is the final chapter and features discussion of the study. Research findings are summarised and discussed further in this chapter. Reflections and limitations of the study are discussed and elaborated. Future research ideas are also covered in this chapter. An overall summary of the study is provided as a conclusion.

## **Chapter Two**

### **Traumatic stress**

Chapter Two looks at the ideas surrounding traumatic events and the consequences of these in the form of traumatic stress and other psychological issues. It is important to understand what a traumatic event is and how it affects individuals. The wide range of trauma will be broken down into specific traumatic events in order to differentiate the individual experiences of these events. PTSD and other comorbid disorders will be mentioned, and trauma's influence on the prevalence of psychopathology will be explored. Different traumatic events will be explored and arguments regarding the occurrence of psychopathology following trauma will be further investigated.

#### **What is a traumatic event?**

Traumatic events vary in magnitude, severity and how they affect individuals. A traumatic event can be defined as an event in which an individual is either directly or indirectly involved and their life is either in danger or serious harm, either physical or psychological, is likely to occur (Briere, 2004). Situations such as combat, assault, robbery, terrorist attacks, torture, disasters, severe motor vehicle accidents, life-threatening illness as well as witnessing death are all considered to be traumatic events (Briere, 2004). It is not only extreme traumatic events such as war and disasters that lead to posttraumatic symptoms, however (Saari, 2005), and victims of traumatic events are not only those directly affected by the event. Those who are shocked by the event can suffer psychological distress from the occurrence of the event (Saari, 2005). An individual reacts not only to the direct stimulus of the traumatic event but also to the idea of what could have happened (Saari, 2005).

## Ideas surrounding trauma

Psychological problems can develop when traumatic events occur and the traumatic event is either excessive or prolonged or the process of working through the traumatic event's occurrence has been hindered or disrupted for the individual (Horowitz, 1999). One possible outcome of not working through the traumatic event's occurrence is that the individual can develop psychosomatic reactions that can lead to maladaptive behaviour patterns. Joseph, Williams, and Yule (1997) comment that stress reactions are dependent on the type of event experienced by the individual and will differ between events and individuals. Events can be more shocking when there is less time to prepare psychologically for what is going to be experienced, such as coming across a motor vehicle accident with fatalities (Saari, 2005). This is why unexpected and unpredictable traumatic events often have long-lasting shocking effects on individuals (Saari, 2005). It is important to note that every day traumas occur and will affect the general population (Benedek & Wynn, 2011). General population studies have highlighted the prevalence of trauma exposure. Norris (1992) conducted a general population study and found that out of a sample of 1000 adults in the southern United States, 69% of the sample had experienced a traumatic stressor in their lives and out of that sample 29% had experienced some sort of traumatic stressor in the past year. Norris (1992) found that tragic death was the most common traumatic event individuals in the sample had experienced, followed by sexual assault and motor vehicle accidents, which presented the highest levels of PTSD symptoms. Unsuccessful adaptations to stressful situations and environments contribute to an individual's health being negatively affected (Gloria, Faulk & Steinhardt, 2013). Understanding how trauma challenges an individual's capacity to adapt and cope can shed light on understanding trauma's effects (McFarlane & De Girolamo, 1996).

## Posttraumatic Stress Disorder

A well-discussed product of trauma exposure is PTSD. Scientific data and clinical knowledge in relation to PTSD has grown rapidly over the years (Wilson & Lindy, 1994). The definition of PTSD in the Diagnostic and Statistical Manual of Mental Disorders 3rd edition (DSM-III) started the conversation surrounding PTSD and acted as a catalyst for research in this field (McFarlane, 1995; Benedek & Wynn, 2011). Before the 1980s and the development of a common language and unifying theoretical umbrella surrounding PTSD, traumatic event effects were described using a variety of terms; no one name was applied to this collection of symptoms (Joseph, Williams, & Yule, 1997). The earliest recorded description of PTSD was a condition called nostalgia, which originated among western frontier settlers and civil war soldiers in the United States (Benedek & Wynn, 2011). During World War I, the term shellshock was created to describe the short-term responses to the trauma experienced during combat (Benedek & Wynn, 2011). Common symptoms of this reaction included generalized disconnection from one's surroundings, fatigue and delayed responsiveness (Benedek & Wynn, 2011). Posttraumatic stress can occur following human-made and natural disasters (Horowitz, 1999). PTSD was formally recognised in DSM-III in 1980 and this represented an attempt to collate all efforts to define this syndrome over the previous years (Benedek & Wynn, 2011). Some historical changes to the definition include removing the requirement that the traumatic event needs to be beyond the scope of normal human experiences (Benedek & Wynn, 2011). This acknowledges that not just extreme traumatic events will lead to PTSD symptoms: common human experiences and daily events can traumatise too. PTSD can be defined as intrusive memories of the traumatic event experienced by an individual, often accompanied by high threat vigilance, avoidance of interpersonal relationships, anxiety and impairment of concentration and memory (Keane,

Zimering, & Caddell, 1985). Saari (2005) states that PTSD occurs when the process of coping with a traumatic event becomes fixed in the reaction stage. Reactions and symptoms fail to reduce over time and remain fixated, leading to what is considered PTSD (Saari, 2005). The characteristics of PTSD include an individual feeling helpless, powerless and having a lack of control over their life and sense of control (McFarlane, 1995). Individuals suffering from PTSD generalise threats, which leads them to feel that most things are threatening and leaves them in a constant state of hyper-arousal (van der Kolk & McFarlane, 1996). High levels of depression and anxiety often accompany PTSD symptoms (Keane et al., 1985). PTSD can develop if the stress response to a traumatic event is not worked through and a point of acceptance and moving forward is not reached (Horowitz, 1999). The occurrence of trauma is an essential element in the development of PTSD; however, it does not provide enough of an explanation as to why some individuals develop PTSD whilst others do not (O'Brien, 1998). Also, severity of trauma is significant in predicting PTSD symptoms, but it is not enough to predict whether PTSD will be experienced by an individual following a traumatic event (O'Brien, 1998). PTSD is not considered to be a normal response to trauma and, although serious trauma experiences are often all too common, PTSD symptoms are not seen as much in general populations (O'Brien, 1998). O'Brien (1998) commented on other researchers attempts to normalise PTSD and make it acceptable as a follow-on effect of traumatic events, but the evidence available points to PTSD being a mental disorder and not a normal response following traumatic events.

### *PTSD vulnerability and predictors*

Shalev (1996) discusses the predictors of PTSD. Pre-trauma vulnerability is the first factor that leads to whether an individual will develop PTSD (Shalev, 1996). Biological factors play a

part in pre-trauma vulnerability, as a family history of mental illness and gender and biological imbalances in cortisol levels have been found to contribute to an individual's susceptibility to PTSD (Shalev, 1996; Walderhaug, Krysal & Neumeister, 2011). Biological causes for PTSD can be explained by looking at hormone and chemical imbalances in the individual (Horowitz, 1999). Dopamine and cortisol have been found to influence PTSD vulnerability. Dopamine levels have been linked to heightening the propensity of arousal, which leads to vulnerability following stressful events (Horowitz, 1999). A series of stressors in the form of stressful events can biologically alter the brain's transmission of alerts, causing repeated alarms to be triggered in the brain, which leads to fatigue and psychological dysfunction (Horowitz, 1999). Anxiety-type arousal can also be triggered by an imbalance of serotonin, as alterations to these stress hormones lead to anxiety symptoms and reactions to triggers that would usually not be perceived as threatening (Horowitz, 1999). If biological systems are hypersensitive prior to a traumatic event, the individual will possess a predisposition to posttraumatic stress due to this biological vulnerability (Horowitz, 1999). Contrary to expectations regarding the role cortisol plays in the body (i.e. that its release is increased during stress), studies have varied, with PTSD patients reporting low, medium and high levels of cortisol in different conditions (Walderhaug et al., 2011). It seems a family history of mental illness and gender and biological imbalances do play a role in PTSD vulnerability, though this has not been fully proven in the research to be conclusive (Walderhaug et al., 2011). Biological factors are important to consider when looking at PTSD vulnerability, but they should be considered with care, as the pathways for these influences on PTSD symptoms are not yet clear (Walderhaug et al., 2011).

The magnitude of the stressor that the individual is exposed to is the next factor that will influence PTSD prevalence (Shalev, 1996). The longer and more threatening to an

individual's life the stressor is, as well as a perceived lack of resources, can heighten the magnitude of a stressor (Shalev, 1996). An individual's preparedness for a stressful event will also predict PTSD occurrence (Shalev, 1996). Preparation can protect an individual from a stressor by increasing an individual's sense of control, reducing uncertainty and equipping the individual with resources to anticipate the stressor's negative effects (Shalev, 1996).

Shepherd and Wild (2014) explored whether PTSD symptom severity was linked to objective difficulties in negative emotion regulation or whether it was linked to perceived difficulties of emotion regulation within the individual. A lack of reappraisal of threats and the suppression of emotions have been linked to PTSD symptoms being more prevalent in individuals after traumatic events (Shepherd & Wild, 2014). The authors found that the cognitive reappraisal of threats leads to lower PTSD symptoms, whereas emotional suppression leads to higher PTSD severity.

PTSD research has highlighted a model consisting of biological, social and psychological dimensions to explain how individuals adjust to and are destabilized by traumatic events (Yehuda & McFarlane, 1995). Social causes can include cultural attitudes to mental illness and how an individual is expected to respond to traumatic events (Horowitz, 1999).

Stigmatization can also worsen psychological distress, as it undermines social support and lowers an individual's self-esteem, identity and coping efforts (Horowitz, 1999). Lower levels of social support for an individual can often be the difference between an individual developing PTSD and successfully coping with a traumatic event (Horowitz, 1999). Rescue workers, usually first on the scene of natural and human-made disasters, are often not socially perceived as victims, and this can lead to these individuals developing posttraumatic symptoms due to a lack of perceived support (Horowitz, 1999). This is another example of

the social domain increasing posttraumatic stress states of mind (Horowitz, 1999). Psychological causes of posttraumatic stress have been confirmed over different psychological theories to be associated with how an individual recognises triggers and stimuli that can lead to stress reactions (Horowitz, 1999). The main idea behind concepts regarding association is that an individual will form connections between stimuli and memories during an event (Horowitz, 1999). Later, these stimuli are connected with the traumatic event and become generalised. When this stimuli is experienced again, without real danger or a traumatic event, the individual will still experience the same level of psychological discomfort or fear as they did in the original event in which these associations were formed (Horowitz, 1999).

Cognitive processing models are the most applicable in explaining posttraumatic reactions due to their ability to explain interrelationships between cultural and social variables and also individual behaviour and experiences (Creamer, 1995). Creamer (1995) discusses a proposed model applied to trauma exposure in individuals to explain reactions to stressors. This model consists of five stages. The first stage looks at objective exposure. Severity of exposure is considered in this stage of Creamer's model; however, the fact that individuals will respond on different levels when exposed to the same incident is also noted (Creamer, 1995). The second stage of Creamer's model is network formation. Creamer (1995) notes that appraisal is key when acknowledging the development of posttraumatic stress symptoms. If the event is not seen as threatening to the individual, appraisal of the situation will not be threatening and therefore trauma symptoms will not develop (Creamer, 1995). A traumatic memory network can be formed, depending on the individual's interpretation of the meaning of the experienced event (Creamer, 1995). Cultural and societal norms are said to contribute to how the individual attaches meaning to the experienced event and

therefore need to be considered as well when understanding how the individual interprets the traumatic event they have experienced (Creamer, 1995). The third stage of this model is called the intrusion stage where intrusive memories of the event are present as well as aversive responses to the event (Creamer, 1995). These intrusive memories are connected to aversive behaviour but also help with overcoming the trauma (Creamer, 1995). The fourth stage is labelled the avoidance stage (Creamer, 1995). The model notes that the individual will try to escape or avoid the discomfort experienced following the traumatic event (Creamer, 1995). This stage will be influenced by societal norms and discourse around expressing emotions and coping with traumatic events (Creamer, 1995). An individual's coping style will also predict the amount of avoidance behaviour that will be exhibited at this stage of the model (Creamer, 1995). The final stage is the outcome stage (Creamer, 1995). Activation of memories and new information allow the resolution of the individual's traumatic experience to occur (Creamer, 1995).

The issue of identifying PTSD and diagnosing it has been a focus of research since 1980 (Horowitz, 1999). The debate surrounds whether traumatic events lead to psychological problems or whether individuals who developed psychological problems after traumatic events possessed characteristics that made them more vulnerable or susceptible to psychological problems (Horowitz, 1999). Years of investigation into this debate have led to the conclusion that it is a combination of the individual's characteristics and the traumatic event occurrence that lead to PTSD symptoms, rather than one or the other (Horowitz, 1999).

The effects of trauma over a long period of time are not limited to PTSD (McFarlane & Yehuda, 1996). Focusing on the trauma itself can limit scope and prevent treatment of

comorbid disorders such as depression, anxiety and substance abuse (McFarlane & Yehuda, 1996). In studies such as Kulka et al. (1990) and McFarlane and Papay (1992), PTSD was often accompanied by other psychological disorders and was rarely noted as occurring on its own (McFarlane & Yehuda, 1996). It is also possible to develop these comorbid disorders but not PTSD following trauma, so the argument that only PTSD will be prevalent following a traumatic event is incorrect, as research shows (McFarlane & Yehuda, 1996).

Looking at stressors within the PTSD context raises questions regarding causation, treatment and the prevention of negative pathology following trauma exposure (McFarlane & De Girolamo, 1996). PTSD is also the focus of a debate surrounding whether it is appropriate to collate all PTSD symptoms into a generic PTSD diagnosis or whether specific events should receive a separate PTSD diagnosis (Joseph, Williams & Yule, 1997). The debate also highlights two sides: one side of the argument suggests that PTSD should be classified in a new stress-response category, while the other states that it should remain as an anxiety disorder (Brett, 1996). There are some disadvantages to creating a symptom criteria in the form of the DSM and categorising PTSD symptoms (Brett, 1996). Only having one posttraumatic stress disorder can limit research and exploration into variations of this disorder and alternative forms (Brett, 1996). The cross-sectional nature of most research within this field also limits the ability to track the natural progression of stress disorders and how they evolve over the years for the affected individual (Brett, 1996). Narrowing focus onto an individual's PTSD progression lead to a loss of focus on the complexity of this disorder (Brett, 1996). McFarlane (1995) commented on the fact that it should be neither the individual's fault for developing PTSD nor society's for not being responsible for the individual. It is a combination of an individual's psychological characteristics and the society

they belong to that provides an environment for trauma to manifest into psychological issues or not.

### **Experiencing trauma**

Norris (1990) broke down the trauma experience into five key elements or aspects that were all connected in an individual's experience of a traumatic event. The first aspect of an individual's experience of trauma is loss. This relates to the tangible loss of property and people where the higher the loss is, the greater the impact of the event (Norris, 1990). The second aspect is the scope of the event, which is also imperative, as the more people who are affected or injured or killed will impact the individual's reactions to the traumatic event (Norris, 1990). Threat to life and physical integrity is the third aspect relating to the experience of trauma that should be noted (Norris, 1990). The degree to which an individual's life is threatened will relate to psychological distress symptoms and PTSD symptoms (Norris, 1990). The fourth aspect of experiencing trauma is blame. Blame can also influence distress levels within an individual following a traumatic event (Norris, 1990). The fifth element is familiarity. Familiarity with the event may decrease psychological distress (Norris, 1990). This is mainly observed in natural disaster situations, in which victims expect the occurrence of the disaster and know what to expect, and are therefore more likely to overcome adversity quicker, as they have already overcome it in the past (Norris, 1990).

The conservation of resources theory (COR) was developed by Hobfoll (1988). The idea surrounding this theory is that the individuals strive to maintain, obtain, and protect personal and social resources and stress occur when these resources are threatened or lost (Hobfoll, Freedy, Lane & Geller, 1990). Under the COR theory, resources include objects,

conditions, personal characteristics and energies that are valued by the individual (Hobfoll et al., 1990). The COR theory focuses on objective reality and focus on circumstances where clear stressors are occurring, rather than focusing on the individual's appraisal of the situation (Hobfoll, 2010). Hobfoll (2010) commented that individuals are constantly striving to maintain, obtain and protect their resources. Resource loss is far more impactful on an individual than resource gain (Hobfoll, 2010).

Exposure to traumatic events can lead to an individual falling out of equilibrium with their structure or sense of self, leaving them distressed and often exhibiting defensive attempts to protect their sense of self (Wilson & Lindy, 1994). This is often manifested in behaviours such as withdrawal, aggression and emotional numbness (Wilson & Lindy, 1994). Individuals who have previously experienced trauma or experience trauma on an ongoing basis may experience feelings of helplessness and have limited resources for coping with traumatic events. This often leads to these individuals being more susceptible to the negative effects of trauma exposure (Lee, Ahn, Jeong, Chae & Choi, 2014). Breslau, Chilcoat, Kessler and Davis (1999) examined the influence of previous exposure to trauma on the risk of PTSD from a subsequent trauma in a large representative sample of Detroit. Breslau et al.'s (1999) results support the hypothesis that previous exposure to traumatic events is associated with greater vulnerability to the PTSD effects of a subsequent trauma. The researchers looked at assaultive violence in this instance.

The ongoing debate as to what stressor can or cannot cause PTSD symptoms continues and in some way, it will never end, because a conclusion cannot be reached that simply (O'Brien, 1998). It is how an individual perceives and responds to a traumatic incident, rather than the incident itself, that will present PTSD symptoms within an individual (O'Brien, 1998).

O'Brien (1998) argues that a range of stressors can cause PTSD and that traumatic event exposure is more common than researchers originally expected. Not only major stressors but also less-major stressors, such as interpersonal relationship problems, problems at work and minor accidents, can lead to PTSD symptoms (O'Brien, 1998).

Kleber, Figley and Gersons (1995) highlight the fact that it is not only the traumatic event itself that is the main cause of PTSD and psychopathology but also the societal atmosphere in which the event takes place that needs to be considered when looking into causes for psychological distress. Kleber et al. (1995) discuss events in which the environment where these traumatic events took place had an effect on amplifying or even causing problems for victims and survivors of traumatic events. Extreme examples such as European survivors after World War II, who experienced property, material and family loss, were considered indifferent and therefore traumatization following the event was not recognised or treated appropriately. In this instance, an indifferent environment where a society had to be rebuilt often made PTSD more prevalent and increased symptomology due to there being a lack of appropriate resources to help affected individuals move forward (Kleber et al., 1995). The lack of recognition for individuals who have experienced trauma also occurred with regard to Vietnam veterans (Kleber et al., 1995). Instead of returning to a lack of society like many European survivors of World War II, American soldiers returning from Vietnam returned to something different; a society that considered these soldiers as representatives of a war that was considered to be controversial. These soldiers also represented a war that should not have happened: America's presence in Vietnam was often questioned and protested (Kleber et al., 1995). This negative reception from society worsened the soldiers PTSD symptoms as there were no appropriate support systems in place for these returning soldiers (Kleber et al., 1995). Social and cultural climate is key when looking at residual

effects that can occur after traumatic events. It is no longer enough or appropriate to isolate the traumatic event itself when looking at PTSD symptoms within individuals (Kleber et al., 1995).

Further research needs to focus on stressful event differences (Joseph et al., 1997). The variety of traumatic events is extensive. O'Brien (1998) highlighted some key high-risk group studies. Historically, the most famous group of high-risk individuals was specifically Vietnam veterans (O'Brien, 1998). Problems with assessing stress following disasters include variations in samples, observations and the significant variability of magnitude and types of disasters that can affect communities (Shore, Tatum & Vollmer, 1986). Many historical studies such as Borus (1974) and Card (1987), had sampling and methodological problems, such as issues with diagnostic methods for PTSD symptoms that were either too broad due to only looking at individual maladjustment or not matching DSM criteria at the time of research (O'Brien, 1998). Inconsistent methodologies left these studies with no firm conclusions about the true prevalence of PTSD or how to replicate it (O'Brien, 1998). Lifetime studies were also carried out on Vietnam veterans and showed that even 15 years later, symptoms were present when appropriate treatment was not received (O'Brien, 1998).

The inability to cope with exposure to traumatic events will manifest itself in increased absence from work, problems with relationships and other psychological issues (Saari, 2005). Longitudinal studies that follow up after traumatic events are key in order to track how psychological distress can manifest years after an event and whether symptoms fade over time in the natural coping process (Saari, 2005). Studies such as Gleser, Green, and Winget (1981) and McFarlane (1990) followed up on victims years after traumatic events

had taken place. Gleser et al. (1981) looked at the effects of a sudden flood disaster. Two years after the flood, 80% of adults rescued from the flood were still suffering from psychological distress. Five years later, 33% of males were still experiencing psychological problems and 25% of females were experiencing psychological problems (Saari, 2005). This same victim group was also followed up 14 years later, and still showed psychological distress symptoms compared with the control group who were not affected by the flood disaster (Saari, 2005). Saari (2005) concludes that about 30% to 40% of individuals who are left to process traumatic experiences without psychological interventions and professional support will struggle to overcome these traumatic experiences. This is an interesting observation, given that current theory suggests most individuals exposed to trauma will not go on to develop long term psychological distress (Bonanno, 2004).

### **Stress versus traumatisation**

Shalev (1996) examines the differences between stress and posttraumatic stress, as the term traumatic stress is considered to be confounding: it combines two separate constructs, stress and traumatisation. There is a difference between stress research and trauma research (Shalev, 1996). When traumatic stress has been investigated, researchers (e.g., Shalev, 1996) have looked at the relationship between trauma and disorders that will manifest as a result of the trauma exposure, whilst stress research looks at the stressfulness of the stressor (Shalev, 1996). The dimensions of powerlessness, helplessness and threat to one's life are central to experiencing traumatic stress (McFarlane & De Girolamo, 1996). Stress research is also more experimental, usually has controlled conditions and is more objective than trauma research (Shalev, 1996). Trauma research is retrospective and set in

natural conditions (Shalev, 1996). Shalev (1996) uses Hobfoll's (1998) explanation for the gap between stress and traumatic stress. Hobfoll (1988) suggests that major stressors lead to different stress reactions than regular stress would, in which the individual is primarily concerned with conserving available resources. For this project, we will be looking at trauma induced reactions rather than stress.

## **Traumatic events**

### *Natural disasters*

Disasters can be seen as severe disruptions that exceed the coping capacities of individuals and communities due to their overwhelming nature (Garakani et al., 2004). Natural disasters are different to war situations, as even though some disasters, such as accidental fires or explosions, may be human-made, they are considered separate to intentional human-made situations such as wars (O'Brien, 1998). It is important to remember that recovery and response to human-made and natural disasters will differ between individuals and communities (Garakani et al., 2004). Few are unaffected when a disaster strikes (Greene & Greene, 2009). Earthquakes, pandemics or disease outbreaks are unpredictable and sudden, often causing trauma to the workers directly affected by the natural disaster (Shi, Wang, Zheng, Shi, Lu, & Fan, 2006). Only after the traumatic event will the emotional toll be felt on the individual, which may result in the functioning and wellbeing of that individual being compromised (Horwitz, 2006).

Natural disasters involve the entire community and often service providers are expected to provide high levels of service whilst employees battle internal conflicts and stress responses

in order to tend to the needs of their clients. During traumatic events, workers will deny reactive feelings in order to carry out the task at hand. Under trauma theory, this is an adaptive quality that individuals possess (Horwitz, 2006). Proximity to the trauma and years of experience have been noted to affect whether trauma in the workplace will result in negative consequences for wellbeing and performance (Horwitz, 2006). The effect of stress and deterioration of health and wellbeing differs between individuals (Maddi, 2011).

Shore et al. (1986) examined human reactions to trauma resulting from a major natural disaster. The authors looked at the effects that the eruption of Mount St. Helens had on the population directly affected by this natural disaster. More than 50 people lost their lives during the major eruptions and extensive property damage was caused due to the flooding that followed (Shore et al., 1986). Shore et al. (1986) found that depression and anxiety symptoms tended to reduce after the third-year mark following the disaster, whilst posttraumatic stress disorder symptoms persisted longer. Shore et al.'s (1986) study highlighted the extent to which victims of traumatic events are affected and the duration of their reactions to these events. Research surrounding the eruption of Mount St Helens by Shore et al. (1986) compared the affected community with a nearby community that was not affected by the eruption. Depression and anxiety was higher in the exposed individuals (O'Brien, 1998). When other earthquake studies were compared, with varying intensities of earthquake, depression scores were similar whilst PTSD symptoms differed. It is therefore evident that the nature of PTSD is very variable between individuals (O'Brien, 1998).

Rubonis and Bickman (1991) conducted a meta-analysis of the relationship between trauma following disasters and psychopathology. They found that natural disasters had higher rates of psychological distress and pathology compared with other forms of trauma events. The

nature and intensity of traumatic events needs to be taken into account when looking at pathology following these events (McFarlane & De Girolamo, 1996). The loss of property, loved ones and stability all play an important role in how the individual is affected by the traumatic event (Thompson & Thompson, 2009). This needs to be acknowledged when looking at the impact of natural disasters and the stress that arises.

Aiello et al. (2011) found that during a SARS outbreak, health care workers experienced acute stress due to the unpredictable nature of the pandemic. The health care workers reacted to this stress by reducing their involvement with patients and absenteeism levels increased. This shows that even those who are meant to help during a natural disaster, can have their ability to provide adequate assistance impaired due to the major stressor that a natural disaster creates. Horwitz (2006) suggested that in order to reduce the trauma effects of natural disasters and workplace stress, exposure to the triggers needs to be lowered. Since this is not always possible, it is important to have an understanding behind resilience to trauma and negative events at work in order to reduce the negative effects of trauma on individuals.

#### *Human-made disasters*

Natural disasters leave the idea that there is no control over these events and that they can occur at any given point in time. Alongside natural disasters, it is important to mention human-made disasters that occur due to human error or negligence.

Green, Grace, Lindy, Titchener and Lindy (1983) focused on the human-made disaster of a fire at the Beverly Hills Supper Club which killed 165 people and injured many others. Green et al. (1983) found that psychological impairment only decreased a year later in individuals that were not at involved directly with the fire, (i.e. they were not at the Beverly Hills

Supper Club when the fire occurred). No decreases were found in psychological impairment for individuals directly affected by the fire a year after it occurred (Green et al., 1983). This suggested the long-term effects of PTSD without treatment, as many affected individuals did not receive appropriate support and treatment for the trauma to which they were exposed (Green et al., 1983). Green et al. (1983) suggested that higher impairment rates could have been noted if the fire had spread to neighbouring buildings and more greatly affected the wider community, like a natural disaster would have done. Due to the isolation of the disaster, individuals were able to return to intact communities and intact support systems; they did not suffer from displacement or a lack of resources for coping with the event (Green et al., 1983). Green et al. (1983) found that the impairment of a sample, following a disaster, is dependent on a multitude of factors. The extent of the disaster, how psychopathology was measured, degrees of bereavement and threat to life were just some of the factors identified by Green et al. (1983).

#### *War and combat*

Solomon, Laor and McFarlane (1996) focused on how traumatic reactions interrupt survival and adaptation processes following traumatic events. Solomon et al. (1996) focused on the reactions to war stress for both soldiers and civilians. When war ends, symptoms experienced by soldiers will fade in some cases. In other individuals, these symptoms may be prolonged and manifest into other pathologies (Solomon et al., 1996). Increased combat exposure has led to an increase in psychological distress in soldiers, more so than in individuals who are exposed to a few traumatic events in their lifetime (Keane, Zimering & Caddell, 1985). This makes military personnel more susceptible to PTSD symptoms and other psychological stress compared with the general population (Keane et al., 1985).

Soldiers are most at risk of developing combat stress reaction (Solomon et al., 1996). combat stress reaction has a direct impact on a soldier's capacity for combat and increases the need for facilities in the field to manage these reactions (Solomon et al., 1996). Combat stress reaction is the most studied reaction to stress in a war setting due to its practical significance to the past and present presence of soldiers in war zones around the globe (Solomon et al., 1996). Combat stress reaction is highly variable and often has rapid changes in its manifestation (Solomon, 1993). Symptoms include restlessness, irritability, apathy, withdrawal, anxiety, depression, hostility, body pain, paranoia and psychomotor retardation to name a few (Solomon et al., 1996). These symptoms have been observed among a range of different soldiers from different wars, times and cultures (Solomon et al., 1996). Identification of the correct diagnosis of combat stress reaction is difficult, however, due to the nature of a war zone and the fact that the soldier themselves and other soldiers around the individual will be the main ones diagnosing these symptoms (Solomon et al., 1996). The problem with having a high symptom identification threshold is that it may lead to the soldier not getting the immediate resources they need to recover, whilst a low symptom threshold will lead to labelling normal stress reactions as pathological (Solomon et al., 1996). The most common long-term effect of combat stress reaction is PTSD (Solomon et al., 1996). However, not all soldiers who suffer from combat stress reaction will develop PTSD: recovery is possible over time, and individuals can regain equilibrium and cope well after trauma exposure in a war environment (Solomon et al., 1996).

Solomon et al. (1996) discuss the connection between combat stress reaction and PTSD. Intense traumatic event exposure can induce both combat stress reaction and PTSD (Solomon et al., 1996). The vulnerability of the individual and the replaying of memories and rumination on events are both similarities between combat stress reaction and PTSD

(Solomon et al., 1996). Solomon et al. (1996) observed Israeli civilian reactions to conflict during the Gulf War conflict. The initial study by Solomon et al. (1993) looked at the damage missiles caused to housing in two stages (Solomon et al., 1993). First, evacuee data was collected a week after missiles were dropped and then a year later (Solomon et al., 1993). High levels of nonspecific distress were reported by most evacuees a week after missile strikes, with 80% showing PTSD symptomology (Solomon et al., 1993). PTSD can only be diagnosed if these symptoms persist over time: a week after the event is too early to classify these symptoms as pathological, as the acute stress reaction is almost universal so early after a traumatic event (Solomon et al., 1996). A year after the missile strikes, PTSD symptomology declined, as expected; however, this decline was not large (Solomon et al., 1996). PTSD symptoms dropped from 80% to 60% and it was noted that avoidance behaviours increased in evacuees (Solomon et al., 1996). Previously, trauma literature had only focused on the immediate follow up on victims' experiences and symptomology, and this particular study provides a perspective as to what happens longitudinally to these victims of trauma (Solomon et al., 1996).

Most PTSD research regarding prevalence has been based around combat trauma, mainly from studies around soldiers and veterans (O'Brien, 1998). This makes PTSD prevalence in a wider population harder to pin point (O'Brien, 1998). PTSD symptoms following civilian trauma vary widely; however, all traumatic events appear to produce PTSD symptoms, though they differ in duration between individuals (O'Brien, 1998). PTSD rates are lower in civilian studies compared with combat studies (O'Brien, 1998). Lower PTSD rates in civilian traumatic events can be explained by the generally shorter duration of the trauma compared with the longer nature of trauma in a combat environment (O'Brien, 1998).

### *Single-event trauma*

Saari (2005) discussed events such as the accidental or violent deaths of loved ones and road accidents that can traumatise individuals. Norris (1992) found that tragic death was the most common traumatic event individuals in the sample had experienced, followed by sexual assault and motor vehicle accidents which presented the highest levels of PTSD symptoms. Saari (2005) discussed the fact that there are plenty of psycho-social support systems in place following major disasters such as helplines and help groups. However, there is also a need for psycho-social support following everyday traumas, as shocking events are equally as traumatic for an individual whether they affect an entire community or only a few individuals. All traumas, whether they are major or every day such as motor vehicle accidents or relationship breakdowns, should be considered significant enough to affect an individual's wellbeing and have the potential to lead to psychological distress (Saari, 2005). Suicide is a traumatic event for family members and the communities to which an individual belonged (Saari, 2005). This type of death of a family member is traumatic and sudden and has lasting effects on the remaining loved ones of the individual (Saari, 2005). In a New Zealand context, there appear to be about 11 suicide deaths per 100 000 of the population, with the majority being male (Statistics New Zealand, 2015). This means that approximately 440 New Zealanders will take their lives annually. New Zealand is also ranked 13th highest in the world for suicide deaths (Statistics New Zealand, 2015). This suggests that it is very likely that someone will be either directly or indirectly exposed to an individual attempting to take or taking their own life at some point. Road accidents are also considered to be every day traumas (Saari, 2005). In New Zealand, during 2013, there were 254 road accident-related deaths, and 11781 people were injured (Ministry of Transport, 2015). These statistics still suggest that a high rate of trauma is experienced by individuals,

either directly or indirectly. Violent crime can also leave individuals feeling traumatised and lead to psychological distress. Cases such as homicide and assault can leave lasting effects on the wider community and shake up the general public (Saari, 2005). The number of recorded homicides and related offences in New Zealand was 66 in 2014, and the number of recorded acts intended to cause injury such as assault was 39944 for 2014 (New Zealand Police, 2015).

### **Trauma does not have to mean psychopathology**

PTSD is not inevitable when a traumatic event occurs; therefore, research surrounding traumatic events needs to take into consideration the other vulnerability factors that play a role in the development of PTSD (Yehuda & McFarlane, 1995). Disaster research has provided conclusions that most people affected by stressful and traumatic events will experience PTSD and other psychological disorders but most of the time this may not be the case (Bonanno et al., 2010). Bonanno and Mancini (2012) opt to describe traumatic events as potentially traumatic, as the majority of those exposed to these situations will have healthy psychological adjustments and cope with major stressors during the event. Along with the negative psychological experiences and consequences of disasters, research also needs to consider that individuals can remain healthy and psychologically stable during these traumatic events (Bonanno et al., 2010). Due to PTSD becoming the main focus of disaster research, it has taken attention away from other consequences of disasters, and researchers have become preoccupied with the pathology of individuals experiencing these events. The existing literature surrounding potentially traumatic events and their effects has continued to focus on the distinction between the prevalence and absence of pathology

following a disaster event. This is considered a simplified view of looking at the psychological consequences of traumatic events (Bonanno & Mancini, 2012). Recovery and healthy adjustment, such as resilience, to the consequences of disasters have been omitted from most disaster research (Bonanno et al., 2010). Individuals who are merely stressed by an event rather than having developed PTSD symptoms will go on functioning normally whilst individuals who develop PTSD will organise their lives around the trauma they have experienced (van der Kolk & McFarlane, 1996). This then leads to persistent reliving of this event followed by biological and psychological changes and dysfunction (van der Kolk & McFarlane, 1996). There is not enough evidence to create one particular formula that could explain who will suffer from PTSD and how severe it will be following specific traumatic exposures (O'Brien, 1998). It is determined on a case-by-case basis and there is no formula for predicting PTSD symptoms in individuals (O'Brien, 1998). The role of the stressor in PTSD and psychopathology symptomology still remains heavily debated in current research (McFarlane, 1995). Trauma itself does not just lead to PTSD; it can also lead to other symptomology, such as major depression or anxiety (McFarlane, 1995). This is in opposition the idea that there is some specificity of the effects of traumatic stress (McFarlane, 1995).

Newman and Nelson (2012) looked at resilience and trauma exposure in Australian journalists. Journalists are exposed to a range of traumatic and difficult events and are expected not to be affected by the stressful nature of these events. Results found that many of these journalists exposed to traumatic stories would later show signs of avoidance to reduce the distress experienced by stories of trauma or disaster. Newman and Nelson (2012) suggested that more is required to prepare journalists than just standard training, noting that individual resilience is also required to lessen the effects of stressful and upsetting events. Not all journalists will develop aversive reactions to their daily traumatic

and difficult event exposure. Bonanno, Rennie and Dekel (2005) looked at individuals exposed to the American World Trade Center terrorist attack, who showed evidence of resilience rather than disordered adjustment. Results found that short term variability in emotional and physical wellbeing was noted in individuals, however those that were resilient did not have their ability to function impeded “to any significant degree” (Bonanno et al., 2005, p. 985). It is important to consider that most individuals will not be negatively affected by exposure to traumatic events and other factors such as resilience, optimism and social support are all explanations on why some individuals will not develop PTSD. Resilience and positive emotion are the most effective combination to rebut the negative consequences of stressful situations (Ong, Bergeman, Bisconti & Wallace, 2006). Reappraisal of a situation can often aid in decreasing emotional responses to the situation and increasing resilience. Individuals that reappraise situations are, in the long term, more satisfied and happier (Carlson, Dikecligil, Greenberg & Mujica-Parodi, 2012). Bandura (1997) also notes that perceived control and social support act as major stress reducers in the workplace. If these stress reducers are absent in the environment, job satisfaction can start to reduce and stress will increase.

Not all individuals develop PTSD after trauma exposure and it is important to look at the factors that may protect individuals from the harmful psychological effects of trauma event exposure (Lee, Ahn, Jeong, Chae & Choi, 2014). Rescue workers such as firefighters show higher symptoms of PTSD and are considered a high risk group due to their repeated exposure to traumatic events (Lee et al., 2014). Lee et al. (2014) looked at resilience as a protective factor for firefighters, who are exposed to trauma on a daily basis. Lee et al. (2014) found that the relationship between traumatic exposure and PTSD symptoms in firefighters was partially mediated by perceived stress. Lee et al. (2014) used Lazarus and

Folkman's (1984) transactional model of stress to explain the importance of perceived stress and how it can lead to the development of PTSD. If stressors are perceived as uncontrollable and threatening, firefighters are more likely to be vulnerable to posttraumatic stress disorder symptoms (Lee et al., 2014). Reducing PTSD symptoms can be addressed by finding multiple factors to facilitate resilience and coping resources (Lee et al., 2014).

Laditka, Laditka, Cornman, Davis and Richter (2009) studied frontline workers in nursing homes looking after evacuees during Hurricane Katrina. These workers were found to show resilience under challenging working conditions and throughout the experience of losing their own homes (Laditka et al., 2009). Laditka et al.'s (2009) study highlighted the need for strategies for nursing home caregivers in order for them to successfully manage during disasters. Interventions such as an increased emphasis on skills, knowledge, commitment and compassion for care workers were developed to respond adequately to disasters (Laditka et al., 2009).

Solomon et al. (1996) criticise the DSM-IV criteria for acute stress disorder, stating that their findings suggests symptoms experienced after trauma can still fall within the range of normal and the DSM-IV may result in over-diagnosis of reactions to trauma that will naturally abate over time.

Positive emotions have also been linked to promoting active coping and resisting stress (Ong et al., 2006). High levels of positive emotions are beneficial to individuals who are both high and low in resilience. Positive emotions act as a buffer against stress, enhancing coping strategies for those that are more resilient, and acting protectively for those that are less resilient (Ong et al., 2006). Bonanno (2004) found that resilience occurs in most people, and

they seem to manage the psychological trauma of disasters, limiting the potential for long-term psychological harm such as PTSD (Bonanno et al., 2010).

Stressors cannot be objectively scaled by the intensity or effect on an individual. Instead, it is the individual's perception of stressors that will lead to the potential for PTSD and psychopathology symptoms (O'Brien, 1998). It appears that there is no such thing as a qualifying or non-qualifying stressor (O'Brien, 1998). It should also be noted that disassociation is a common response during traumatic events, and this may cause the underreporting of symptoms or misperception of trauma to occur (McFarlane & De Girolamo, 1996).

In the following chapters, we will examine constructs such as social support and optimism that may play a role in influencing how individuals will react to their inevitable exposure to trauma within their lifetimes.

## **Chapter Three**

### **Social support**

This chapter looks at social support. The ideas surrounding social support are discussed, including the connection to optimism and how this relates to trauma exposure and PTSD symptomology. The literature surrounding social support highlights the two positions in this field: the main effect and buffering effect theories of social support. The different types of social support are explored, as it is important to note that this construct can be broken down into sub-constructs. The idea of social support changing over time is also covered.

#### **Ideas surrounding social support**

Traumatic effects following events cannot be discussed without considering the sociocultural factors that influence adjustment. One of these sociocultural factors is social support (Joseph et al., 1997). Psychiatric, medical and sociological literature have all found social support to be beneficial to wellbeing (Applebaum, Stein, Lord-Bessen, Pessin & Rosenfield, 2014). Social support allows individuals to focus on the positive aspects and potential benefits of stressful and difficult situations, highlighting the fact that optimism may be connected to social support in reducing the adverse effects of negative events (Applebaum et al., 2014).

Social support can be broken up into behaviour relevant to coping needs such as tangible, emotional and informational social support (Joseph et al., 1997). Tangible support relates to the direct support an individual receives in the form of services and direct help (Joseph et

al., 1997). Emotional support includes relying on others for support, relationships and feelings of being cared about and belonging (Joseph et al., 1997). Providing feedback and advice falls into the informational support category (Joseph et al., 1997). The extent of the traumatic event will determine which form of social support will be the most beneficial to the individual (Joseph et al., 1997).

The best comfort for someone who has experienced trauma is a good and extensive social network that is activated straight after the traumatic event (Saari, 2005). Individuals who are alone and do not have a good social network are at risk of developing psychological distress following traumatic events and are more at risk of developing long lasting psychological disorders as a result of trauma exposure (Saari, 2005).

### **Main effects and buffering effects**

Cohen and Wills (1985) reviewed research relating to buffering theories of social support. Their main discussion surrounds whether social support has a buffering effect or is the main effect on an individual's wellbeing. Social support has been found to increase wellbeing and protect an individual from the harmful effects of stressful events (Cohen & Wills, 1985). This is considered to be related to the buffering hypothesis for social support, where social support acts as a buffer or protective factor in protecting an individual from the adverse effects of stressful or distressing events (Cohen & Wills, 1985). The other school of thought relating to social support suggests that social support is beneficial to an individual, no matter whether there is a stressful event being experienced or not (Cohen & Wills, 1985).

Current research confirms two models of thought surrounding social support (Brookings & Bolton, 1988). The first model of social support considers that social support to acts as a preserving force that is constant, no matter the levels of stress the individual is exposed to at any point in time (Brookings & Bolton, 1988). The second model of social support sees social support as a buffer towards stress. This buffering effect is only active when high levels of stress are experienced by the individual (Brookings & Bolton, 1988). Cohen and Wills (1985) found that when social support structure is studied, (i.e., when an individual's amount of support people is measured), evidence towards social support acting as a preserving force is seen. When social support function is measured, as in the type of support an individual receives, the buffering effect can be observed (Cohen & Wills, 1985).

Social support acts as a buffer to stressful situations by enhancing the individual's perception of control over the environment (Joseph et al., 1997). The buffering model is confirmed when interpersonal resources are responsive to the needs of the individual during a stressful situation (Joseph et al., 1997). Studies such as Cohen and Hoberman (1983) and Paykel et al. (1980) showed consistent buffering effects in their participants (Cohen & Wills, 1985). Cohen and Hoberman (1983) examined social support and positive events as well as the relationship between negative or traumatic event exposure and the development of psychopathology. Cohen and Hoberman (1983) looked at appraisal, self-esteem, belonging and tangible support and how each of these variations of social support function in relation to buffering the harmful effects of traumatic events. Appraisal and self-esteem support were the only social support types that contributed independently as buffers to stressful events (Cohen & Hoberman, 1983). The perceived availability of social support will protect an individual from psychopathology following high levels of stress, which can be seen in physical health symptoms and depressive symptoms (Cohen &

Hoberman, 1983). What this research has taught us is that in order for an individual to have a protective buffering effect from social support, the individual must perceive that they have someone who can support them and listen to their problems (Cohen & Hoberman, 1983). There appears to be more evidence in social support research for the buffering effect of social support.

It is important to note however, that studies looking at perceived social support have not been successful in suggesting how the perception of social support actually acts as a buffer (Cohen & Hoberman, 1983).

### **Different types of social support**

Social support can be divided up into sub constructs, which include appraisal support, tangible support and belonging support (Gabert-Quillen, Irish, Sledjeski, Fallon, Spoonster, & Delahanty, 2012). Social support research often looks globally at social support but it is important to note the sub constructs of social support and their effects on psychopathology following trauma exposure (Gabert-Quillen et al., 2012). Appraisal support is also known as emotional support and refers to having someone you can go to with problems or confide in. Tangible support is also known as instrumental support and refers to practical help such as borrowing money or getting information to help with problems. Belonging support is also known as companionship support and refers to spending time with friends and family (Wills & Shinar, 2000; Ibarra-Rovillard & Kuiper, 2011; Gabert-Quillen et al., 2012).

Gabert-Quillen et al. (2012) assessed the extent to which social support buffered short-term and long-term PTSD symptoms following motor vehicle accidents. They looked at different

types of social support, including appraisal, belonging and tangible social support. Glass et al.'s (2007) results showed that tangible support rather than appraisal support buffered the relationship between trauma history and PTSD in women who had experienced violence. This differs from Gabert-Quillen et al.'s (2012) study of motor vehicle accident survivors. The results suggest that it is important to understand the effects of different types of social support. It is important to note the different types of trauma and it is still unclear how findings from these studies can be generalised to wider trauma populations (Gabert-Quillen et al., 2012).

Self-esteem and appraisal social support appear to be the most supportive buffers to stressful events because most social support scales tap into stressful events that elicit the coping requirements best met by these social support constructs (Cohen & Hoberman, 1983). Gabert-Quillen et al. (2012) reported that social support acted as a moderator for those who reported high PTSD, replicating findings by Cohen and Wills (1985) and contributing to evidence for the stress-buffering hypothesis. Gabert-Quillen et al. (2012) found the presence of appraisal social support produced a significant interaction with PTSD symptoms.

### **Social support and stressors**

Cohen and Wills (1985) defined an individual experiencing stress as one appraising their situation and not having the appropriate coping resources to manage the stressful or threatening nature of the situation. Measuring stress usually involves checklists that tally the total number of stressful events an individual has experienced (Cohen & Wills, 1985). These are usually self-reported and measure perceived stress (Cohen & Wills, 1985). It is

important to remember that there might be confounding effects between stress and support measures since changes in social relationships measure the same dynamics to some extent when it comes to the constructs of support and stress (Cohen & Wills, 1985).

The restoration of social support is seen as a key element in disaster management due to the human need to affiliate to a community in order to anticipate and integrate difficult experiences that trauma can cause leading to psychological protection for the individuals (McFarlane & van der Kolk, 1996). Different societies will hold different values and norms with regard to coping with traumatic events, as societies differ when it comes to norms and the obligations between individuals and their surroundings (McFarlane & van der Kolk, 1996). McFarlane and van der Kolk (1996) discuss the idea of how societies treat victims of trauma. Victims of trauma will only be accepted by society and not excluded if they are perceived to be not responsible for their traumatisation. Without appropriate treatment, individuals will turn violent and anxious and disrupt the social fabric of the society to which they belong (McFarlane & van der Kolk, 1996).

Research, such as Cohen and Wills (1985) suggests that social support will moderate the effects of stress and enhance coping strategies in the presence of a stressful or traumatic event. Cullen et al. (1985) adds to this argument by suggesting that social support effects vary according to the type of stressor experienced by individuals. Therefore, it is important to differentiate stressors when examining the effect of social support and potential moderating effects (Stephen & Long, 1997).

Migration is often not included when considering stressful events, but it has been considered a significantly stressful process that can affect the psychological and physical health of migrants (Pantelidou & Craig, 2006). Social support is an important factor when

looking at migration and the degree to which individuals suffer from culture shock or the distress experienced when moving countries, which is often seen as a sense of identity loss and confusion and anxiety from being in a new environment (Pantelidou & Craig, 2006).

### **PTSD and social support**

The common debate regarding social support and PTSD symptoms is: does social support buffer the effects of traumatic events or does PTSD influence how social support is perceived by the individual (O'Brien, 1998). Brewin, Andrews and Valentine (2000) conducted a meta-analysis on 14 separate risk factors for PTSD. Brewin et al. (2000) looked at the moderating effects characteristics such as civilian/military status. Gender, age when trauma occurred and race predicted PTSD in some populations but not in others (Brewin et al., 2000). It was discovered that factors operating during or after the trauma such as trauma severity, lack of social support, and additional life stress caused stronger effects than pre-trauma factors (Brewin et al., 2000).

Robinaugh et al. (2011) commented on the fact that negative post-trauma cognitions may play a part by acting as mechanisms for how social support is perceived and, in turn, influencing the severity and development of the PTSD symptoms in individuals affected by traumatic events. Robinaugh et al. (2011) examined 102 motor vehicle accident survivors and the association of social support in the development and maintenance of PTSD symptoms. They found that poor perceptions of social support can inhibit natural recovery from traumatic events and allow PTSD symptoms to increase in severity and persist over time (Robinaugh et al., 2011).

Stephens and Long (1999) found a negative correlation between PTSD scores and social support variables in their study on New Zealand police officers. PTSD symptoms were positively related to traumatic experiences, but this weakened in the presence of higher social support. These findings highlight social support's role in reducing the relationship between PTSD symptoms and trauma exposure.

Arnberg et al. (2012) focused on survivor perceptions of available social support and how this influenced the development of PTSD symptoms in Swedish tourists following the 2004 Indian Ocean tsunami. The researchers examined the buffering properties of social support following event specific trauma and global distress in disaster survivors. Arnberg et al. (2012) found that social support influenced PTSD symptoms and psychological distress within affected disaster survivors, irrespective of the trauma exposure severity. The results of Arnberg et al. (2012) confirmed those of previous studies such as Kaniasty and Norris (1992) and Schumm et al. (2006), that social support act as a stress-buffering agent on PTSD symptoms. The fact that the buffering effect of social support appears to occur across different traumatic events suggests the broad capability of social resources to protect against a variety of adverse events (Arnberg et al., 2012).

Moving away from combat literature, civilian traumatic events often have individuals reporting lower social support when higher PTSD symptoms are experienced (O'Brien, 1998). However, whether lower social support results in higher distress or whether distress leads to lower social support cannot be clearly separated (O'Brien, 1998). Lower social support has been associated with severe PTSD rather than mild cases (O'Brien, 1998).

## **Optimism and social support**

Carver and Scheier (1989; 1986) found that optimistic individuals were more likely to seek out more social support in times of need, increasing their coping with the use of more social support resources. Applebaum et al. (2014) found optimistic individuals reported fewer anxiety and depression symptoms, whereas higher social support was connected with higher quality-of-life ratings. Applebaum et al. (2014) found that optimism moderated the relationship between social support and anxiety symptoms in cancer patients. When patients had low optimism, social support was associated with lower anxiety symptoms when optimism was high, social support was not associated with low anxiety (Applebaum et al., 2014). Applebaum et al. (2014) explain these findings by suggesting that naturally optimistic individuals attract others and naturally have higher social support; therefore, social support is more consistent for these individuals, while individuals who are lower in optimism benefit more from increases in social support when looking at anxiety symptoms during difficult times.

Dougall, Hyman, Hayward, McFeeley and Baum (2001) looked at the fatal crash of US Air Flight 427, which occurred on 8 September 1994 and killed 132 people near Pittsburgh, Pennsylvania. Dougall et al. (2001) commented that even though optimistic individuals may report that they perceive they have higher levels of social support, it is unclear whether high social support may lead to more optimism and therefore more successful coping strategies or whether it is optimism that leads to higher social support.

## **Benefits of social support**

There have been many studies that look at the health benefits of social support. A review of the literature found that individuals low in social support showed higher levels of mortality from all causes. Social support, along with coping mechanisms such as problem-focused coping have been found to be related to psychological and physical health outcomes (Penley, Tomaka, & Wiebe, 2002). Mental health issues were more prevalent when lower social support levels were reported (Cohen & Wills, 1985). From these findings, it can be suggested that negative psychological states such as anxiety and depression can be triggered by a lack of positive social relationships and lead to negative health behaviours, increasing the risk of disease and mortality (Cohen & Wills, 1985). A higher number of PTSD symptoms and severity are linked to suicidal behaviour (Panagioti, Gooding, Taylor & Tarrier, 2014). Panagioti et al. (2014) found that individuals who reported high levels of perceived social support were less likely to experience suicidal behaviour, even when experiencing high levels of PTSD symptoms. The positive self-appraisal of one's ability to cope with negative emotions has been found to moderate symptoms of hopelessness and suicidal behaviour in psychotic patients (Panagioti et al., 2014).

Social support is also related to how an individual is influenced to carry out health related behaviours such as smoking, alcohol use or seeking medical help (Cohen & Wills, 1985). Individuals with higher levels of social support have better health statuses and recover from illness or health problems much faster than those with lower levels of social support (Karademas, 2006). If an individual's social support group is likely to seek out activities that are harmful to their health, the individual is likely to do the same (Cohen & Wills, 1985). This

holds true for individuals in social support groups that seek or do not seek medical help when illness occurs.

Cohen and Hoberman (1983) found no correlation between the perceived availability of support and the number of positive or negative events an individual had experienced in their lifetime. Platt, Keyes and Koenen (2014) examined differences in the association between PTSD and embedded social role diversity versus the perceived availability of support. They looked at individuals exposed to traumatic life events in the general US population. Platt et al. (2014) investigated the association between social support and current PTSD symptoms among respondents who had experienced trauma. They found that the overall association between perceived support and PTSD was larger than that of social network diversity and PTSD. In other words, the perception of social support is more powerful than the actual size of a social network or the amount of positive or negative events an individual experiences.

Social support has different influences over time. Kaniasty and Norris (2008) found that within the early stages of exposure to trauma, low social support levels contributed to higher PTSD symptoms whilst after a two year period, PTSD symptom severity eroded social support resources. The kinds of social support an individual needs can change over time as we age and it is important to note that changes in support may reflect the different types of stressors we experience as we grow older (Cohen & Hoberman, 1983).

The final construct of optimism is explored in the following chapter. Optimism and social support often go together with regard to coping after trauma exposure.

## **Chapter Four**

### **Optimism**

This chapter looks at the last construct measured in the present study, optimism. The ideas surrounding optimism are explored, and it is reiterated that this study focuses on dispositional or trait optimism rather than optimism as a state. Optimism and its connection to social support is explored and it is highlighted that the construct of optimism is often connected to other constructs; this suggests that it is interrelated to other variables when it comes to exposure to trauma and its effects on an individual. Optimism and stressors are discussed, leading to the notion that coping styles often contribute to how individuals deal with trauma exposure. In addition, which coping styles are connected to optimism are also looked at. The benefits of optimism, including optimism's role in posttraumatic growth, are also discussed in this chapter.

### **Ideas surrounding optimism**

Peterson and Bosio (1991) defined optimism as a bias towards positive perceptions and expectations in life. Ho et al. (2011) describe optimism as a stable tendency in the belief that more positive than negative things will happen in one's life. Another definition of optimism is that it is an individual's tendency to see the world as a positive place, accept difficult situations as challenges instead of barriers and have a general positive outlook on life (Bolder, Bar-Dayyan, Rosenbloom, Shemar, & Bar-Dayyan, 2012). It is important to note that research within this field can observe optimism as a trait as well as a state (Burke, Joyner, Czech & Wilson, 2000). The present study observes optimism as a trait and is measured with

the appropriate scales to observe this construct as a trait rather than a state (Burke et al., 2000).

After a meta-analytic review of the life orientation test, Andersson (1996) confirmed that there was a clear relationship between optimism, coping strategies, symptom reporting and negative affect. Andersson (1996) concluded that the clearest and most reliable relationship was between optimism and negative affect. Optimistic individuals tend to employ more problem-focused coping strategies when faced with hardship, which allows them to regulate their emotions more effectively and, in turn, leads to better functioning (Karademas, 2006).

Optimists have been found to cope more effectively than pessimists when it comes to stressful events by showing less mood disturbances when exposed to stressors (Brisette, Scheier & Carver, 2002). Due to better coping strategies and the ability to generate more supportive social networks, optimists exhibited higher psychological wellbeing and adjustment to stressful events than pessimists (Brisette et al., 2002). Brisette et al. (2002) suggested that social support was what allowed optimists to be better adjusted to stressful situations and in turn find it easier to deal with their first semester of college than pessimists did.

Instead of focusing on the lack of disease present, research has moved towards looking at overall health and wellbeing. Research regarding optimism and health has increased in recent years (Segovia, Moore, Linnville & Hoyt, 2014). Wellbeing is not just about whether the individual feels happy. It describes a long-term state rather than momentary emotions of happiness. Ng and Ho (2006) raised the idea of personal welfare. The authors discussed how personal welfare can be considered a long term state of wellbeing and that personal welfare can be considered a state of happiness. Positive emotions have also been linked to

promoting active coping and resisting stress (Ong, Bergeman, Bisconti & Wallace, 2006).

High levels of stress can lead to adverse effects on an individual's wellbeing and overall satisfaction with life (Carlson, Dikecligil, Greenberg & Mujica-Parodi, 2012).

### **Optimism and social support**

Brissette et al. (2002) examined whether optimists adjusted to stressful situations better than pessimists because of their more extensive and supportive social networks. Brissette et al. (2002) suggested that the development of extensive and supportive social networks would very likely be due to an optimistic outlook appearing more attractive to relationship partners and useful for creating social ties. As a result, the ability to foster extensive and supportive social networks would be expected to promote psychological wellbeing (Brissette et al., 2002). Brissette et al. (2002) investigated whether optimism was associated with the development of more supportive social networks or whether such supportive social networks created an optimistic disposition. They also looked at network size: previous studies have not focused on this aspect of social networks. Brissette et al. (2002) confirmed prior study findings with their results. Their results showed that their first year college student optimists reported more social support. Larger friend networks were reported by these optimists in the first 2 weeks of college. However, people who were optimistic did not increase in friend networks over the course of the semester. Brissette et al. (2002) explained this lack of association between optimism and increased friendship networks: optimists will create large friend networks at the beginning of the semester and maintain them, hence the networks are not seen to increase but are still relatively larger for optimists than pessimists.

Terrill, Ruiz and Garofalo (2010) found that dispositional optimism was more likely to be exhibited when individuals were faced with social (e.g., delivering a speech) rather than non-social challenges (e.g., putting feet in cold water). This confirms Terril et al.'s (2010) hypothesis that due to the social nature of optimism, social stressors are likely to be handled better by an individual with high dispositional optimism than non-social stressors. Terril et al. (2010) conducted research with two scenarios that relied on dispositional optimism to buffer the stress of the situations. The scenarios consisted of one stressful situation of a social nature and one of a non-social nature. The social situation consisted of individuals having to carry out a self-disclosure speech task whilst the non-social scenario consisted of individuals putting their feet into a bucket of cold water. Terril et al. (2010) confirmed prior literature by observing that in the social speech task, cardiovascular reactivity was found to be moderated by optimism. Higher optimism was associated with moderating the negative effects of social stressors and increasing recovery from social stress (Terril et al., 2010). In conclusion, Terril et al. (2010) confirmed the importance of optimism in moderating social stimuli and the benefit of optimism in social situations as well as on physical health.

Longitudinal research by Dougal et al. (2006) examined 159 emergency workers at a plane crash site. This is also an example of a human-made disaster. The study took different measurements at different points in time over a 12-month period following the plane crash. Optimism was found to be stable over time. Optimists in this study reported less stress, fewer avoidance strategies and practical problem solving. Optimistic individuals also had increased social support. Dougal et al. (2006) argued that social support is an important factor in the relationship between optimism and coping and optimism and stress.

A natural disaster example includes Benight, Swift, Sanger, Smith, and Zeppelin (2006), who examined social support and optimism's influence on survivors of the Opal hurricane in 1995. The authors found that coping, self-efficacy, social support and optimism all influenced trauma-related distress. Several studies, such as Chang and Sanna (2001), Diener, Oishi and Lucas (2003) and Eid and Diener (2004), have found that optimism can predict subjective wellbeing and be related to health outcomes for individuals (Karademas, 2006). Karademas (2006) found that optimism was significantly predicted by the presence of daily emotional social support and resilience self-efficacy.

### **Optimism and Stressors**

In healthy populations, studies have shown that optimism can be linked to a reduction in physical illnesses such as coronary heart disease and cardiovascular mortality (Segovia, Moore, Linnville, & Hoyt, 2014). A relationship has been found between optimism and reduced psychiatric illness in survivors of traumatic events or extreme trauma (Segovia et al., 2014).

Auerbach et al. (2005) and Luthans, Lebsack, and Lebsack (2008) reported medical staff that were optimistic had higher levels of performance, which led to high levels of patient satisfaction and improved work-related performance. This was due to optimistic health care workers' tendency to experience less pressure, use fewer avoidance coping strategies, seek social support and focus on problem solving to reducing distress (Auerbach et al., 2005; Luthans et al., 2008).

Segovia et al. (2014) observed resilience and optimism in prisoners of war from the Vietnam era. Segovia et al. (2014) defined resilience as the absence of psychological illness, and, therefore, looked at whether optimism predicted a lack of psychological illness or distress after trauma and whether optimism contributed to positive health outcomes for these individuals. Segovia et al. (2014) reviewed data collected a few years earlier. Optimism levels that were identified years earlier still remained as strong predictors of current positive health. This underlines the protective nature of optimism; even years after exposure to a traumatic event, it can continue to maintain positive health levels (Segovia et al., 2014).

Studies such as Brissette et al. (2002) looked at university students and their stress levels and found that higher levels of optimism were associated with lower levels of depression and perceived stress. Optimistic individuals have been found to have less distress, better quality of life and better health outcomes than pessimistic individuals (Dougall, Hyman, Hayward, McFeeley & Baum, 2001). This is explained by optimists' preference for choosing a more active coping strategy during stressful situations (Dougall et al., 2001). Symptom distress and positive coping were related to optimistic individuals in a study by Zeider and Hammer (1992), which looked at reactions to missile attacks during the Persian Gulf War.

### **Benefits of optimism**

People who are optimistic have a tendency to adjust better to life transitions than people who are pessimists (Scheier, Carver & Bridges, 1994). These observations have been noted in studies looking at health events such as surgery. Terrill et al. (2010), for instance, commented on the fact that most research surrounding optimism and cardiovascular

reactivity actually measures pessimism rather than optimism levels in individuals. The focus on optimism in research mainly occurred in a health context, in which it was found that optimism was linked to better psychological and physical health (Carver & Scheier, 2014). In one study by Scheier et al. (1989), men who were optimistic showed a faster recovery after coronary artery bypass surgery than men who were pessimistic. Differences in recovery rates can be explained by how optimists and pessimists have different coping styles (Scheier et al., 1994). This is due to optimists holding positive expectancies for the future, and pessimists holding more negative expectancies for the future (Scheier et al., 1994).

Terrill et al. (2010) examined the increasing number of research findings relating to personality traits being associated with physical disease. Terrill et al. (2010) looked at dispositional optimism and its association with physical disease risk, in particular cardiovascular health. Terrill et al. (2010) examined whether optimism relates to interpersonal tendencies. Dispositional optimism was found to work better at reducing cardiovascular reactivity to social stressors than non-social stressors due to the social nature of optimism (Terrill et al., 2010).

Van der Velden et al. (2007) compared optimism levels and depressive symptoms among disaster victims. The authors found that pessimistic victims were more at risk from health problems and psychopathology than their optimistic counterparts. Bolder et al. (2012) reviewed the role of optimism in both daily life and crisis situations among health care workers. Bolder et al. (2012) reported optimistic health care workers felt less pressure, used fewer avoidance strategies, sought social support, used practice problem solving and trusted people and organisations more.

Wellbeing can be improved with optimism interventions that seek to increase how individuals deal with daily situations and increase positivity in the way individuals look at life (Sergeant & Mongrain, 2014). Littman-Ovadia and Nir (2014) found that daily self-applied exercises designed to promote optimism can reduce pessimism, negative affect and emotional exhaustion with effects lasting up to one month following seven days of optimism exercises. It is important to note that Littman-Ovadia and Nir (2014) found that their intervention did not increase optimism; it only reduced negative affect. Therefore optimism can aid in the reduction of the negative effects of negative events but optimism as a trait is harder to increase with interventions. Usually, individuals are either optimistic or they are not.

### **PTSD, optimism and posttraumatic growth**

Posttraumatic growth (PTG) is positive psychological growth and change as a result of experiencing a traumatic event (Ho et al., 2011). PTG appears to develop as a result of successful coping strategies. Hope and optimism are considered positive coping strategies and play a key part in the development of PTG. PTG can be described as the development of personal functioning and wellbeing that is higher than it was before the individual was exposed to a traumatic event. It results in the individual possessing an increased satisfaction in life, more fulfilling interpersonal relationships and an increased sense of personal strength (Bostock, Sheikh & Barton, 2009).

### **Is optimism related to positive life events?**

Positive life events may act as stress buffers as they protect the individual by producing a positive state in the individual that allows them to cope with stress and adapt more effectively (Cohen & Hoberman, 1983). Lazarus, Kanner and Folkman (1980) stated that feelings of satisfaction and happiness allow for the individual to cope more efficiently with a stressful situation by providing a buffer that allows the individual to re-evaluate the stressful situation and restore coping resources to manage the stressor. Positive events have been found to protect individuals from the stressful nature of negative life changes (Cohen & Hoberman, 1983). Studies, such as that by Reich and Zautra (1981), have looked at increasing positive events for individuals following negative life changes to protect them from the stressfulness of these negative life changes. Reich and Zautra (1981) found that individuals who had experienced negative life changes in the past, benefited from exposure to positive events by reporting less psychiatric distress and higher levels of pleasant feelings towards life. It should be said that results for the buffering effect of positive events were only noted if prior hardship had been experienced by the individual, therefore if no negative experiences are experienced by the individual, increasing positive events has no effect (Cohen & Hoberman, 1983). Positive events can be related to optimism, but further research is required to confirm this assumption. The following chapters test the present study's aims.

## **Chapter Five**

### **Research aims and hypotheses**

#### **Research aims**

This project looks at whether there is a relationship between social support levels and traumatic reactions and PTSD symptoms within individuals that have experienced traumatic events. The project also seeks to discover whether there is a relationship between optimism and the occurrence of PTSD symptoms and psychological distress within individuals who have experienced trauma. The main aim of this project is to demonstrate that optimism and social support (be it from family and friends or work colleagues) are important factors when buffering the potentially harmful effects of traumatic events that occur in one's life. We expect to see that higher levels of optimism and social support will lead to lower levels of PTSD symptoms.

#### **Research questions and hypotheses**

Research questions were provided to establish the general themes, which were then followed by specific research hypotheses that make predictions in testable forms. These hypotheses were tested using statistical methods. The following research questions provide a broader overview of what we are trying to investigate and the testable hypothesis follows the research question. If there is a significant relationship, we will be able to reject the null hypothesis, which claims that no real effect occurs between variables and that results were by chance.

### *Hypothesis 1*

There will be a relationship between exposure to traumatic events in the last 12 months and PTSD symptoms in a general Auckland, New Zealand sample.

$H_0: p = 0$ ; there will be no relationship between exposure to traumatic events in the last 12 months and PTSD symptoms in a general Auckland, New Zealand sample.

### *Hypothesis 2*

There will be a relationship between exposure to traumatic events over an individual's lifetime and PTSD symptoms.

$H_0: p = 0$ ; there will be no relationship between exposure to traumatic events over an individual's lifetime and PTSD symptoms in a general Auckland, New Zealand sample.

### *Hypothesis 3*

Optimism will moderate the relationship in Hypothesis 1.

$H_0: p = 0$ ; Optimism will not moderate the relationship between exposure to traumatic events in the last 12 months and PTSD symptoms in a general Auckland, New Zealand sample.

#### *Hypothesis 4*

Optimism will moderate the relationship in Hypothesis 2.

$H_0: p = 0$ ; Optimism will not moderate the relationship between exposure to traumatic events over an individual's lifetime and PTSD symptoms in a general Auckland, New Zealand sample.

#### *Hypothesis 5*

Social support will moderate the relationship in Hypothesis 1.

$H_0: p = 0$ ; Social support will not moderate the relationship between exposure to traumatic events in the last 12 months and PTSD symptoms in a general Auckland, New Zealand sample.

#### *Hypothesis 6*

Social support will moderate the relationship in Hypothesis 2.

$H_0: p = 0$ ; Social support will not moderate the relationship between exposure to traumatic events over an individual's lifetime and PTSD symptoms in a general Auckland, New Zealand sample.

These hypotheses were tested using various statistical techniques. The results and techniques are discussed in Chapters Six and Chapter Seven.

## **Chapter Six**

### **Method**

Chapter Six describes the methods and considerations undertaken in order to investigate trauma exposure and PTSD symptoms and their relationship to optimism and social support levels in an Auckland, New Zealand population. This chapter outlines the research design used, the sample collected, the method employed and the ethical considerations and procedure undertaken.

### **Research design**

This study used a cross-sectional, quantitative design to investigate the relationship between trauma exposure and PTSD symptoms within a general Auckland, New Zealand population over a 12 month period as well as lifetime exposure to trauma. This study also investigated how social support and optimism moderate the relationship between trauma exposure and PTSD symptoms. One hundred and eight individuals from the Auckland region of New Zealand completed the 82-item self-report questionnaire, which was made up of four separate psychometric scales and demographic questions. Statistical analysis was carried out on these results in order to test the hypotheses. In order to address these aims, a number of considerations with regard to the research design were required. It was important to consider how participants would be recruited, what the sample size requirements would be, how data would be collected and how the desired constructs would be measured and results generalised.

## **Recruitment methods**

Participants were recruited via social media and word of mouth. The project was advertised on Facebook and Twitter in order to collect volunteers. The graduate student mailing list was also used to increase exposure of the study.

The survey was first shared on Facebook on 23 October 2014 and remained on Facebook until 5 December 2014. Massey University, as with most universities, has a graduate emailing list that allows students and academics to advertise research opportunities and events of interest within a psychological community. At the time of sending the email request, there were 472 current subscribers on the mailing list.

The Department of Psychology at Massey University has a webpage dedicated to current online research that is being conducted at the university by its students. The web address for this page is <http://psych-research.massey.ac.nz/>. A brief description of the research project with a direct link to the questionnaire was made available on this webpage on 22 October 2014. Referrals from family and friends to help with the research project. Past and current employers were also informed about the research project.

## **Participants and setting**

The only selection criterion for the project was that participants must be based in Auckland, New Zealand at the time of the study. Participants must have lived in Auckland, New Zealand for at least 6 months on a permanent basis before participating in the study. There were no identified risks or discomfort that could be experienced as a result of participation.

Participants were expected to complete the questionnaire in their own time, using their own computers and within their own environments.

### Sample

A total of 108 participants completed the questionnaire from start to finish. This was a positive result as the aim of the project was to get at least 100 participants in order to carry out sound statistical analysis (Brace, Kemp, & Snelgar, 2012). The sample has been described in Table 1. Out of the total number of participants, 25% were male ( $n=27$ ) and 75% were female ( $n=81$ ), as can be seen in Table 1. The age of the participants ranged from 19 to 67 years ( $M = 33.30$  years;  $SD = 11.18$ ). Comparing this with the 2013 Auckland census results, the average age for people in Auckland is 33.4 years (Statistics New Zealand, 2015). One can therefore confidently say that the collected sample is closely representative of the Auckland population.

The ethnic diversity of participants can also be seen in Table 1. As expected, there was a high proportion of New Zealand European/Pakeha participants as Auckland itself has a large population of New Zealand Europeans. In the 2006 census, 54.4 % of the Auckland people surveyed identified as belonging to the European category (Statistics New Zealand, 2015). Of the 108 participants, 67.6% identified as New Zealand European/Pakeha ( $n=73$ ), followed by 13.9% European ( $n=15$ ), 8.3% Asian ( $n=9$ ), 3.7% Indian ( $n=4$ ), 1.9% New Zealand Maori ( $n=2$ ), 1.9% Pacific Islander ( $n=2$ ), 1.9% South African ( $n=2$ ) and 0.9% identifying as other ethnicity ( $n=1$ ).

Table 1

*Demographics of sample*

Demographic variable	n	percent
Gender		
Male	27	25
Female	81	27
Ethnicity		
New Zealand European/Pakeha	73	67.6
European	15	13.9
Asian	9	8.3
Indian	4	3.7
New Zealand Maori	2	1.9
Pacific Islander	2	1.9
South African	2	1.9
Other	1	0.9
Employment status		
Employed full time (40 hours a week)	81	75
Employed part-time (1-30 hours a week)	17	15.7
Unemployed and looking for work	2	1.9
Unemployed and not looking for work	5	4.6
Retired	2	1.9

Employment status was also collected as part of the sample demographics, as can be seen in Table 1. Out of the 108 participants, full-time employees made up 75% of participants (N = 81). Part-time employment followed with 15.7% (n=17). A total of 1.9% of participants were unemployed and looking for work (n=2) whilst 4.6% were unemployed and not looking for work (n=5). Retirees were also captured within our sample, with 1.9% of participants reporting that they were retired (n=2).

In addition to looking at employment status, participants' occupational industries were also observed, as seen in Table 2. The top three occupational industries for our sample of 108 participants, were Human Resources and Recruitment with 16.7% (n=18), Healthcare with 11.1% (n=12) and Marketing, Advertising and Media with 11.1% (n=12). A fair distribution of various industries was collected, without any one industry dominating the sample. Initially, there were more industry categories but after data collection it was decided to refine the industry groups. Industry groups that were not collected in our sample include agriculture, forestry, fishing, hunting, construction and sports and recreation.

Table 2

*Main occupational industry of participants (N=108)*

Measure	Frequency	Percentage
Home maker	3	2.8
Student	10	9.3
Sales and retail	4	3.7
Accounting	1	0.9
Legal	2	1.9
Administration	7	6.5
Healthcare	12	11.1
Education	7	6.5
Hospitality and tourism	3	2.8
Engineering and information technology	8	7.4
Marketing, advertising and media	12	11.1
Human resources and recruitment	18	16.7
Public servant/government	10	9.3
Other	11	10.2

### Outliers

The outlier labelling procedure was conducted, using SPSS software to identify outliers for each of the four scales used in the current study. The value for  $g$  was set at 2.20, as recommended by Hoaglin, Iglewicz and Tukey (1986). No outliers were identified for the raw

scores for all four variables of the current study. As no outliers were identified, no values were removed from the data.

Post hoc statistical power of the observed power for the study's multiple regression was calculated and results are discussed in Chapter Seven.

### **Questionnaire**

A cross-sectional, self-report survey design was used to collect data. This design was selected due to the time constraints of the project and considerations of how data would be collected. The self-report questionnaire was the only method of data collection for the four constructs of PTSD, traumatic events, optimism and social support. Participants voluntarily completed the questionnaire online. The questionnaire took approximately 15 minutes to complete.

The self-report survey design is commonly used throughout psychological research and often comes with limitations, as do many other methods within this field (Rossi, Wright, & Anderson, 2013). Howard (1994) compared self-report construct validity on a number of constructs such as social skills, empathy and anxiety, and found self-report methods to be superior at capturing these constructs to non-self-report approaches, such as role plays and behavioural measures. Researchers often discuss the limitations of using self-report methods but disregard the limitations of using other methods, such as behavioural measures (Howard, 1994). It is important to remember that, with every method, there will be limitations as well as benefits. When used in a well-constructed design, self-report survey measures can shed light on the relationship between constructs without too many

limitations (Howard, 1994). As we used self-report scales to create our questionnaire, it is appropriate to use a self-report design in order to accurately use these scales.

Along with the questionnaire being self-report, it was also web-based. The order of the scales in the questionnaire was also taken into account due to the nature of the constructs that were being measured. This allowed participants to not lose interest half way through or be put off by the nature of some questions, such as those measuring PTSD symptoms and asking about traumatic event experiences.

The questionnaire was broken up into five sections, labelled A-E (see Appendix 3). Section A consisted of the demographic questions. These questions allowed the collection of data for a descriptive analysis of the sample. The rest of the sections measured specific constructs, including traumatic event occurrence, PTSD symptoms, social support and optimism.

#### *Traumatic events*

Section B measured traumatic events that occurred in one's lifetime and in the last 12 months. This section consisted of the Traumatic Stress Schedule (TSS), measuring traumatic incident occurrence (Norris, 1990). For both the lifetime and the last-12-months segments, 19 items measuring the extent and frequency of traumatic events in an individual's life were included. Norris (1990) developed a scale in order to measure the occurrence and impact of several traumatic events on a general population. The TSS allows for a broad array of stressful events to be captured and recognised as contributing to an individual's life stress (Norris, 1990). The TSS includes events such as the loss of loved ones through homicide, accident and suicide; injury from motor vehicle accidents to the individual and others; robbery, theft or assault; injury and property loss as a result of natural and human-made disasters; and being in imminent danger (Norris, 1990). These events are all undesirable,

unexpected and uncontrollable for the individual involved (Norris, 1990). This scale is appropriate when looking at PTSD and other trauma exposure reactions that also involve the elements of lack of control and undesirability as the key criteria for psychopathology to develop. Norris and Perilla (1996) tested the TSS, finding a Cronbach's alpha of 0.88 which suggests sound psychometric properties. In the present study, the TSS scale had a high internal consistency, as determined by a Cronbach's alpha of 0.90.

### *PTSD symptoms*

Section C measured problems and complaints experienced by individuals after stressful experiences. This section was included to measure PTSD symptoms in candidates. The Post Traumatic Stress Disorder Checklist scale (PCL) (Weathers et al., 1993) was used in this particular section. It was developed by Weathers et al (1993) to assess the symptoms of PTSD. For this project, the civilian version of the PCL was used. This particular version of the scale looked at a stressful experience in the past, whereas the military and specific traumatic event versions of the PCL referred to specific events. The civilian version was the most appropriate for this study, as we were looking at a general population, not military or specific sample groups where traumatic events might be more prevalent. The PCL is a 17-item checklist that has been formulated using the diagnostic criteria of the DSM-IV and a combination of other scales (Ruggiero, Del Ben, Scotti & Rabalais, 2003). Due to following the DSM-IV so closely, the PCL scale is more comparable to the diagnostic criteria of the DSM-IV, than other scales who parallel these diagnostic criteria to a lesser degree (Ruggiero et al., 2003). The PCL was developed by combining scales by Foa (Foa, Riggs, Dancu & Rothbaum, 1993), Davidson's Self-Rating PTSD scale (Davidson, Book & Colket, 1995) and the Impact of Events scale (Horowitz, Wilmer & Alvarez, 1979). Blanchard, Jones-Alexander,

Buckley and Forneris (1996) conducted a cross-validation study to test the PCL's psychometric properties across different sample groups. The PCL had good internal consistency for its three symptom clusters ranging from 0.89 to 0.92. Blanchard, Jones-Alexander, Buckley and Forneris (1996) endorsed the PCL scale as a screening instrument and a self-report measure of the degree of PTSD, but they reminded users to be sensitive to possible gender and trauma-type differences when deciding on cut-off scores. Ruggiero et al. (2003) also examined the PCL's psychometric properties, following on from Blanchard et al. (1996). Ruggiero et al. (2003) looked at the test-retest correlation coefficients for the PCL and found that the total score correlations were 0.92 for immediate retesters, 0.88 for participants one week after initial testing and 0.68 for participants after a two-week retest period. The cut off is important when discussing whether individuals are expressing PTSD symptoms. Failing to apply methodological constraints to data can lead to researchers overestimating trauma's impact. Researchers who create their own cut off points for PTSD or depression ratings run the risk of inflating their results and drawing conclusions that overestimate the magnitude of a disaster or trauma's impact on a population (Bonanno, Brewin, Kaniasty & Greca, 2010). Blanchard et al. (1996) and Ruggiero et al. (2003) examined which cut off would be best and decided that a cut-off score of 44 for the PCL would suggest the prevalence of PTSD symptoms within an individual. The PCL is psychometrically valid as it has shown internal and construct validity, reliability, and it is relevant to the DSM-IV (Ruggiero, Del Ben, Scotti & Rabalais, 2003). Therefore, this scale was confidently included in order to identify the range of PTSD symptoms in a general Auckland, New Zealand population. It should be noted that because this is a self-report and not clinically administered scale, it is only possible to observe the relationships of PTSD symptomology

within a general population, not diagnose individuals with PTSD. In the present study, the PCL scale had high internal consistency, with a Cronbach's alpha of 0.95.

### *Social support*

Section D measured social support. The Interpersonal Support Evaluation list (ISEL) (Cohen, Mermelstein, Kamarck & Hoberman, 1985) was used to measure this construct. The shortened version of 12 items was administered in order to make the survey more efficient and to retain participants. The original version contained 40 items and would have made the questionnaire too long, which may have put the study at risk of losing participants, as some would drop out due to the length of the survey (Cohen et al., 1985). Three different dimensions of social support were measured using this scale and included tangible support, appraisal support and belonging support (Cohen et al., 1985). As social support is multidimensional, it was important to select a scale that acknowledged the nature of social support and allowed us to look at the subscales when analysing data for relationships between constructs. The ISEL assesses perceived social support availability (Cohen & Hoberman, 1983). The ISEL is designed to measure the perceived availability of different forms of social support (Brookings & Bolton, 1988). It is important to look at the total social support scale as well as subscales when analysing the ISEL scale as sub scale social support can indicate aspects of an individual's support levels that would otherwise not have been understood if only the total score was assessed (Brookings & Bolton, 1988). Cohen and Hoberman (1983) tested the Cronbach's alpha for the total social support score using the ISEL and found it to be 0.77, with tangible, appraisal and belonging support all having Cronbach's Alpha scores of 0.71, 0.77 and 0.75 respectively, confirming sound reliability and

validity. In the present study, the ISEL scale also had high internal consistency, with a Cronbach's alpha of 0.87 for overall social support.

### *Optimism*

Section E measured optimism. To measure this construct, the Life Orientation Test-Revised (LOT-R) was used. This scale looked at generalised optimism versus pessimism (Carver, Scheier & Segerstrom, 2010). This revised version included expectations for the future, which is important in current theories surrounding optimism. Originally, most optimism research had used the Life Orientation Scale (LOT) by Scheier and Carver (1985). On revision of the LOT scale, now named the Life Orientation Scale Revised (LOT-R), the Cronbach's alpha for the new scale, with new six items, was 0.78, providing evidence that the scale is at an acceptable level of internal consistency (Scheier & Carver, 1994). Scheier and Carver (1994) retested their LOT-R scale in order to check the stability of individual scores over time and to test the reliability of the scale for re-test scenarios. Scheier and Carver compared different college student samples over 4, 12, 24 and 28 month intervals. The test-retest correlations were  $r = .68$ ,  $r = .60$ ,  $r = .56$  and  $r = .79$  respectively. This suggests that the LOT-R scale is stable over time (Scheier & Carver, 1994). In the present study, the LOT-R scale had a Cronbach's alpha of 0.68.

Once the survey format was completed, the survey was created using the Qualtrics software with help from the IT department at Massey University. The survey was then tested on the online platform to make sure it ran smoothly and that there were no grammatical errors or errors with the flow of the survey. Independent testers conducted the survey and provided feedback on all aspects of the survey, such as content coherence, instruction clarity and technical aspects such as format and visual display.

### **Method considerations**

Considerations in collecting participants and increasing sample numbers were taken into account in order to make sure a large enough sample was obtained for statistical analysis to be valid and reliable. One strategy that was implemented to increase survey participation was regular reminders. These took place on a weekly basis across all networks. Regular reminders in the form of reminder emails and repeated posts on Facebook were used to increase response rates. It was evident that every time a reminder post on Facebook or email was sent out, it resulted in more successfully completed surveys.

### **Ethical considerations**

A low-risk questionnaire was completed in order to ascertain whether this project would have to go through an ethics committee in order to obtain ethics approval. The project did not raise any issues that would require a full ethics committee application therefore an application for a Low Risk Notification was requested. Low Risk status was granted by Massey University on 8 July 2014 and recorded on the Low Risk Database, which is reported in the Annual Report of the Massey University Human Ethics Committees (see Appendix 1 for Ethics Approval letter).

Ethical issues were considered before data collection commenced. The first issue considered was the identities of participants. The survey was completely anonymous to ensure participant identities were kept unknown to the researcher and anyone looking at the data. The survey did not ask for any personal information in the form of contact details or names. Anonymity was important in ensuring participants felt comfortable disclosing their

experiences and answering questions honestly. Another issue that was considered before commencement of data collection was the issue of participants becoming distressed whilst answering questions regarding traumatic experiences. Participants were provided with information about where to find help and support if they felt distressed (see Appendix 2, which contains the Information Sheet).

Since the questionnaire was anonymous, the identities of participants were not discoverable. Data was stored securely. An executive summary of findings will be made available through the same portals used for participant recruitment so that participants will be able to read about what their contribution resulted in.

### **Statistical analysis**

The data that was collected from the questionnaires was statistically analysed and used to answer research questions that the project aims to investigate. The data collected was tested for normality in order to meet the assumptions for parametric and nonparametric analysis. Nonparametric procedures were used for data that was tested for normality and was found not to meet the assumptions for parametric tests (Pallant, 2011). Parametric analysis was also chosen for the further exploratory analysis to test the hypotheses as parametric testing has increased sensitivity and is able to pick up significant differences more accurately than nonparametric analysis (Pallant, 2011).

#### *Descriptive statistics*

Descriptive statistics were analysed using SPSS software. Descriptive statistics included calculating means, standard deviations, frequencies and minimum and maximum scores for

scales and demographic information which allowed for the sample to be described and variables explored.

### *Cronbach's alpha*

Cronbach's alpha was calculated to check the internal reliability of the four scales used in the project. This measure is used to allow the researcher to have an indication of how closely the items in each scale measure the desired construct (Pallant, 2011). The reliability of a scale assesses the extent to which variation in measurement is due to true differences in individuals or if this difference is due to measurement error (Kline, 1992). Tabachnick and Fidell (2001) state that internal consistency reliability estimates (Cronbach's alpha) of 0.65 or above ( $\alpha \geq 0.65$ ) reflect good reliability. The TSS scale consisted of 76 items and measured traumatic event exposure. In the present study, the TSS scale had a high internal consistency, as determined by a Cronbach's alpha of 0.90. The PCL scale consisted of 17 items and measured PTSD symptoms. In the present study, the PCL scale had high internal consistency, with a Cronbach's alpha of 0.95. The ISEL scale consisted of 12 items and measured social support. In the present study, the ISEL scale also had high internal consistency, with a Cronbach's alpha of 0.87. The LOT-R scale consisted of 10 items and measured optimism. Of these items, 3 items required reverse scoring and items 2, 5, 6 and 8 were filler items that were removed for analysis. The LOT-R scale had a Cronbach's alpha of 0.68. All scales had high scores, above 0.65, on the Cronbach's Alpha scale.

### *Correlation, hierarchical multiple regression and moderation analysis*

The hypotheses explored the relationship between the variables of trauma exposure and PTSD symptoms therefore correlational analysis was appropriate for this investigation. Depending on whether the data met the assumptions for normality, Pearson's product-

moment correlations or Spearman's rank-order correlations were considered as appropriate for analysis. As our data did not meet the assumptions for normality, it was appropriate to use the nonparametric correlational analysis of the Spearman's rank-order correlation. Correlations were used to describe the strength and direction of the relationship between variables (Pallant, 2011).

Once the correlational relationships were analysed, exploratory analysis was conducted on the constructs. Hierarchical multiple regressions techniques were used to allow for a calculation of the percentage of variance in a construct to be explained by a single predictor or a collection of predictors (Brace, Kemp, & Snelgar, 2006). The rationale for regression analysis was the additional information such analyses would provide about the relationships among trauma exposure and PTSD symptoms in relation to social support and optimism levels.

Moderation analysis was conducted on social support and optimism and how they moderate Hypotheses 1 and 2. A moderator analysis was used to determine whether the relationship between two variables, in this case trauma exposure and PTSD symptoms, depends on or is moderated by the value of a third variable. In the present study, these third and fourth variables in question are optimism and social support.

The results of the described analyses follow in Chapter Seven.

## **Chapter Seven**

### **Results**

This chapter describes the results of the study in relation to each of the six research questions related hypotheses. Data screening is discussed first, and this is followed by a summary of the key descriptive statistics for the sample. Each hypothesis is then tested individually, making sure that each meets statistical assumptions for the correct statistical analysis to be carried out. A summary of each hypothesis test is provided. The first two hypotheses consisted of correlation analysis, whilst the remaining four hypotheses were tested via moderation analysis.

#### **Data screening**

The data needed to be screened and cleaned up before analysis could be conducted (Pallant, 2011). This is done before analysis begins in order to avoid errors (Pallant, 2011).

The data was screened to make sure we were only analysing complete sets of surveys rather than incomplete surveys with missing sections or only half-completed surveys. From the 150 surveys we gathered, only 108 were fully completed, meaning all sections had been completed by the individual. The incomplete surveys were not used in data analysis.

#### **Descriptive statistics**

Although this project looks at general trauma exposure, it is still interesting to observe the frequencies of specific traumatic events within the sample. Figure 1 shows the frequency of specific events, the data of which was collected using the TSS scale (Norris, 1990). The scale items were categorised into traumatic event categories for ease of interpretation and observation of the spread of traumatic exposure within the gathered sample of Auckland,

New Zealand residents. It appears that the most frequently reported trauma event was coming into contact with a dead body. This event consisted of item 3 (*Have you experienced a critical incident where an individual died (other than a child)?*), item 5 (*Have you experienced a critical incident where someone was dead upon your arrival?*) and item 7 (*Have you experienced a critical incident where you came into contact or saw the body of someone who committed suicide?*) on the TSS scale. The second most frequent traumatic event was the serious injury of oneself or others. This category consisted of item 1 (*Have you experienced a critical incident where someone was seriously injured?*) and item 2 (*Have you experienced a critical incident where a child was seriously injured or killed?*) on the TSS scale. By looking at the bar graph in Figure 1, it can be observed that the rest of the traumatic events are evenly spread across categories.

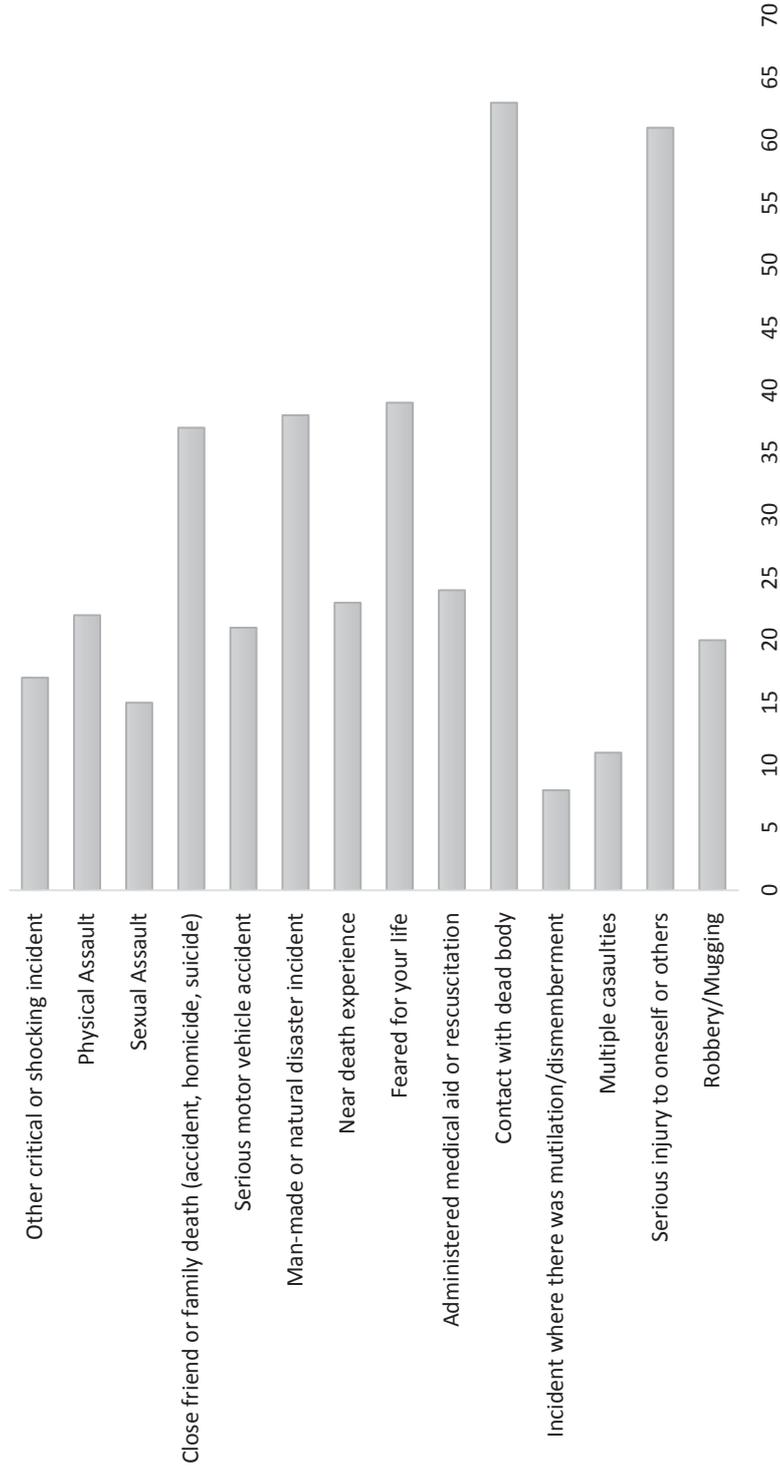


Figure 1. Bar graph showing the frequency of different types of traumatic incidents that individuals within the study experienced in their life time and answered using the TSS scale (N=108).

Table 3 displays the sample size, maximum and minimum values, mean and standard deviation for each construct measured. These are separated by gender as well as totals shown for our sample. The TSS scale measured traumatic event exposure for an individual's lifetime and the last 12 months. The PCL measured PTSD symptoms. The ISEL measured social support. The LOT-R scale measured optimism. The data did not meet normality assumptions and therefore t-tests could not be carried out between groups such as between males and females (Pallant, 2011).

Table 4 shows the Spearman's rank order correlations for the present study's measurement scales. A nonparametric correlation was chosen because the data did not meet assumptions for normality, as is explained later in the chapter. There was a moderate positive correlation between trauma exposure within the last 12 months and trauma exposure within an individual's lifetime,  $r_s(106) = .44, p < .05$ . There was a weak positive correlation between PTSD symptoms and trauma exposure within the last 12 months,  $r_s(106) = .33, p < .05$ . A weak negative correlation was observed between overall social support and PTSD symptoms,  $r_s = -.23, p < .05$ . The present study also found a significant, weak negative correlation between Optimism and PTSD symptoms,  $r_s = -.27, p < .05$ . Overall social support was found to have a significant relationship with optimism, with a weak positive correlation observed,  $r_s = .38, p < .05$ .

Table 3

*Summary of descriptive statistics for measurement scales*

Measure	<i>N</i>	Minimum score	Maximum score	<i>M (SD)</i>
<b>TSS (lifetime)</b>				
Male	27	0	10	4.63 (3.00)
Female	81	0	13	3.38 (2.91)
Total sample	108	0	13	3.69 (2.97)
<b>TSS (12 months)</b>				
Male	27	0	10	0.78 (2.06)
Female	81	0	12	0.80 (1.65)
Total sample	108	0	12	0.80 (1.75)
<b>PCL</b>				
Male	27	17	71	28.30 (13.88)
Female	81	16	69	30.95 (13.31)
Total sample	108	16	71	30.29 (13.44)
<b>ISEL – overall social support</b>				
Male	27	27	48	39.59 (6.01)
Female	81	21	48	39.86 (6.76)
Total sample	108	21	48	39.80 (6.56)
<b>LOT-R</b>				
Male	27	10	24	17.74 (4.16)
Female	81	6	25	17.40 (5.04)

Total sample 108 6 25 17.48 (4.82)

*Note.* TSS = Traumatic Stress Schedule scale; PCL = Posttraumatic Stress Disorder Checklist scale; ISEL = Interpersonal Support Evaluation List scale; LOT-R = Life Orientation Test Revised scale.

Table 4

*Spearman's rank order correlation for measurement scales*

Measure	1	2	3	4	5
1. TSS (lifetime)	-				
2. TSS (12 months)	.44**	-			
3. PCL	.19	.33**	-		
4. ISEL – overall social support	-.06	-.04	-.23*	-	
5. LOT-R	.02	-.16	-.27**	.38**	-

*Note.* TSS = Traumatic Stress Schedule scale; PCL = Posttraumatic Stress Disorder Checklist scale; ISEL = Interpersonal Support Evaluation List scale; LOT-R = Life Orientation Test Revised scale. \* $p < .05$ . \*\* $p < .001$ .

### Normality of data

The normality of the data for each hypothesis was examined in order to see whether the assumptions for the appropriate statistical tests were met. As the relationship between variables was investigated, correlational analysis was appropriate for this sort of investigation. Depending on whether the data meets the appropriate assumptions, a

Pearson's product-moment correlations or Spearman's rank-order correlations will be conducted accordingly.

Two methods to assess normality were used. Firstly, graphical methods were used to assess the normality of the data. In this case, the investigated relationships were graphed into scatter diagrams in SPSS to make a visual judgement as to the trend of the data, if one was present. It should be noted that this method of assessing normality is subjective and therefore normality was further investigated using numerical methods also. Secondly, the Shapiro-Wilk test was used to assess normality. Once the status of normality was established, the correct correlation test was administered to each hypothesis to test for significant relationships.

### **Research hypotheses**

1. There will be a relationship between exposure to traumatic events in the last 12 months and PTSD symptoms in a general Auckland, New Zealand sample.
2. There will be a relationship between exposure to traumatic events over an individual's lifetime and PTSD symptoms.
3. Optimism will moderate the relationship in Hypothesis 1.
4. Optimism will moderate the relationship in Hypothesis 2.
5. Social support will moderate the relationship in Hypothesis 1.
6. Social support will moderate the relationship in Hypothesis 2.

## **Hypothesis 1**

There will be a relationship between PTSD symptoms and trauma exposure for individuals who have experienced traumatic events within the last 12 months.

$H_0: \rho = 0$ ; there will be no relationship between exposure to traumatic events within the last 12 months and PTSD symptoms in a general Auckland, New Zealand sample.

### *Test for normality*

PTSD symptoms were not normally distributed for our sample with a skewness of 1.29 ( $SE = 0.23$ ) and kurtosis of 1.13 ( $SE = 0.46$ ). Traumatic event occurrence within the last 12 months was not normally distributed for our sample with a skewness of 4.14 ( $SE = 0.23$ ) and kurtosis of 21.64 ( $SE = 0.46$ ). Both skewness z-scores were greater than 2.58, which is the accepted z-score for normal distribution, meaning our data is skewed. The fact that these two z-scores were greater than zero, means we have positive skewness. This was also visually confirmed by the histograms created by SPSS. Kurtosis scores for both PTSD and traumatic events within the last 12 months were greater than zero, suggesting positive kurtosis.

The Shapiro-Wilk's test was also administered to the data to test for normality. PTSD symptoms and traumatic events within the last 12 months were not normally distributed, as assessed by Shapiro-Wilk's test ( $p < .05$ ).

The data is not normally distributed, and, therefore, it does not meet all the assumptions required to conduct a Pearson's correlation. As with Hypothesis 1, we conducted a Spearman's correlation as a nonparametric alternative to the parametric

test of a Pearson's correlation that would have been possible if the data met all assumptions of normality.

### *Correlation analysis*

A Spearman's correlation was conducted instead as assumptions for this non-parametric test were not met. Preliminary analysis showed the relationship to be monotonic, as assessed by visual inspection of a scatterplot. There was a moderate, positive correlation between PTSD symptoms and traumatic event exposure within the last 12 months in a general Auckland, New Zealand sample,  $r_s = .33, p < .05$ . The results show a significant relationship between PTSD symptoms and traumatic event exposure within the last 12 months; therefore we can reject the null hypothesis and suggest that there is a significant correlational relationship between these two variables.

### **Hypothesis 2**

There will be a relationship between exposure to traumatic events in one's lifetime and PTSD symptoms in a general Auckland, New Zealand sample.

$H_0: \rho = 0$ ; there will be no relationship between exposure to traumatic events within one's lifetime and PTSD symptoms in a general Auckland, New Zealand sample.

### *Test for normality*

PTSD symptoms were not normally distributed for our sample with a skewness of 1.30 ( $SE = 0.23$ ) and kurtosis of 1.13 ( $SE = 0.46$ ). Traumatic event occurrence within a

lifetime was not normally distributed for our sample with a skewness of 0.93 ( $SE = 0.23$ ) and kurtosis of 0.31 ( $SE = 0.46$ ). Both skewness z-scores were greater than 2.58, which is the accepted z-score for normal distribution, meaning our data is skewed. The fact that these two z-scores were greater than zero, means we have positive skewness. This was also visually confirmed by the histograms created by SPSS. Kurtosis scores for both PTSD and lifetime traumatic events were greater than zero, suggesting positive kurtosis.

The Shapiro-Wilk's test was also administered to the data to test for normality. PTSD symptoms and lifetime traumatic event occurrence were not normally distributed, as was assessed by the Shapiro-Wilk's test ( $p < .05$ ).

The data is not normally distributed, and, therefore, it does not meet all the assumptions required to conduct a Pearson's correlation. The Spearman's correlation was conducted for Hypothesis 1 due to the data not meeting the normality assumptions that would allow us to continue with the parametric Pearson's correlation.

#### *Correlation analysis*

A Spearman's correlation was conducted instead, as assumptions for this non-parametric test were met. Preliminary analysis showed the relationship to be monotonic, as assessed by visual inspection of a scatterplot. There was a weak, positive correlation between PTSD symptoms and lifetime traumatic event exposure in a general Auckland, New Zealand sample,  $r_s = .19$ ,  $p > .05$ . As results found no significant relationship between PTSD symptoms and total traumatic event exposure,

we cannot reject the null hypothesis and accept that there is no significant relationship between these two variables.

### **Moderation analysis**

Hierarchical multiple regression and moderation analysis techniques were used to explore the moderating effects of optimism and social support constructs. Aiken and West (1991) suggest centering scores to reduce the possible effects of multicollinearity. The scores on the independent and moderator variables were centred by subtracting their respective sample means from all individuals' scores and producing revised sample means of zero. An interaction term was generated by multiplying the independent and moderator variable together (Aiken & West, 1991). After these steps were completed, hierarchical multiple regression was conducted to test the interaction between the independent and moderator variable (Aiken & West, 1991). A moderator variable changes the strength or direction of a relationship between the independent and dependent variables (Baron & Kenny, 1986).

### **Hypothesis 3**

Optimism will moderate the relationship in Hypothesis 1.

$H_0: p = 0$ ; Optimism will not moderate the relationship between exposure to traumatic events in the last 12 months and PTSD symptoms in a general Auckland, New Zealand sample.

A hierarchical multiple regression model was tested to investigate whether the association between trauma exposure within 12 months and PTSD symptoms depends on the level of optimism. After centering trauma exposure within 12 months and optimism and computing interaction term (Aiken & West, 1991), the two predictors and the interaction were entered in steps for the hierarchical regression model. The results can be observed below in Table 8.

A three step hierarchical multiple regression was conducted with PTSD symptoms as the dependant variable. The centralised variable for trauma exposure within 12 months was entered at step 1, the centralised variable for optimism was entered at step 2, and the interaction term was entered at step 3.

Table 5

*Summary of hierarchical multiple regression analysis for hypothesis 3*

Variable	$\beta$	$R$	$R^2$	$Adj. R^2$	$\Delta R^2$
Step 1		.28	.08	.07	.08
Trauma exposure within 12 months	.28*				
Step 2		.33	.11	.10	.03
Trauma exposure within 12 months	.26*				
Optimism	-.18				
Step 3		.33	.11	.09	.00
Trauma exposure within 12 months	.27*				
Optimism	-.18				
Interaction between optimism and trauma exposure within 12 months	-.05				

*Note.*  $n=108$ ,  $\beta$  statistics marked \* are significant at  $p<.05$

The analysis revealed that at step 1, trauma exposure within 12 months showed a significant relationship with PTSD symptoms on the regression model,  $F(1,106) = 8.96$ ,  $p<.05$ , and accounted for 8% of the variation in PTSD symptoms. Adding optimism at step 2 contributed 3% more variation in PTSD symptoms but no significant relationship between optimism and PTSD symptoms was found. Adding the interaction term at step 3 did not contribute anymore variation in PTSD symptoms. As this interaction was non-significant, simple slopes for the association between trauma exposure within 12 months and PTSD symptoms were not tested for different levels of optimism. With

these findings, there is some evidence to suggest that the null hypothesis cannot be rejected.

#### **Hypothesis 4**

Optimism will moderate the relationship in Hypothesis 2.

$H_0: p = 0$ ; Optimism will not moderate the relationship between exposure to traumatic events over an individual's lifetime and PTSD symptoms in a general Auckland, New Zealand sample.

A hierarchical multiple regression model was tested to investigate whether the association between trauma exposure within an individual's lifetime and PTSD symptoms depends on the level of optimism. After centering lifetime trauma exposure and optimism and computing the interaction term (Aiken & West, 1991), the two predictors and the interaction were entered in steps for the hierarchical regression model. The results can be observed below in Table 9.

A three step hierarchical multiple regression was conducted with PTSD symptoms as the dependant variable. The centralised variable for lifetime trauma exposure was entered at step 1, the centralised variable for optimism was entered at step 2, and the interaction term was entered at step 3.

Table 6

*Summary of hierarchical multiple regression analysis for hypothesis 4*

Variable	$\beta$	$R$	$R^2$	Adj. $R^2$	$\Delta R^2$
Step 1		.14	.02	.01	.02
Lifetime trauma exposure	.14				
Step 2		.26	.07	.05	.05
Lifetime Trauma exposure	.16				
Optimism	-.21*				
Step 3		.27	.07	.04	.01
Lifetime trauma exposure	.18				
Optimism	-.21*				
Interaction between optimism and lifetime trauma exposure	-.08				

*Note.*  $n=108$ ,  $\beta$  statistics marked \* are significant at  $p<.05$

The analysis revealed that at step 1, lifetime trauma exposure showed a non-significant relationship with PTSD symptoms on the regression model and accounted for 2% of the variation in PTSD symptoms. Adding optimism at step 2 contributed 5% more variation in PTSD symptoms. A significant relationship was found between optimism and PTSD symptoms at level 2 and 3,  $F(2,105) = 3.67, p<.05$ . Adding the interaction term at step 3 did not contribute anymore variation in PTSD symptoms. As this interaction was non-significant, simple slopes for the association between lifetime trauma exposure and PTSD symptoms were not tested for different levels of optimism.

With these findings, there is some evidence to suggest that the null hypothesis cannot be rejected and that optimism will not moderate the relationship between exposure to traumatic events over an individual's lifetime and PTSD symptoms in a general Auckland, New Zealand sample.

### **Hypothesis 5**

Social support will moderate the relationship in Hypothesis 1.

$H_0: p = 0$ ; Social support will not moderate the relationship between exposure to traumatic events in the last 12 months and PTSD symptoms in a general Auckland, New Zealand sample.

A hierarchical multiple regression model was tested to investigate whether the association between trauma exposure within 12 months and PTSD symptoms depends on the level of social support. After centering trauma exposure within 12 months and social support and computing interaction term (Aiken & West, 1991), the two predictors and the interaction were entered in steps for the hierarchical regression model. The results can be observed below in Table 10.

A three step hierarchical multiple regression was conducted with PTSD symptoms as the dependant variable. The centralised variable for trauma exposure within 12 months was entered at step 1, the centralised variable for social support was entered at step 2, and the interaction term was entered at step 3.

Table 7

*Summary of hierarchical multiple regression analysis for hypothesis 5*

Variable	$\beta$	$R$	$R^2$	Adj. $R^2$	$\Delta R^2$
Step 1		.28	.08	.07	.08
Trauma exposure within 12 months	.28**				
Step 2		.41	.17	.16	.09
Trauma exposure within 12 months	.27**				
Social support	-.30**				
Step 3		.42	.17	.15	.00
Trauma exposure within 12 months	.28**				
Social support	-.31**				
Interaction between social support and trauma exposure within 12 months	-.05				

*Note.*  $n=108$ ,  $\beta$  statistics marked \* are significant at  $p<.05$ , \*\* are significant at  $p<.01$

The analysis revealed that at step 1, trauma exposure within 12 months showed a significant relationship with PTSD symptoms on the regression model,  $F(1,106) = 8.96$ ,  $p<.05$ , and accounted for 8% of the variation in PTSD symptoms. Adding social support at step 2 contributed 9% more variation in PTSD symptoms. There was a significant relationship between social support and PTSD symptoms on the regression model,  $F(2,105) = 10.8$ ,  $p<.05$ . Adding the interaction term at step 3 did not contribute anymore variation in PTSD symptoms. As this interaction was non-significant, simple

slopes for the association between trauma exposure within 12 months and PTSD symptoms were not tested for different levels of social support. With these findings, there is some evidence to suggest that the null hypothesis cannot be rejected.

### **Hypothesis 6**

Social support will moderate the relationship in Hypothesis 2.

$H_0: \rho = 0$ ; Social support will not moderate the relationship between exposure to traumatic events over an individual's lifetime and PTSD symptoms in a general Auckland, New Zealand sample.

A hierarchical multiple regression model was tested to investigate whether the association between trauma exposure within an individual's lifetime and PTSD symptoms depends on the level of social support. After centering lifetime trauma exposure and social support and computing the interaction term (Aiken & West, 1991), the two predictors and the interaction were entered in steps for the hierarchical regression model. The results can be observed below in Table 11.

A three step hierarchical multiple regression was conducted with PTSD symptoms as the dependant variable. The centralised variable for trauma exposure within 12 months was entered at step 1, the centralised variable for social support was entered at step 2, and the interaction term was entered at step 3.

Table 8

*Summary of hierarchical multiple regression analysis for hypothesis 6*

Variable	$\beta$	$R$	$R^2$	$Adj. R^2$	$\Delta R^2$
Step 1		.14	.02	.01	.02
Lifetime trauma exposure	.14				
Step 2		.33	.11	.10	.09
Lifetime Trauma exposure	.13				
Social support	-.31**				
Step 3		.34	.11	.09	.00
Lifetime trauma exposure	.13				
Social support	-.30**				
Interaction between social support and lifetime trauma exposure	.03				

*Note.*  $n=108$ ,  $\beta$  statistics marked \* are significant at  $p<.05$  and \*\* are significant at  $p<.01$

The analysis revealed that at step 1, lifetime trauma exposure showed a non-significant relationship with PTSD symptoms on the regression model and accounted for 2% of the variation in PTSD symptoms. Adding social support at step 2 contributed 9% more variation in PTSD symptoms. A significant relationship was found between social support and PTSD symptoms at level 2 and 3,  $F(2,105) = 6.69, p<.05$ ;  $F(3,104) = 4.45, p<.05$ . Adding the interaction term at step 3 did not contribute anymore variation in PTSD symptoms. As this interaction was non-significant, simple slopes for the

association between lifetime trauma exposure and PTSD symptoms were not tested for different levels of social support. With these findings, there is some evidence to suggest that the null hypothesis cannot be rejected and that social support will not moderate the relationship between exposure to traumatic events over an individual's lifetime and PTSD symptoms in a general Auckland, New Zealand sample.

### **Post hoc power analysis**

Post hoc statistical power of the observed power for the study's multiple regression was conducted. A Post-Hoc statistical power calculator developed by Soper (2015) was used to calculate the observed statistical power for hypotheses 3, 4, 5 and 6 as multiple regression analyses were carried out and the correlation coefficient of  $R^2$  was available to test the statistical power. Soper (2015) developed the calculator with theoretical foundation developed by Cohen et al. (Cohen, 1988; Cohen, Cohen, West, & Aitken, 2003). Using this theoretical framework, a value of 0.8 or higher indicates sufficient statistical power for a researcher to accept alternative hypotheses to the null with confidence (Cohen, 1988). Hypothesis 3 had a statistical power result of 0.87 meaning the sample size for this analysis was appropriate. Hypothesis 4 had a statistical power result of 0.65, meaning that the sample size for this particular multiple regression was not large enough. Hypothesis 5 had a statistical power result of 0.98, meaning the sample size was appropriate for this particular regression analysis. Lastly, hypothesis 6 had a statistical power result of 0.87 meaning the sample size was also appropriate for this particular multiple regression analysis.

## Summary of results

Null hypothesis 1 was rejected due to the findings showing a significant relationship between PTSD symptoms and traumatic event exposure within the last 12 months.

Null Hypothesis 2 was accepted as there was no significant relationship observed between exposure to traumatic events within one's lifetime and PTSD symptoms in a general Auckland, New Zealand sample. Null hypothesis 3 was accepted as optimism did not appear to moderate the relationship between exposure to traumatic events in the last 12 months and PTSD symptoms. Null hypothesis 4 was accepted as optimism did not moderate the relationship between exposure to traumatic events over an individual's lifetime and PTSD symptoms in a general Auckland, New Zealand sample.

Null hypothesis 5 was accepted as social support did not appear to moderate the relationship between exposure to traumatic events in the last 12 months and PTSD symptoms. Null hypothesis 6 was accepted as social support will not moderate the relationship between exposure to traumatic events over an individual's lifetime and PTSD symptoms in a general Auckland, New Zealand sample. Social support was found to have a negative, statistically significant correlation with PTSD symptoms within 12 months of trauma exposure and trauma exposure over an individual's lifetime.

Optimism also showed a negative, significant correlation with PTSD symptoms for trauma exposure within an individual's lifetime and within the last 12 months.

## **Chapter Eight**

### **Discussion**

The current study's aims included looking at the relationship between trauma exposure and PTSD symptoms within individuals that had experienced traumatic events in the Auckland region of New Zealand. The current project also aimed to investigate whether optimism and social support had a moderating effect on PTSD symptoms within Auckland residents who had experienced trauma. Data was collected from a sample of 108 adults living in the Auckland region of New Zealand who completed an online survey.

The constructs that were examined in this study included exposure to traumatic events within a 12 month period and over a lifetime, PTSD symptoms in a civilian population, social support and optimism. Demographic data was also collected through the online survey.

This chapter follows on from the results discussed in Chapter Seven. Hypothesis 1 and 2 are discussed together with regard to the existing literature, including whether the current study's findings added to or diverged from relevant research and literature. The same procedure is applied to hypotheses 3 and 4 and hypotheses 5 and 6. The practical implications of this research will be commented on along with limitations, assumptions and directions for future research.

## Hypotheses

### *Hypothesis 1 and Hypothesis 2*

Hypothesis 1: There will be a relationship between exposure to traumatic events in the last 12 months and PTSD symptoms in a general Auckland sample.

Hypothesis 2: There will be a relationship between exposure to traumatic events over an individual's lifetime and PTSD symptoms.

These two hypotheses looked at there being a relationship between exposure to traumatic events and PTSD symptoms. The first hypothesis looked at trauma exposure within an individual's lifetime and the second hypothesis looked at trauma exposure within the last 12 months. Looking at the relationship between trauma exposure and PTSD symptoms was important because, to the researcher's knowledge, a general Auckland, New Zealand population had not been studied before in this field.

Hypothesis 1 looked at establishing whether there were long-term effects of lifetime trauma on the prevalence of PTSD symptoms in a general Auckland, New Zealand population. The results found no significant relationship between PTSD symptoms and total traumatic event exposure; the null hypothesis was not rejected. It was concluded that there is no significant relationship between these two variables.

Hypothesis 2 looked at short-term trauma exposure, specifically within the last 12 months, and the prevalence of PTSD symptoms in an Auckland, New Zealand general population group. The results found a significant relationship between PTSD symptoms and traumatic event exposure within the last 12 months; therefore, the null hypothesis

was rejected and the project could conclude that there is a significant correlational relationship between these two variables.

An explanation for there being no significant relationship between lifetime trauma exposure and PTSD symptoms is related to Bonanno (2004)'s theory regarding psychological adjustment following traumatic events. The majority of individuals will exhibit healthy adjustment to traumatic events rather than psychopathology (Bonanno et al., 2010). This is due to other factors such as coping styles, their outlook on life, social support and the nature of the traumatic events in question (Bonanno, 2004).

The present study found different results and contradicts research by Saari (2005) that concludes that about 30% to 40% of individuals who are left to process traumatic experiences without psychological interventions and professional support will struggle to overcome these traumatic experiences. The present study showed no significant relationship between lifetime exposure to trauma and PTSD symptoms, suggesting that individuals exposed to trauma within the sample have appeared to efficiently overcome psychological distress. Solomon et al. (1996) found a decline of PTSD symptoms following a year after missile strikes in their studied sample. The present study's sample could be exhibiting a nonsignificant relationship between PTSD symptoms and lifetime trauma exposure due to the idea that time has passed and the individuals have overcome their trauma. The present study's results are aligned with Bonanno (2004; van der Kolk & McFarlane, 1996; Solomon et al., 1996) findings that found individuals suffering from PTSD symptoms following traumatic events such as missile strikes, reported a decline in symptoms a year after the event. Therefore, there is evidence to suggest PTSD symptoms are likely to decline over time and that the

observed results in the current study show a decline in PTSD symptom prevalence because it is likely these symptoms have subsided as suggested by previous research. Just like Stephens and Long (1997), PTSD symptoms were positively correlated with traumatic experiences. The correlation was not strong and some reasoning behind this can be explained by considering the variance of mental health outcomes attributed to other factors (Stephens & Long, 1997). Stephens and Long (1997) mention that simply summing the traumatic events is a crude way of measuring traumatic event exposure and may not capture other features of these events such as the immediate effect of the event and individual differences. The reason behind a significant result between PTSD symptoms and traumatic event exposure within the last 12 months is related to the shorter time frame of exposure between the individual and traumatic event. Distress is reported to be high following a traumatic event (McFarlane, 1995). However, we expect the PTSD symptoms to decline over time and individuals to function normally, without psychopathology as a result of trauma exposure (Bonanno, 2004).

#### *Hypothesis 3 and Hypothesis 4*

Hypothesis 3: Optimism will moderate the relationship in Hypothesis 1.

Hypothesis 4: Optimism will moderate the relationship in Hypothesis 2.

The present study's results found a statistically significant association between optimism and PTSD symptoms, in both 12-month and lifetime trauma exposure.

These findings replicate Carver and Scheier (1989; 1986) and Applebaum et al. (2014), where people who are optimistic were found to be more likely to seek out more social support in times of need, increasing their coping with the use of more social support resources and reported fewer anxiety and depression symptoms. The general Auckland, New Zealand sample confirmed prior research findings by also showing a significant relationship between Optimism and PTSD symptoms.

No moderating effect of optimism on trauma exposure and PTSD symptom prevalence within the last 12 months or an individual's lifetime was observed. Neither null hypothesis could be rejected, as no moderation effect was found for optimism. Terril et al. (2010) found that higher optimism was associated with moderating negative effects of social stressors and increasing recovery from social stress but a moderating effect was not replicated in the present study. The limitations of this study could provide explanation as to why the expected moderating effect was not observed in the present study.

#### *Hypothesis 5 and Hypothesis 6*

Hypothesis 5: Social support will moderate the relationship in Hypothesis 1

Hypothesis 6: Social support will moderate the relationship in Hypothesis 2

There was a statistically significant negative association between social support and PTSD symptoms for both 12-month and lifetime trauma exposure, meaning the higher the PTSD symptoms, the lower the social support scores, and vice versa. This confirms prior research findings in which the perceived availability of social support acts as a

buffer and protects an individual from psychopathology following high levels of stress (Cohen & Hoberman, 1983). Lower levels of social support for an individual can often be the difference between an individual developing PTSD and successfully coping with a traumatic event (Horowitz, 1999).

There was no moderating effect of social support on PTSD symptoms found with 12 month and lifetime trauma exposure. Neither null hypothesis could be rejected, as no moderation effect was found for social support.

The present study's results replicated Stephens and Long (1999), as PTSD scores were positively related to traumatic experiences and the current study also observed a negative correlation between PTSD scores and social support. The present study failed to replicate findings from Platt et al. (2014) in which individuals exposed to traumatic life events in the general US population were investigated and the association between social support and current PTSD symptoms among respondents was examined. Gabert-Quillen et al. (2012) is another relevant study to these two hypotheses, in which the researchers reported that social support acted as a moderator for those who reported high PTSD. Gabert-Quillen et al. (2012) replicated findings by Cohen and Wills (1985) and contributed to evidence for the stress-buffering hypothesis.

### **Practical implications**

One of the aims of this study was to highlight the importance of studying the general population: A population that is usually used as a base or control group to study specialised groups of individuals. The present study highlighted the different types of traumatic events individuals within an Auckland region had been exposed to. This

contributed to existing research by providing a New Zealand context. The top two reported trauma events for the Auckland, New Zealand sample were contact with a dead body and serious injury of oneself or others. The rest of the observed traumatic events were evenly spread across categories. The practical implications that can be drawn from the present study are that trauma exposure within the last 12 months is more likely to have a significant effect on an individual that could lead to the development of PTSD. Over a lifetime, an individual who has experienced trauma is likely to function normally and not suffer from psychopathology. The correlational relationship observed between social support and PTSD symptoms needs to be noted and although causation cannot be concluded, the relationship is significant in understanding how general population individuals overcome traumatic exposure. These findings confirm prior research and add to existing findings in this growing knowledge base.

The fact that there were no moderating effects found for optimism and social support upon PTSD symptoms following trauma exposure implies that there may be more research required in this field. The results of one study are by no means conclusive, therefore further research is required in this field. The significant correlations between the constructs in the current study indicate important associations between these variables and the fact that they have replicated prior research is an important contribution to the field. While current results are inconclusive, the significant correlations between optimism and PTSD symptoms and social support and PTSD symptoms indicate the importance of these two constructs on the effects of traumatic exposure within a general population.

## Limitations

It is important to acknowledge the limitations of this study. The sample of general population individuals was drawn from only the Auckland region: other regions in New Zealand might have different results. The results of this study cannot be generalised to all of New Zealand unless more sample are taken from different regions within the country. Additional limitations of the current study may affect the generalisability of results. These include its cross-sectional design, use of self-report scales and other variables that should have been measured to provide a wider scope for findings.

A cross-sectional design was used for the present study, where data from each participant was collected at a single point in time and compared between subjects. Because of this, correlational analysis was the main statistical strategy used to look at the data. Since correlational analysis was conducted, causation cannot be implied with the results of this study. The cross-sectional nature of this research design limits our ability to track the natural progression of stress disorders and how they evolve over the years for the affected individual (Brett, 1996). Another feature that should be noted when looking at trauma reactions and cross-sectional research is the fact that narrowing focus on an individual's PTSD progression can cause a loss of focus on the complexity of this disorder (Brett, 1996). A longitudinal design would have allowed for the effects of trauma exposure to be tracked. Longitudinal studies that follow up after traumatic events are key in tracking how psychological distress can manifest years after an event or whether symptoms fade over time in the natural coping process (Saari, 2005). Longitudinal assessment would allow for the relationship between

optimism and social support following trauma exposure to be examined in more detail and the stability of this relationship to be understood better (Dougall et al., 2001).

The use of self-report scales was another limitation. Self-report surveys were the only form of data collection used in the present study. The use of self-report only provides one dimension to the constructs and relationships being measured. It also relies on the individual's perception of their social support and optimism, rather than what may truly be the case. The collection of other measurements such as biological and observational measures would provide more detailed and unbiased information. The tools used may need to be adjusted to a New Zealand context in order to capture optimism and social support for this type of population.

The self-report questionnaire was web-based. This method was chosen due to its ability to reach a wide range of people on a much larger scale than paper-based questionnaires would have been able to do (Dillman, Tortora, & Bowker, 1998). It was also easily accessible, as the participant simply needed to click on a link that directed them to the questionnaire. It was also easy for the participant in that they did not have to mail back any questionnaires or worry about what to do with their data, as it was automatically stored as soon as they completed the questionnaire. This method was also cost effective, as there were no printing or postage costs, as would have been the case with paper-based questionnaires. A simple yearly subscription fee for the Qualtrics software, paid by Massey University and free to use for students, was the only cost involved. The web-based questionnaire method of data collection was also more favourable in terms of its physical size and length compared with a paper-based questionnaire. For instance, a paper-based version of this questionnaire would be

roughly 9-10 pages long. The online version made the duration of the questionnaire less noticeable to participants, whereas a paper version would indicate its length at first glance, which may have dissuaded individuals from taking part. A progress bar at the bottom of the questionnaire also allowed participants to see their progress.

A few complementary variables could have been measured to provide a wider scope of observed results. Pre-trauma vulnerability is the one factor known to lead to whether an individual will develop PTSD (Shalev, 1996) and could have been measured as a base line in individuals. Biological factors play a part in pre-trauma vulnerability, as a family history of mental illness, gender and biological imbalances in cortisol levels have been found to contribute to an individual's susceptibility to PTSD (Shalev, 1996; Walderhaug, Krysal & Neumeister, 2011). These variables could have been collected to observe individuals' susceptibility to PTSD and the effects of specific trauma events on these susceptible individuals. PTSD usually does not manifest on its own. The effects of trauma over a long period of time are not limited to PTSD (McFarlane & Yehuda, 1996). Focusing on the trauma itself can limit scope and prevent the treatment of comorbid disorders such as depression, anxiety and substance abuse (McFarlane & Yehuda, 1996). In studies such as Kulka et al. (1990) and McFarlane and Papay (1992), PTSD was often accompanied by other psychological disorders and was rarely noted as occurring on its own (McFarlane & Yehuda, 1996). The collection of data that targeted comorbid disorders such as depression and anxiety could have identified other observations within the Auckland sample that were not identified by only using a PTSD measuring tool. Other variables such as psychological distress could have also been measured as simply measuring PTSD symptoms does not provide enough scope in understanding the wider implications of traumatic event exposure.

The study only focused on optimism. Optimistic individuals have been found to cope more effectively than pessimistic individuals when it comes to stressful events by exhibiting fewer mood disturbances when exposed to stressors (Brissette, Scheier & Carver, 2002). Measuring pessimism separately would have added another dimension to the sample and individual responses to trauma exposure. Optimistic individuals have a more active coping strategy than pessimistic individuals in stressful situations (Dougall et al., 2001). Looking at coping strategies as well as optimism might have aided in highlighting how individuals in the present study coped with trauma exposure. Optimism on its own does not seem to show significant connections to wellbeing following trauma in the present study. Gaining an understanding of individual coping strategies would have allowed the present study to observe whether individuals were using problem-solving coping strategies, which are often related to optimistic individuals (Dougall et al., 2006).

As data collection was conducted solely via the internet, there were a few issues that arose. One was the issue of the link not being smart phone compatible. Due to technology advancing rapidly, the platforms of Facebook and Twitter are now available in the form of apps on smartphones. Many potential participants may have seen the link via their smartphones, tried to access the survey on these devices, and failed to do so because the software was not supported by smartphone platforms. It is hard to say whether participant numbers would have been higher if the link was smartphone compatible, but it is something to consider. Participants that wanted to complete the survey needed to be at a computer to do so and could not complete the survey on the run on their smartphones.

Another issue that arose was the fact that anyone, from any location, could have participated in the survey. Due to the world-wide nature of the internet, there was no control over the location of participants and completion of the survey relied purely on the honesty of the participants reporting their location.

A reason for this inability to replicate findings could be sample size. The present study only had 108 participants whilst Gabert-Quillen et al. (2012) had 235 participants and Platt et al. (2014) had a sample of 31650 respondents. A larger sample could provide more evidence for the stress-buffering characteristics of social support. Increasing sample size could also be beneficial for finding stronger relationships between the other variables in the study.

The results of this study need to be considered within the context of the described limitations. The small sample size limited the ability to perform further statistical analysis and the skewed data with regard to gender did not allow for within-group analysis to be conducted, as it would not have produced valid within-group comparisons. This study does not account for the trauma experiences of residents in Auckland who did not participate in this study.

### **Assumptions**

This study included the assumption that the individuals who completed the survey responded accurately and honestly. This study also included the assumption that the scales used were appropriate for the constructs measured and were all psychometrically sound. Therefore, we can assume the results from using these scales were reliable and valid in our study.

## Future research

A few suggestions for future research directions are mentioned in this section. These suggestions include the implementation of longitudinal study design, mixed methods approach, and measuring additional variables. This would allow to gauge a broader scope of understanding the general New Zealand population in regard to trauma exposure and the moderating effects of optimism and social support.

A longitudinal study design that investigates social support and optimism and how they moderate PTSD symptoms within an Auckland, New Zealand sample over time is a future research focus that could prove beneficial to existing research. Longitudinal investigation could provide data regarding the progression of PTSD symptoms and whether optimism and social support change over time. Longitudinal design could help develop theory by testing current models over time and fine tuning them in order to gain a greater understanding of how trauma exposure acts upon individuals over time. Longitudinal design could also provide insight into strategies to increase social support and optimism, as a greater understanding of these constructs would be possible with further research and interventions could be developed for individuals who experience high trauma exposure.

Using a combination of quantitative and qualitative methods would allow for a deeper understanding of trauma exposure and related constructs (Creswell, 2013). Gathering biological data such as cortisol levels (e.g., Shalev, 1996; Walderhaug et al., 2011) conducting interviews and objective observations would increase the variety of data gathered and provide a boarder understanding of the effects of trauma and how optimism and social support moderate these reactions. Future studies in this field

should apply a mixed method approach to gathering data in order to gain a deeper understanding of what they are observing in their data.

In general, the measures used in the present study showed evidence of good reliability and validity in measuring the constructs, except for the scale used to measure optimism. Studies such as Stephens and Long (1999) studied different kinds of social support and much can be learned from venturing down these avenues of study for future research. Exploring subscales of social support such as tangible social support, belonging social support and appraisal social support could provide a greater understanding as to which social support is the most effective when it comes to general traumatic event exposure.

Future research could look into measuring pre-trauma variables, such as a family history of PTSD and comorbid disorders. Research such as Walderhaug et al (2011) confirms that these factors are important in the occurrence of PTSD symptoms following traumatic event exposure. This data would provide a deeper understanding of trends in psychopathology in a longitudinal study.

### **Conclusion**

The aim of the present study was to look at how individuals within the Auckland region of New Zealand were affected by traumatic events in their lives. Traumatic events are a common occurrence in our daily lives and this study acts as an acknowledgement of that fact. A range of traumatic events were identified as being experienced by individuals within a general Auckland, New Zealand population. The data gathered in this study demonstrates just how common trauma exposure is. Contrary to historical

literature surrounding trauma exposure, most individuals will not suffer from long-term psychopathology as a result of traumatic events. Optimism and social support did not show any moderating effects in the current sample, but they are still important factors to consider when looking at the complexity of trauma exposure. This research contributed to existing general population research regarding trauma exposure and also looked at optimism and social support in general populations. The limitations and future research ideas have been covered in this chapter. The knowledge gained from this study can pave the way for future researchers who are interested in looking at different regions of New Zealand and how their everyday, general populations are affected by traumatic events.

## Bibliography

- Aiello, A., Khayeri, M., Raya, S., Peladeau, N., Romano, D., Leszcz, M., ... Schulman, B. (2011). Resilience training for hospital workers in anticipation of an influenza pandemic. *Journal of Continuing Education in Health Professions, 31*(1), 15-20. doi: 10.1002/chp
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park: Sage.
- Andersson, G. (1996). The benefits of optimism: A meta-analytic review of the life orientation test. *Personality and Individual Differences, 21*(5), 719-725.
- Applebaum, A. J., Stein, E. M., Lord-Bessen, J., Pessin, H., & Rosenfeld, B. (2014). Optimism, social support, and mental health outcomes in patients with advanced cancer. *Psycho-Oncology, 23*, 299-306.
- Arnberg, F. K., Hultman, C. M., Michel, P.-O., & Lundin, T. (2012). Social support moderates posttraumatic stress and general distress after disaster. *Journal of Traumatic Stress, 25*, 721-727.
- Auerbach, S. M., Kiesler, D. J., Wartella, J., Rausch, S., Ward, K. R., & Ivatury, R. (2005). Optimism, satisfaction with needs met, interpersonal perceptions of the healthcare team, and emotional distress in patients' family members during critical care hospitalization. *American Journal of Critical Care, 14*, 202-210.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman and Company.

- Barron, R. B., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182.
- Baum, A., Fleming, R., & Singer, J. E. (1983). Coping with victimization by technological disaster. *Journal of Social Issues, 39*, 117-138.
- Beehr, T. A. (1995). *Psychological stress in the workplace*. London: Routledge.
- Benedek, D. M., & Wynn, G. H. (Eds.). (2011). *Clinical manual for management of PTSD*. Washington, DC: American Psychiatric Publishing, Inc.
- Benight, C. C., Swift, E., Sanger, J., Smith, A., & Zeppelin, D. (2006). Coping self-efficacy as a mediator of distress following a natural disaster. *Journal of Applied Social Psychology, 29*, 2443-2464.
- Blanchard, E. B., Jones-Alexander, J., Buckley, T. C., & Forneris, C. A. (1996). Psychometric properties of the PTSD checklist (PCL). *Behaviour Research and Therapy, 34*(8), 669-673. doi: 0005-7967/96 \$15.00 + 0.00
- Boldor, N., Bar-Dayana, Y., Rosenbloom, T., Shemar, J., & Bar-Dayana, Y. (2012). Optimism of health care workers during a disaster: A review of the literature. *Emerging Health Threats Journal, 5*.
- Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist, 59*(1), 20-28.
- Bonanno, G. A., Brewin, C. R., Kaniasty, K., & Greca, A. M. L. (2010). Weighing the costs of disaster: Consequences, risks, and resilience in individuals, families, and

communities. *Psychological Science in the Public Interest*, 11(1), 1-49. doi:  
10.1177/1529100610387086

Bonanno, G. A., & Mancini, A. D. (2012). Beyond resilience and PTSD: Mapping the heterogeneity of responses to potential trauma. *Psychological Trauma: Theory, Research, Practice, and Policy*, 4(1), 74-83. doi: 10.1037/a0017829

Bonanno, G. A., Rennie, C., & Dekel, S. (2005). Self-enhancement among high-exposure survivors of the September 11th terrorist attack: resilience or social maladjustment? *Journal of Personality and Social Psychology*, 88(6), 984-998. doi: 10.1037/0022-3514.88.6.984

Borus, J. F. (1974). Incidence of maladjustment in Vietnam returnees. *Archives of General Psychiatry*, 30, 554-557.

Bostock, L., Sheikh, A. I., & Barton, S. (2009). Posttraumatic growth and optimism in health-related trauma: A systematic review. *Journal of Clinical Psychology in Medical Settings*, 16, 281-296. doi: 10.1007/s10880-009-9175-6

Brace, N., Kemp, R., & Snelgar, R. (2006). *SPSS for psychologists: A guide to data analysis using SPSS for windows (versions 12 and 13)*: L. Erlbaum Assoc.

Breslau, N., Chilcoat, H. D., Kessler, R. C., & Davis, G. C. (1999). Previous exposure to trauma and PTSD effects of subsequent trauma: Results from the Detroit area survey of trauma. *The American Journal of Psychiatry*, 156(6), 902-907.

Brett, E. A. (1996). The classification of posttraumatic stress disorder. In B. van der Kolk, A. C. McFarlane & L. Weisaeth (Eds.), *Traumatic stress: The effects of*

*overwhelming experience on mind, body, and society*. New York, NY: The Guilford Press.

Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting Clinical Psychology, 68*(1), 748-766.

Briere, J. (2004). *Psychological assessment of adult posttraumatic states*. Washington, DC: American Psychological Association.

Brissette, I., Scheier, M. F., & Carver, C. S. (2002). The role of optimism in social network development, coping, and psychological adjustment during a life transition. *Journal of Personality and Social Psychology, 82*(1), 102-111. doi: 10.1037//0022-3514.82.1.102

Brookings, J. B., & Bolton, B. (1988). Confirmatory factor analysis of the Interpersonal Support Evaluation List. *American Journal of Community Psychology, 16*(1), 137-147. doi: 0091-0562/88/0200-0137506.00/0

Burke, K. L., Joyner, A. B., Czech, D. R., & Wilson, M. J. (2000). An investigation of concurrent validity between two optimism/pessimism questionnaires: The life orientation test-revised and the optimism/pessimism scale. *Current Psychology: Developmental, Learning, Personality, Social, 19*(2), 129-136.

Catalano, D., Chan, F., Wilson, L., Chiu, C., & Muller, V. R. (2011). The buffering effect of resilience on depression among individuals with spinal cord injury: A structural equation model. *Rehabilitation Psychology, 56*(3), 200-211. doi: 10.1037/a0024571.

- Card, J. J. (1987). Epidemiology of PTSD in a national cohort of Vietnam veterans. *Journal of Clinical Psychology, 43* (1), 6-17
- Carlson, J. M., Dikecligil, G. N., Greenberg, T., & Mujica-Parodi, L. R. (2012). Trait reappraisal is associated with resilience to acute psychological stress. *Journal of Research in Personality, 46*, 609-613.
- Carson, E., King, S., & Papatraianou, L. H. (2011). Resilience among social workers: The role of informal learning in the workplace. *Practice: Social Work in Action, 23*(5), 267-278. doi:org/10.1080/09503153.2011.581361
- Carver, C. S., & Scheier, M. F. (2014). Dispositional optimism. *Trends in Cognitive Sciences 18*(6), 293-299. doi: 10.1016/j.tics.2014.02.003
- Chang, E. C., & Sanna, L. J. (2001). Optimism, pessimism, and positive and negative affectivity in middle-aged adults: A test of a cognitive-affective model of psychological adjustment. *Psychology and Aging, 16*, 524-531.
- Clore, G. L., & Huntsinger, J. R. (2007). How emotions inform judgment and regulate thought. *Trends in Cognitive Sciences, 11*, 393–399.
- Cohen, S., & Hoberman, H. M. (1983). Positive events and social supports as buffers of life change stress. *Journal of Applied Social Psychology, 13*(2), 99-125.
- Cohen S., Mermelstein R., Kamarck T., & Hoberman, H.M. (1985). Measuring the functional components of social support. In Sarason, I.G. & Sarason, B.R. (Eds), *Social support: theory, research, and applications*. The Hague, Netherlands: Martinus Nijhoff.

- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis  
*Psychological Bulletin*, 98(2), 310-357. doi: 0033-2909/85/\$00.75
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd Edition).  
Hillsdale, NJ: Lawrence Earlbaum Associates.
- Cohen, J., Cohen, P., West, S.G., and Aiken, L.S. (2003). *Applied Multiple  
Regression/Correlation Analysis for the Behavioral Sciences* (3rd edition).  
Mahwah, NJ: Lawrence Earlbaum Associates.
- Cornum, R., Matthews, M. D., & Seligman, M. E. P. (2011). Comprehensive soldier  
fitness: Building resilience in a challenging institutional context. *American  
Psychologist*, 66(1), 4-9. doi: 10.1037/a0021420.
- Cullen, F. T., Lemming, T., Link, B. G., & Wozniak, J. F. (1985). The impacts of social  
supports on police stress. *Criminology*, 23, 503-522.
- Creamer, M. (1995). A cognitive processing formulation of posttrauma reactions. In R.  
J. Kleber, C. R. Figley & B. P. R. Gersons (Eds.), *Beyond trauma: Cultural and  
societal dynamics* New York, NY: Plenum Press.
- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods  
approaches*. Sage publications
- Davidson, J. R. T., Book, S. W. & Colket, J. T. (1995). Davidson Self-Rating PTSD Scale.  
Available from Multi-Health Systems, Inc., 908 Niagara Falls Boulevard, North  
Tonawanda, NY 14120.
- de Terte, I., Stephens, C., & Huddleston, L. (2014). The Development of a Three Part  
Model of Psychological Resilience. *Stress and Health*, 30(5), 416-424.

- Diener, E., Oishi, S., & Lucas, R. E. (2003). Personality, culture, and subjective well-being: Emotional and cognitive evaluations of life. *Annual Review of Psychology, 54*, 403-425.
- Dillman, D. A., Tortora, R. D., & Bowker, D. (1998). Principles for constructing web surveys. In *Joint Meetings of the American Statistical Association*.
- Dougall, A. L., Hyman, K. B., Hayward, M. C., McFeeley, S., & Baum, A. (2001). Optimism and traumatic stress: The importance of social support and coping. *Journal of Applied Social Psychology, 31*(2), 223-245.
- Eid, M., & Diener, E. (2004). Global judgements of subjective well-being: Situational variability and long-term stability. *Social Indicators Research, 65*, 245-277.
- Foa, E. B., Riggs, D. S., Dancu, C. V. & Rothbaum, B. O. (1993). Reliability and validity of a brief instrument for assessing post-traumatic stress disorder. *Journal of Traumatic Stress, 6*, 459-473.
- Folkman, S., & Moskowitz, T. (2004). Coping: Pitfalls and promise. *Annual Review of Psychology, 55*, 745-774.
- Friedman, M. J. (1988). Pharmacotherapy for posttraumatic stress disorder. *American Journal of Psychiatry, 144*, 281-285.
- Gabert-Quillen, C. A., Irish, L. A., Sledjeski, E., Fallon, W., Spoonster, E., & Delahanty, D. L. (2012). The impact of social support on the relationship between trauma history and PTSD symptoms in motor vehicle accident victims. *International Journal of Stress Management 19*(1), 69-79.

- Garakani, A., Hirschowitz, J., & Katz, C. L. (2004). General disaster psychiatry. *Psychiatric Clinics of North America*, 27, 391-406. doi:10.1016/j.psc.2004.03.002
- Glass, N., Perrin, N., Campbell, J. C., Soeken, K. (2007). The protective role of tangible support on post-traumatic stress disorder symptoms in urban women survivors of violence. *Research in Nursing & Health*, 30(5), 558–568.
- Gleser, G. C., Green, B. L., & Winget, C. (1981). *Prolonged psychosocial effects of disaster. A study of Buffalo Creek*. New York, NY: Academic Press.
- Gloria, C. T., Faulk, K. E., Steinhardt, M. A. (2013). Positive affectivity predicts successful and unsuccessful adaptation to stress. *Motivation and Emotion*, 37, 185-193. doi: 10.1007/s11031-012-9291-8
- Goodman, L. A., Corcoran, C., Turner, K., Yuan, N., & Green, B. L. (1998). Assessing traumatic event exposure: General issues and preliminary findings for the stressful life events screening questionnaire. *Journal of Traumatic Stress*, 11(3), 521-542.
- Green, B. L., Grace, M. C., Lindy, J. D., Titchener, J. L., & Lindy, J. G. (1983). Levels of functional impairment following a civilian disaster: The Beverly Hills supper club fire. *Journal of Consulting and Clinical Psychology*, 51(4), 573-580.
- Greene, R. R. & Greene, D. G. (2009). Resilience in the face of disasters: Bridging micro- and macro-perspectives. *Journal of Human Behaviour in the Social Environment*, 19, 1010-1024. doi: 10.1080/10911350903126957
- Ho, S., Rajandram, R. K., Chan, N., Samman, N., McGrath, C., & Zwahlen, R. A. (2011). The roles of hope and optimism on posttraumatic growth in oral cavity cancer

patients. *Oral Oncology*, 47(2), 121-124. doi:

10.1016/j.oraloncology.2010.11.015

Hoaglin, D. C., Iglewicz, B., Tukey, J. W. (1986). Performance of some resistant rules for outlier labelling. *Journal of American Statistical Association*, 81, 991-999.

Hobfoll, S. E. (1988). *The ecology of stress*. New York: Hemisphere.

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44, 513-524.

Hobfoll, S. E., Freedy, J., Lane, C., & Geller, P. (1990). Conservation of social resources: Social support resource theory. *Journal of Social and Personal Relationships*, 7, 465-478.

Hobfoll, S. E. (2010). Conservation of resources theory: Its implications for stress, health, and resilience. In S. Folkman (Ed.), *The Oxford handbook of stress, health, and coping* (pp. 127-148). USA: Oxford University Press.

Horowitz, N. J., Wilmer, N. & Alvarez, N. (1979). Impact of Events Scale: a measure of subjective stress. *Psychosomatic Medicine*, 41, 209-218.

Horowitz, M. J., Wilner, N., Kaltreider, N., & Alvarez, W. (1980). Signs and symptoms of posttraumatic stress disorder. *Archives of General Psychiatry*, 37, 85-92.

Horwitz, M. J. (Ed.). (1999). *Essential papers on posttraumatic stress disorder*. New York: New York University Press.

Horwitz, M. J. (2006). Work-related trauma effects in child protection social workers. *Journal of Social Service Research*, 32(3), 1-18. doi:10.1300/J079v32n03\_01

- Joseph, S., Williams, R., & Yule, W. (1997). *Understanding post-traumatic stress: A psychosocial perspective on PTSD and treatment*. West Sussex, England: John Wiley & Sons.
- Kaniasty, K. (2012). Predicting social psychological well-being following trauma: The role of postdisaster social support. *Psychological Trauma: Theory, Research, Practice, and Policy*, 4(1), 22-33.
- Kaniasty, K., & Norris, F. H. (1992). Social support and victims of crime: Matching event, support, and outcome. *American Journal of Community Psychology*, 20, 211-241.
- Kaniasty, K., & Norris, F. H. (2008). Longitudinal linkages between perceived social support and posttraumatic stress symptoms: Sequential roles of social causation and social selection. *Journal of Traumatic Stress*, 21, 274-281.
- Karademas, E. C. (2006). Self-efficacy, social support and well-being: The mediating role of optimism. *Personality and Individual Differences*, 40, 1281-1290.
- Keane, T. M., Zimering, R. T., & Caddell, J. M. (1985). A behavioral formulation of posttraumatic stress disorder in Vietnam veterans. *The Behavior Therapist*, 8, 9-12.
- Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. (1995). Posttraumatic stress disorder in the national comorbidity survey. *Archives of General Psychiatry*, 52, 1048-1060.

- Kinman, G., & Grant, L. (2011). Exploring stress resilience in trainee social workers: The role of emotional and social competencies. *British Journal of Social Work, 41*, 261-275. doi: 10.1093/bjsw/bcq088
- Kleber, R. J., Figley, C. R., & Gersons, B. P. R. (Eds.). (1995). *Beyond trauma: Cultural and societal dynamics*. New York, NY: Plenum Press.
- Kline, P. (1992). *Handbook of psychological testing*. London: Routledge.
- Kulka, R. A., Schlenger, W. E., Fairbank, J. A., Hough, R. L., Jordan, B. K., Marmar, C. R., & Weiss, D. S. (1990). *Trauma and the Vietnam War generation: Report of findings from the National Vietnam Veterans Readjustment study*. New York, NY: Brunner/Mazel.
- Laditka, S., Laditka, J., Cornman, C., Davis, C., & Richter, J. (2009). Resilience and challenges among staff of Gulf coast nursing homes sheltering frail evacuees following Hurricane Katrina, 2005: Implications for planning and training. *Prehospital and Disaster Medicine, 24*(1), 54-62.
- Larsen, R. J., & Ketelaar, T. (1991). Personality and susceptibility to positive and negative emotional states. *Journal of Personality and Social Psychology, 61*, 132-140.
- Lazarus, R. S., Kanner, A. D., & Folkman, S. (1980). Emotions: A cognitive phenomenological analysis. In R. Plutchick & H. Kellerman (Eds.), *Theories of emotion*. New York, NY: Academic Press.
- Lee, J.-S., Ahn, Y.-S., Jeong, K.-S., Chae, J.-H., & Choi, K.-S. (2014). Resilience buffers the impact of traumatic events on the development of PTSD symptoms in

firefighters. *Journal of Affective Disorders*, 162, 128-133. doi:  
10.1016/j.jad.2014.02.031

Littman-Ovadia, H., & Nir, D. (2014). Looking forward to tomorrow: The buffering effect of a daily optimism intervention. *Journal of Positive Psychology*, 9(2), 122-136.

Lukaschek, K., Kruse, J., Emeny, R. T., Lacruz, M. E., von Eisenhart Rothe, A., & Ladwig, K.-H. (2012). Lifetime traumatic experiences and their impact on PTSD: A general population study. *Social Psychiatry and Psychiatric Epidemiology*, 48(4), 525-532.

Luthans, K. W., Lebsack, S. A., Lebsack, R. R. (2008). Positivity in healthcare: Relation of optimism to performance. *Journal of Health Organization and Management*, 22, 178-188.

Maddi, S. R. (2011). Personality hardiness as a pathway to resilience under educational stresses. In G.M. Reevy & E. Frydenberg (Eds.), *Personality, Stress, and Coping: Implications for Education*. Charlotte, North Carolina: Information Age Publishing, Inc.

Maslach, C. (1998). A multidimensional theory of burnout. In C. L. Cooper (Ed.), *Theories of organizational stress* (pp.68-85). New York: Oxford University Press.

McDevitt-Murphy, M. E., Weathers, F. W., & Adkins, J. W. (2005). The use of the trauma symptom inventory in the assessment of PTSD symptoms. *Journal of Traumatic Stress*, 18(1), 63-67. doi: 10.1002/jts.20003

- McFarlane, A. C. (1990). An Australian disaster: The 1983 bushfires. *International Journal of Mental Health, 19*, 36-47.
- McFarlane, A. C. (1995). The severity of the trauma: Issues about its role in posttraumatic stress disorder. In R. J. Kleber, C. R. Figley & B. P. R. Gersons (Eds.), *Beyond trauma: Cultural and societal dynamics*. New York, NY: Plenum Press.
- McFarlane, A. C., & De Girolamo, G. (1996). The nature of traumatic stressors and the epidemiology of posttraumatic reactions. In B. van der Kolk, A. C. McFarlane & L. Weisaeth (Eds.), *Traumatic stress: The effects of overwhelming experience on mind, body, and society*. New York, NY: The Guilford Press.
- McFarlane, A. C., & Papay, P. (1992). Multiple diagnoses in posttraumatic stress disorder in the victims of a natural disaster. *Journal of Nervous and Mental Disease, 180*(8), 498-504.
- McFarlane, A. C., & van der Kolk, B. (1996). Trauma and its challenge to society. In B. van der Kolk, A. C. McFarlane & L. Weisaeth (Eds.), *Traumatic stress: The effects of overwhelming experience on mind, body, and society*. New York, NY: The Guilford Press.
- McFarlane, A. C., & Yehuda, R. (1996). Resilience, vulnerability, and the course of posttraumatic reactions. In B. van der Kolk, A. C. McFarlane & L. Weisaeth (Eds.), *Traumatic stress: The effects of overwhelming experience on mind, body, and society*. New York, NY: The Guilford Press.

- McGowan, J., Gardner, D., & Fletcher, R. (2006). Positive and negative affective outcomes of occupational stress. *New Zealand Journal of Psychology, 35*(2), 92-98.
- McMillen, J. C. (1999). Better for it: How people benefit from adversity. *Social Work, 44*(5), 455-468.
- Ministry of Transport (2015). Motor vehicle crashes in New Zealand 2013. 2015, from <http://www.transport.govt.nz/research/roadcrashstatistics/motorvehiclecrashesinnewzealand/motor-vehicle-crashes-in-new-zealand-2013/>
- Newman, E., & Nelson, S. (2012). Reporting on resilience and recovery in the face of disaster and crime: Research and training implications. *Australian Journalism Review, 34*(1).
- New Zealand Police (2015). Statistics: Crime statistics. 2015, from <http://www.police.govt.nz/about-us/publications/statistics>
- Ng, Y., & Ho, L. S. (2006). Introduction: Happiness as the only ultimate objective of public policy. In Y. K. Ng & L. S. Ho (Eds.), *Happiness and public policy: Theory, case studies and implications* (pp. 1-16). New York, NY: Palgrave Macmillan.
- Norris, F. H. (1990). Screening for traumatic stress: A scale for use in the general population. *Journal of Applied Social Psychology, 20*(20), 1704-1718.
- Norris, F. H. (1992). Epidemiology of trauma: Frequency and impact of different potentially traumatic events on different demographic groups. *Journal of Consulting and Clinical Psychology, 60*, (3), 409-418.

- Norris, F. H., & Perilla, J. L. (1996). The revised civilian Mississippi scale for PTSD: Reliability, validity, and cross-language stability. *Journal of Traumatic Stress, 9*(2), 285-298.
- O'Brien, L. S. (1998). *Traumatic events and mental health*. Cambridge, United Kingdom: Cambridge University Press.
- O'Keefe, D. J. (2007). Post hoc power, observed power, a priori power, retrospective power, prospective power, achieved power: Sorting out appropriate uses of statistical power analyses. *Communication Methods and Measures, 1*(4), 291-299.
- Ong, A. D., Bergeman, C. S., Bisconti, T. L., & Wallace, K. A. (2006). Psychological resilience, positive emotions, and successful adaptations to stress in later life. *Journal of Personality and Social Psychology, 91*(4), 730-749. doi: 10.1037/0022-3514.91.4.730
- Palinkas, L. A. (2012). A conceptual framework for understanding the mental health impacts of oil spills: Lessons from the Exxon Valdez oil spill. *Psychiatry, 75*(3), 203-222.
- Pallant, J. (2011). *SPSS survival manual: A step by step guide to data analysis using SPSS*. Crows Nest, NSW: Allen & Unwin.
- Panagioti, M., Gooding, P. A., Taylor, P. J., & Tarrier, N. (2014). Perceived social support buffers the impact of PTSD symptoms on suicidal behavior: Implications into suicide resilience research. *Comprehensive Psychiatry, 55*, 104-112.

- Pantelidou, S., & Craig, T. K. J. (2006). Culture shock and social support: A survey in Greek migrant students. *Social Psychiatry and Psychiatric Epidemiology*, *41*, 777-781. doi: 10.1007/s00127-006-0096-5
- Penley, J. A., Tomaka, J., & Wiebe, J. S. (2002). The association of coping to physical and psychological health outcomes: A meta-analytic review. *Journal of Behavioral Medicine*, *25*(6), 551–603.
- Peterson, C., & Bosio, L. M. (1991). *Health and optimism*. New York, NY: Free Press.
- Platt, J., Keyes, K. M., & Koenen, K. C. (2014). Size of social network versus quality of social support: Which is more protective against PTSD? *Social Psychiatry and Psychiatric Epidemiology*, *49*(8), 1279-1286.
- Raphael, B., & Maguire, P. (2009). Disaster mental health research: Past, present, and future. In Y. Neria, S. Galea, & F. Norris (Eds.), *Mental health consequences of disasters* (pp. 7-28). New York: Cambridge University Press.
- Rego, A., Marques, C., Leal, S., Sousa, F., & Pina e Cunha, M. (2010). Psychological capital and performance of Portuguese civil servants: exploring neutralizers in the context of an appraisal system. *The International Journal of Human Resource Management*, *21*(9), 1531-1552. doi:10.1080/09585192.2010.488459
- Reich, J. W. & Zautra, A. J. (1981). Life events and personal causation: Some relationships with satisfaction and distress. *Journal of Personality and Social Psychology*, *41*, 1082–1012.
- Resnick, H. S., Kilpatrick, D. G., Dansky, B. S., Saunders, B. E., & Best, C. L. (1993). Prevalence of civilian trauma and posttraumatic stress disorder in a

representative national sample of women. *Journal of Consulting and Clinical Psychology, 61*, 984–991.

Robinaugh, D. J., Marques, L., Traeger, L. N., Marks, E. H., Sung, S. C., Beck, J. G., . . .

Simon, N. M. (2011). Understanding the relationship of perceived social support to post-trauma cognitions and posttraumatic stress disorder. *Journal of Anxiety Disorders, 25*(8), 1072-1078.

Rossi, P. H., Wright, J. D., & Anderson, A. B. (Eds.). (2013). *Handbook of survey research*. Academic Press

Rubonis, A., & Bickman, L. (1991). Psychological impairment in the wake of disaster: The disaster-psychopathology relationship. *Psychological Bulletin, 109*, 384-399.

Ruggiero, K. J., Del Ben, K., Scotti, J. R., & Rabalais, A. E. (2003). Psychometric properties of PTSD checklist - civilian version. *Journal of Traumatic Stress, 16*(5), 495-502.

Saari, S. (2005). *A bolt from the blue: Coping with disasters and acute traumas*. London, United Kingdom: Jessica Kingsley Publishers.

Scheier, M. F., & Carver, C. S. (1985). A model of behavioural self-regulation: Translating intention into action. In L. Berkowitz (Ed.), *Advances in experimental social psychology*, (vol 21, pp.303-346). San Diego, CA: Academic Press.

Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology, 4*, 219-247.

- Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neurotism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the life orientation test. *Journal of Personality and Social Psychology*, *67*(6), 1063-1078.
- Scheier, M. F., Matthews, K. A., Owens, J., Magovern, G. J., Lefebvre, R. C., Abbott, R. A., & Carver, C. S. (1989). Dispositional optimism and recovery from coronary artery bypass surgery: The beneficial effects on physical and psychological well-being. *Journal of Personality and Social Psychology*, *57*, 1024-1040.
- Schumm, J. A., Briggs-Phillips, M., & Hobfoll, S. E. (2006). Cumulative interpersonal traumas and social support as risk and resiliency factors in predicting PTSD and depression among inner-city women. *Journal of Traumatic Stress*, *19*, 825-836.
- Segovia, F., Moore, J. L., Linnville, S. E., & Hoyt, R. E. (2014). Optimism predicts positive health in repatriated prisoners of war. *Psychological Trauma: Theory, Research, Practice, and Policy*. doi: 10.1037/a0037902
- Sergeant, S., & Mongrain, M. (2014). An online optimism intervention reduces depression in pessimistic individuals. *Journal of Consulting and Clinical Psychology*, *82*(2), 263-274.
- Shakespeare-Finch, J., Rees, A., & Armstrong, D. (2014). Social support, self-efficacy, trauma and well-being in emergency medical dispatchers. *Social Indicators Research*, 1-17.

- Shalev, A. Y. (1996). Stress versus traumatic stress: From acute homeostatic reactions to chronic psychopathology. In B. van der Kolk, A. C. McFarlane & L. Weisaeth (Eds.), *Traumatic stress: The effects of overwhelming experience on mind, body, and society*. New York, NY: The Guilford Press.
- Shepherd, L., & Wild, J. (2014). Emotion regulation, physiological arousal and PTSD symptoms in trauma-exposed individuals. *Journal of Behavior Therapy and Experimental Psychiatry* 45, 360-367. doi: 10.1016/j.jbtep.2014.03.002
- Shi, K., Wang, X. L., Zheng, R., Shi, W., Lu, J. F., & Fan, H. X. (2006). Psychological approaches to the relationship between happiness and public policy in P. R. China. In Y. K. Ng & L. S. Ho (Eds.), *Happiness and public policy: Theory, case studies and implications* (pp. 169-192). New York, NY: Palgrave Macmillan.
- Shore, J. H., Tatum, E. L., & Vollmer, W. M. (1986). Psychiatric reactions to disaster: The Mount St. Helens experience. *American Journal of Psychiatry*, 143, 590-595.
- Solomon, Z. (1993). *Combat stress reaction: The enduring toll of war*. New York: Plenum Press.
- Solomon, Z., Laor, N., & McFarlane, A. C. (1996). Acute posttraumatic reactions in soldiers and civilians. In B. van der Kolk, A. C. McFarlane & L. Weisaeth (Eds.), *Traumatic stress: The effects of overwhelming experience on mind, body, and society*. New York, NY: The Guilford Press.
- Solomon, Z., Laor, N., Weiler, D., Muller, U. F., Hadar, O., Waysman, M., Koslowsky, M., Ben-Yakar, M., & Bleich, A. (1993). The psychological impact of the Gulf War: A

study of acute stress in Israeli evacuees. *Archives of General Psychiatry*, 50, 320-321.

Soper, D.S. (2015). Post-hoc Statistical Power Calculator for Multiple Regression [Software]. Available from <http://www.danielsoper.com/statcalc>

Statistics New Zealand (2015). NZ social indicators. 2015, from [http://www.stats.govt.nz/browse\\_for\\_stats/snapshots-of-nz/nz-social-indicators/Home/Health/suicide.aspx#anchor5](http://www.stats.govt.nz/browse_for_stats/snapshots-of-nz/nz-social-indicators/Home/Health/suicide.aspx#anchor5)

Stephens, C., & Long, N. (1997). The impact of trauma and social support on posttraumatic stress disorder: A study of New Zealand Police officers. *Journal of Criminal Justice*, 25(4), 303-314.

Stephens, C., & Long, N. (1999). Posttraumatic stress disorder in the New Zealand Police: The moderating role of social support following traumatic stress. *Anxiety, Stress, & Coping: An International Journal*, 12(3), 247-264.

Terrill, A. L., Ruiz, J. M., & Garofalo, J. P. (2010). Look on the bright side: do the benefits of optimism depend on the social nature of the stressor? *Journal of Behavioral Medicine*, 33(5), 399-414. doi: 10.1007/s10865-010-9268-6

Thompson, N. & Thompson, S. (2009). Loss, grief and trauma. In N. Thompson & J. Bates (Eds.), *Promoting workplace well-being* (pp. 71-82). Hampshire, United Kingdom: Palgrave Macmillan.

- Tilvis, R. S., Laitala, V., Routasalo, P., Strandberg, T. E., & Pitkala, K. H. (2012). Positive life orientation predicts good survival prognosis in old age. *Archives of Gerontology and Geriatrics* 55, 133-137. doi: 10.1016/j.archger.2011.06.030
- Turnball, G. J. (1998). A review of post-traumatic stress disorder. Part 1: Historical development and classification. *Injury*, 29(2), 87-91.
- van der Kolk, B., & McFarlane, A. C. (1996). The black hole of trauma. In B. van der Kolk, A. C. McFarlane & L. Weisaeth (Eds.), *Traumatic stress: The effects of overwhelming experience on mind, body, and society*. New York, NY: The Guilford Press.
- van der Kolk, B., McFarlane, A. C., & Weisaeth, L. (Eds.). (1996). *Traumatic Stress: The effects of overwhelming experience on mind, body and society*. New York, NY : The Guilford Press.
- Van der Velden, P. G., Kleber, R. J., Fournier, M., Grievink, L., Drogendijk, A., Gersons, B. P. R. (2007). The association between dispositional optimism and mental health problems among disaster victims and a comparison group: A prospective study. *Journal of Affective Disorders*, 102, 35-45.
- Walderhaug, E., Krystal, J. H., & Neumeister, A. (2011). Biology. In D. M. Benedek & G. H. Wynn (Eds.), *Clinical manual for management of PTSD*. Washington, DC: American Psychiatric Publishing, Inc.
- Wilson, J. P. & Lindy, J. D. (1994). Empathic strain and countertransference. In J. P. Wilson & J. D. Lindy (Eds.), *Countertransference in the treatment of PTSD*, (pp. 5-30). New York, NY: Guilford Press.

- Wurm, S., & Benyamini, Y. (2014). Optimism buffers the detrimental effect of negative self-perceptions of aging on physical and mental health. *Psychology & Health, 29*(7), 832-848.
- Yehuda, R., & Flory, J. D. (2007). Differentiating biological correlates of risk, Posttraumatic Stress Disorder, and resilience following trauma exposure. *Journal of Traumatic Stress, 20*(4), 435-447.
- Yehuda, R., & McFarlane, A. (1995). Conflict between current knowledge about posttraumatic stress disorder and its original conceptual basis. *American Journal of Psychiatry, 152*(12), 1705-1713.
- Zoellner, T., Rabe, S., Karl, A., & Maercker, A. (2008). Posttraumatic growth in accident survivors: Openness and optimism as predictors of its constructive or illusory sides. *Journal of clinical psychology, 64*(3), 245-263. doi: 10.1002/jclp.20441

## Appendix 1: Low risk questionnaire approval letter



MASSEY UNIVERSITY  
TE KUNENGA KI PŪREHUROA

14 July 2014

Barbara (Basia) Wojciorowska  
16B Mayfair Crescent  
Mairangi Bay  
AUCKLAND 0630

Dear Basia

**Re: Social Support and Optimism: How Do These Affect Reactions to Trauma and PTSD Symptoms?**

Thank you for your Low Risk Notification which was received on 8 July 2014.

Your project has been recorded on the Low Risk Database which is reported in the Annual Report of the Massey University Human Ethics Committees.

You are reminded that staff researchers and supervisors are fully responsible for ensuring that the information in the low risk notification has met the requirements and guidelines for submission of a low risk notification.

The low risk notification for this project is valid for a maximum of three years.

Please notify me if situations subsequently occur which cause you to reconsider your initial ethical analysis that it is safe to proceed without approval by one of the University's Human Ethics Committees.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

**A reminder to include the following statement on all public documents:**

*"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research."*

*If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director (Research Ethics), telephone 06 350 5249, e-mail [humanethics@massey.ac.nz](mailto:humanethics@massey.ac.nz)".*

Please note that if a sponsoring organisation, funding authority or a journal in which you wish to publish requires evidence of committee approval (with an approval number), you will have to provide a full application to one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research.

Yours sincerely

John G O'Neill (Professor)  
Chair, Human Ethics Chairs' Committee and  
Director (Research Ethics)

cc Dr Ian de Terte  
School of Psychology  
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Massey University Human Ethics Committee  
Accredited by the Health Research Council

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## **Appendix 2: Participant information sheet**

**How do social support and optimism moderate the relationship between traumatic exposure and PTSD symptoms?**

### **Information Sheet**

#### *Researcher Introduction*

My name is Basia (Barbara) Wojcierowska and I am conducting a research project as part of the Master of Arts programme at Massey University. I would like to invite you to participate in my study.

This project aims to look at how individuals within the Auckland region of New Zealand are affected by traumatic events in their lives, particularly by looking at their levels of social support and optimism. The project aims to see whether there is a relationship between social support levels and traumatic reactions and PTSD symptoms within individuals that have experienced traumatic events. The project also seeks to see whether there is a relationship between optimism and the occurrence of PTSD symptoms and psychological distress within individuals who have experienced trauma.

This project will be contributing to existing literature by adding a general Auckland sample group and its findings to existing research.

The main aim of this project is that optimism and social support (be it family and friends or work colleagues) are important factors when buffering potentially harmful effects of traumatic events occurring in one's life. We expect to see that higher levels of optimism and social support will lead to lower levels of PTSD symptoms and psychological distress.

My thesis is being supervised by Dr Ian de Terte, a senior lecturer in Clinical Psychology at Massey University. He is available for contact if there are any questions regarding my research. As with most research, there may be the option to publish research findings from this thesis in academic journals.

#### *Participant Identification and recruitment*

Participants will be recruited via social media and word of mouth. I will be advertising this project on Facebook and Twitter in order to collect volunteers. I will also be using the graduate student mailing list to spread the word.

The only selection criteria is that participants must be based in Auckland at the time of the study. Participants must have lived in Auckland for at least 6 months on a permanent basis before participating in the study. There are no identified risks or discomfort that would be experienced as a result of participation.

#### *Project Procedures*

Participants will voluntarily complete the questionnaire online. The questionnaire should take the participant no more than 15 minutes to complete. Completion of the questionnaire online implies consent from the participant.

If the participants feel they are distressed after completing the questionnaire, psychological procedures will be put in place to aid participants in reducing distress. This is very unlikely to occur. You should not have any difficulties with completing the questionnaire. There is the possibility that recalling traumatic events will cause some people distress. If this happens to you, please contact your general practitioner. Alternatively, you can seek assistance from a psychologist in your area. A list of psychologists in your area can be accessed via the internet at [www.nzccp.co.nz](http://www.nzccp.co.nz) and following the link to find private practitioners or at [www.psychology.org.nz](http://www.psychology.org.nz) and following the link to find a psychologist. Note there would be a fee charged to you for making an appointment with these professionals.

#### *Data Management*

The data that is collected from the questionnaires will be statistically analysed and used to answer research questions that the project aims to investigate. Since the questionnaire is anonymous, identities of participants will not be able to be discovered. Data will be stored securely. An executive summary of findings will be made available through the same portals as recruitment was carried out so that participants will be able to read about what their contribution resulted in.

#### *Participant's Rights*

Completion of the online questionnaire implies consent. You have the right to decline to answer any particular question.

Please do not hesitate to contact myself or my supervisor if you have any questions.

#### *Researcher*

Basia (Barbara) Wojciewska

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021 042 7924

#### *Supervisor*

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0800 627 739 ext. 62033

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher named above is responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher, please contact Professor John O'Neil, Director (Research Ethics), telephone 06 350 5249, email [humanethics@massey.ac.nz](mailto:humanethics@massey.ac.nz)

### Appendix 3: Questionnaire

#### Social Support and Optimism: How Do These Affect Reactions to Trauma and PTSD Symptoms?

##### Section A

##### Demographics

Please indicate your gender, ethnicity you identify with, employment status, and region in New Zealand you reside in:

<b>Gender</b>	Male	Female
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<b>Ethnicity</b>	NZ European	NZ Māori	Pacific Islander	Asian	European	Other (Please specify):
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<b>Employment status:</b>	Employed Full time 40 hours a week	Employed Part time 1-30 hours a week	Unemployed and not looking for work	Unemployed and looking for work	Retired
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<b>Which region do you live in:</b>	Auckland	Northland	Bay of Plenty	Waikato	Gisborne	Hawkes Bay	Taranaki	Manawatu-Wanganui
	Wellington	Marlborough	Otago	West Coast	Canterbury	Tasman	Southland	

Please indicate your age:

<b>Age</b>	..... years old
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Please indicate your main occupational industry:

Home maker	
Student	
Agriculture, Forestry, Fishing or hunting	
Construction	
Hospitality	
Tourism	
Engineering	
Information Technology	
Sales and retail	
Marketing	
Advertising	
Accounting	
HR	
Legal	
Administration	
Healthcare	
Education	
Sports and recreation	

Media	
Other	

*Section B*

In your life time:		If 'Yes', please circle how many times this has happened to you in your lifetime?			
Have you experienced a critical incident where someone was seriously injured?	Yes/No	1	2-5	6-10	11+
Have you experienced a critical incident where a child was seriously injured or killed?	Yes/No	1	2-5	6-10	11+
Have you experienced a critical incident where an individual died (other than a child)?	Yes/No	1	2-5	6-10	11+
Have you experienced a critical incident in which there were multiple casualties?	Yes/No	1	2-5	6-10	11+
Have you experienced a critical incident where someone was dead upon your arrival?	Yes/No	1	2-5	6-10	11+
Have you experienced a critical incident where there was serious mutilation or human dismemberment (e.g., loss of limbs)?	Yes/No	1	2-5	6-10	11+
Have you experienced a critical incident where you came into contact or saw the body of someone who committed suicide?	Yes/No	1	2-5	6-10	11+
Have you had to administer emergency medical aid or resuscitation on an injured or unconscious person?	Yes/No	1	2-5	6-10	11+
Have you been involved in an incident in which you feared for your life?	Yes/No	1	2-5	6-10	11+
Have you had a near death experience?	Yes/No	1	2-5	6-10	11+
Have you experienced a serious explosion or bomb incident?	Yes/No	1	2-5	6-10	11+
Have you experienced a large scale community or natural disaster?	Yes/No	1	2-5	6-10	11+
Have you suffered injury, evacuation or property damage because of severe weather or either a natural or man-made disaster?	Yes/No	1	2-5	6-10	11+
Have you been involved in a motor vehicle accident serious enough to injure one or more person?	Yes/No	1	2-5	6-10	11+
Has anyone taken something from you by force or threat force, such as robbery, mugging or hold up?	Yes/No	1	2-5	6-10	11+
Has a close friend or family member died because of an accident, homicide or suicide?	Yes/No	1	2-5	6-10	11+
Has anyone forced you to have sex by using force or threat	Yes/No	1	2-5	6-10	11+

of harm? This includes any type of unwanted sexual activity.					
Have you been physically assaulted or injured or had your life placed under threat by another person?	Yes/No	1	2-5	6-10	11+
Have you experienced any other shocking event or critical incident that has not yet been mentioned?	Yes/No	1	2-5	6-10	11+

In the last 12 months:		If 'Yes', please circle how many times this has happened to you in the last 12 months?			
Have you experienced a critical incident where someone was seriously injured?	Yes/No	1	2-5	6-10	11+
Have you experienced a critical incident where a child was seriously injured or killed?	Yes/No	1	2-5	6-10	11+
Have you experienced a critical incident where an individual died (other than a child)?	Yes/No	1	2-5	6-10	11+
Have you experienced a critical incident in which there were multiple casualties?	Yes/No	1	2-5	6-10	11+
Have you experienced a critical incident where someone was dead upon your arrival?	Yes/No	1	2-5	6-10	11+
Have you experienced a critical incident where there was serious mutilation or human dismemberment (e.g., loss of limbs)?	Yes/No	1	2-5	6-10	11+
Have you experienced a critical incident where you came into contact or saw the body of someone who committed suicide?	Yes/No	1	2-5	6-10	11+
Have you had to administer emergency medical aid or resuscitation on an injured or unconscious person?	Yes/No	1	2-5	6-10	11+
Have you been involved in an incident in which you feared for your life?	Yes/No	1	2-5	6-10	11+
Have you had a near death experience?	Yes/No	1	2-5	6-10	11+
Have you experienced a serious explosion or bomb incident?	Yes/No	1	2-5	6-10	11+
Have you experienced a large scale community or natural disaster?	Yes/No	1	2-5	6-10	11+
Have you suffered injury, evacuation or property damage because of severe weather or either a natural or man-made disaster?	Yes/No	1	2-5	6-10	11+
Have you been involved in a motor vehicle accident serious enough to injure one or more person?	Yes/No	1	2-5	6-10	11+

Has anyone taken something from you by force or threat force, such as robbery, mugging or hold up?	Yes/No	1	2-5	6-10	11+
Has a close friend or family member died because of an accident, homicide or suicide?	Yes/No	1	2-5	6-10	11+
Has anyone forced you to have sex by using force or threat of harm? This includes any type of unwanted sexual activity.	Yes/No	1	2-5	6-10	11+
Have you been physically assaulted or injured or had your life placed under threat by another person?	Yes/No	1	2-5	6-10	11+
Have you experienced any other shocking event or critical incident that has not yet been mentioned?	Yes/No	1	2-5	6-10	11+

### Section C

*For the next section, please read the following:*

Circle 0 if your answer is NEVER; it has not happened at all in the last 6 months.

Circle 1 or 2 if it has happened in the last 6 months, but has not happened often.

Circle 3 if your answer is OFTEN; it has happened often in the last 6 months.

In the last 6 months, how often have you experienced:	Never	Happened but not often		Often
Nightmares or bad dreams	0	1	2	3
Trying to forget about a bad time in your life	0	1	2	3
Irritability	0	1	2	3
Stopping yourself from thinking about the past	0	1	2	3
Getting angry about something that wasn't very important	0	1	2	3
Feeling empty inside	0	1	2	3
Sadness	0	1	2	3
Flashbacks (sudden memories or images of upsetting things)	0	1	2	3
Not being satisfied with your sex life	0	1	2	3
Feeling like you were outside of your body	0	1	2	3
Lower back pain	0	1	2	3
Sudden disturbing memories when you were not expecting them	0	1	2	3
Wanting to cry	0	1	2	3
Not feeling happy	0	1	2	3
Becoming angry for little or no reason	0	1	2	3
Feeling like you don't know who you really are	0	1	2	3
Feeling depressed	0	1	2	3
Having sex with someone you hardly knew	0	1	2	3
Thoughts or fantasies about hurting someone	0	1	2	3
Your mind going blank	0	1	2	3
Fainting	0	1	2	3
Periods of trembling or shaking	0	1	2	3
Pushing painful memories out of your mind	0	1	2	3
Not understanding why you did something	0	1	2	3
Threatening or attempting suicide	0	1	2	3
Feeling like you were watching yourself from far away	0	1	2	3
Feeling tense or 'on edge'	0	1	2	3
Getting into trouble because of sex	0	1	2	3

Not feeling like your real self	0	1	2	3
Wishing you were dead	0	1	2	3
Worrying about things	0	1	2	3
Not being sure of what you want in life	0	1	2	3
Bad thoughts or feelings during sex	0	1	2	3
Being easily annoyed by other people	0	1	2	3
Starting arguments or picking fights to get your anger out	0	1	2	3
Having sex or being sexual to keep from feeling lonely or sad	0	1	2	3
Getting angry when you didn't want to	0	1	2	3
Not being able to feel your emotions	0	1	2	3
Confusion about your sexual feelings	0	1	2	3
Using drugs other than marijuana	0	1	2	3
Feeling jumpy	0	1	2	3
Absent-mindedness	0	1	2	3
Feeling paralyzed for minutes at a time	0	1	2	3
Needing other people to tell you what to do	0	1	2	3
Yelling or telling people off when you felt you shouldn't have	0	1	2	3
Flirting or 'coming on' to someone to get attention	0	1	2	3
Sexual thoughts or feelings when you thought you shouldn't have them	0	1	2	3
Intentionally hurting yourself (eg. Scratching, cutting or burning) even though you weren't trying to commit suicide	0	1	2	3
Aches and pains	0	1	2	3
Sexual fantasies about being dominated or overpowered	0	1	2	3
High anxiety	0	1	2	3
Problems in your sexual relations with another person	0	1	2	3
Wishing you had more money	0	1	2	3
Nervousness	0	1	2	3
Getting confused about what you thought or believed	0	1	2	3
Feeling tired	0	1	2	3
Feeling mad or angry inside	0	1	2	3
Getting into trouble because of your drinking	0	1	2	3
Staying away from certain people or places because they reminded you of something	0	1	2	3
One side of your body going numb	0	1	2	3
Wishing you could stop thinking about sex	0	1	2	3
Suddenly remembering something upsetting from your past	0	1	2	3
Wanting to hit someone or something	0	1	2	3
Feeling hopeless	0	1	2	3
Hearing someone talk to you who wasn't really there	0	1	2	3
Suddenly being reminded of something bad	0	1	2	3
Trying to block out certain memories	0	1	2	3
Sexual problems	0	1	2	3
Using sex to feel powerful or important	0	1	2	3
Violent dreams	0	1	2	3
Acting 'sexy' even though you didn't really want sex	0	1	2	3
Just for a moment, seeing or hearing something upsetting that happened earlier in your life	0	1	2	3
Using sex to get love or attention	0	1	2	3
Frightening or upsetting thoughts popping into your mind	0	1	2	3
Getting your own feelings mixed up with someone else's	0	1	2	3
Wanting to have sex with someone who you knew was bad for you	0	1	2	3
Feeling ashamed about your sexual feelings or behaviour	0	1	2	3
Trying to keep from being alone	0	1	2	3
Losing your sense of taste	0	1	2	3
Your feelings or thoughts changing when you were with other people	0	1	2	3

Having sex that had to be kept a secret from other people	0	1	2	3
Worrying that someone is trying to steal your ideas	0	1	2	3
Not letting yourself feel bad about the past	0	1	2	3
Feeling like things weren't real	0	1	2	3
Feeling like you were in a dream	0	1	2	3
Not eating or sleeping for 2 or more days	0	1	2	3
Trying not to have any feelings about something that once hurt you	0	1	2	3
Daydreaming	0	1	2	3
Trying not to think or talk about things in your life that were painful	0	1	2	3
Feeling like life wasn't worth living	0	1	2	3
Being startled or frightened by sudden noises	0	1	2	3
Seeing people from the spirit world	0	1	2	3
Trouble controlling your temper	0	1	2	3
Being easily influenced by others	0	1	2	3
Wishing you didn't have any sexual feelings	0	1	2	3
Wanting to set fire to a public building	0	1	2	3
Feeling afraid you might die or be injured	0	1	2	3
Feeling so depressed that you avoided people	0	1	2	3
Thinking that someone was reading your mind	0	1	2	3
Feeling worthless	0	1	2	3

**Section D**

This scale is made up of a list of statements each of which may or may not be true about you. For each statement circle "definitely true" if you are sure it is true about you and "probably true" if you think it is true but are not absolutely certain. Similarly, you should circle "definitely false" if you are sure the statement is false and "probably false" if you think it is false but are not absolutely certain.

	Definitely false	Probably false	Probably true	Definitely true
If I wanted to go on a trip for a day (for example, to the country or mountains), I would have a hard time finding someone to go with me.	1	2	3	4
I feel that there is no one I can share my most private worries and fears with.	1	2	3	4
If I were sick, I could easily find someone to help me with my daily chores.	1	2	3	4
There is someone I can turn to for advice about handling problems with my family.	1	2	3	4
If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone to go with me.	1	2	3	4
When I need suggestions on how to deal with a personal problem, I know someone I can turn to.	1	2	3	4
I don't often get invited to do things with others.	1	2	3	4
If I had to go out of town for a few weeks, it would be difficult to find someone who would look after my house or apartment (the plants, pets, garden, etc.).	1	2	3	4
If I wanted to have lunch with someone, I could easily find someone to join me.	1	2	3	4

If I was stranded 10 miles from home, there is someone I could call who could come and get me.	1	2	3	4
If a family crisis arose, it would be difficult to find someone who could give me good advice about how to handle it.	1	2	3	4
If I needed some help in moving to a new house or apartment, I would have a hard time finding someone to help me.	1	2	3	4

**Section E**

Please be as honest and accurate as you can throughout. Try not to let your response to one statement influence your responses to other statements. There are no "correct" or "incorrect" answers. Answer according to your own feelings, rather than how you think "most people" would answer.

- A = I agree a lot
- B = I agree a little
- C = I neither agree nor disagree
- D = I disagree a little
- E = I disagree a lot

	I agree a lot	I agree a little	I neither agree nor disagree	I disagree a little	I disagree a lot
In uncertain times, I usually expect the best	A	B	C	D	E
It's easy for me to relax.	A	B	C	D	E
If something can go wrong for me, it will.	A	B	C	D	E
I'm always optimistic about my future.	A	B	C	D	E
I enjoy my friends a lot.	A	B	C	D	E
It's important for me to keep busy.	A	B	C	D	E
I hardly ever expect things to go my way.	A	B	C	D	E
I don't get upset too easily.	A	B	C	D	E
I rarely count on good things happening to me.	A	B	C	D	E
Overall, I expect more good things to happen to me than bad.	A	B	C	D	E

Thank you for your participation.

All results will be kept anonymous and secure.

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher named above is responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher, please contact Professor John O'Neil, Director (Research Ethics), telephone 06 350 5249, email [humanethics@massey.ac.nz](mailto:humanethics@massey.ac.nz).

## Appendix 4: Advertisement for participants

Hello all!

My name is Basia (Barbara) Wojciewska and I am conducting a research project as part of the Master of Arts programme at Massey University. I would like to invite you to participate in my study.

This project aims to look at how individuals within the Auckland region of New Zealand are affected by traumatic events in their lives, particularly by looking at their levels of social support and optimism. The project aims to see whether there is a relationship between social support and optimism levels and the occurrence of PTSD symptoms within individuals who have experienced trauma.

The main aim of this project is that optimism and social support (be it family and friends or work colleagues) are important factors when buffering potentially harmful effects of traumatic events occurring in one's life. We expect to see that higher levels of optimism and social support will lead to lower levels of PTSD symptoms and psychological distress.

Please follow the link to participate

[Social Support and Optimism](#)

Thank you!